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Taxonomy of Indo-Malayan Pentastirini (Homoptera, Cixiidae)

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Contents

Summary

A taxonomic revision is given of the oriental Pentastirini. All species are redescribed and illustrated with emphasis on the male and female genitalia, and regrouped in five genera : *Pentastiridius* KIRSCHBAUM, *Reptalus* EMELJANOV, *Adzapala* DISTANT, *Oecleopsis* EMELJANOV, and *Oliarus* STÅL. A key to these genera is presented and for each genus a key to species is given. Fifteen new combinations are given, ten names are synonymized and a lectotype is selected for thirty three taxa. Twenty four species in Oliarus and one in Oecleopsis are described as new to science.

Taxonomic summary

New combinations :

— *to Adzapala* : *O. greeni* and *O. maculipennis*, *O. meridionalis*.
— to *Pentastiridius* : *O. lucidipes* MUIR, *O. bohemani* STÅL, *O. hodgarti* DISTANT, *O. fuscoapicatus* METCALF, *O. ogasawarensis* MATSUMURA.
— to *Oecleopsis* : *O. yoshikawai*, *O. petasatus*, *O. mori*, *O. sinicus*, *O. bifidus*, *O. chiangi*, *O. elevatus*.

New synonyms :

— *O. trifasciatus* METCALF, 1954 of *Reptalus quadricinctus* (MATSUMURA, 1914).
— *O. kierpurensis* MUIR, 1922 and *O. flavipes* MUIR, 1924 of *Pentastiridius suezensis* MATSUMURA, 1910.
— *O. asiaticus* ISHIHARA, 1961 of *O. speciosus* MATSUMURA, 1914.
— *O. nuwarae* DISTANT, 1911 of *O. stigma* MOTSCHULSKY, 1863.
— *O. annandalei* DISTANT, 1911 and *O. cocosivora* MUIR, 1929 of *O. oryzae* MATSUMURA, 1911.
— *O. sumbensis* LALLEMAND & SYNAVE, 1953 of *O. incisus* BIERMAN, 1908.
— *O. distanti* METCALF, 1936 objective synonym of *Adzapala greeni* DISTANT, 1911.
— *O. fusciceps* METCALF, 1936 objective synonym of *O. fuscipennis* MUIR, 1924.

New species :

In *Oliarus* : *anamalaii* sp. n., *angsensis* sp. n., *bidiensis* sp. n., *indiensis* sp. n., *inermis* sp. n., *lawitensis* sp. n., *madrasensis* sp. n., *malayensis* sp. n., *manbhumensis* sp. n., *microstylus* sp. n., *mogogonipae* sp. n., *muiri* sp. n., *muluensis* sp. n., *nilgiriensis* sp. n., *okinawensis* sp. n., *pahangensis* sp. n., *penrissensis* sp. n., *pundaloyensis* sp. n., *ryukyucola* sp. n., *sabahensis* sp. n., *sulawesiensis* sp. n., *tamangensis* sp. n., *thekkadiensis* sp. n., *agusani* sp. n.
In *Oecleopsis* : *articara* sp. n.

Lectotype selections

Adzapala greeni, *Oliarus binghami*, *O. boninensis*, *O. caudatus*, *O. cingalensis*, *O. cocosivora*, *O. cucullatus*, *O. decumbens*, *O. flavipes*, *O. fusconebulosus*, *O. geniculatus*, *O. greeni*, *O. indicus*, *O. insetosus*, *O. kierpurensis*, *O. kurseongensis*, *O. modicus*, *O. nuwarae*, *O. petasatus*, *O. simlae*, *O. simplex*, *O. sinicus*, *O. siporiensis*, *O. speciosus*, *O. spinosus*, *O. stigma*, *O. subpunctatus*, *O. vilis*, *O. walkeri*, *Pentastiridius apicalis*, *P. bohemani*, *P. hodgarti*, *P. ogasawarensis*.

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O'Brien (COB), Dr A. Taeger (DEI), prof. Mutsuo Miyatake (EUM), Dr J. Deckert and Dr U. Göllner-Scheiding (HM), Dr S. Takagi (HU), Dr. J. P. Duffels (ITZ), Dr J. Van Tol (ML), Dr S. Adisoemarto (MZB), Dr L. R. Blinn (NCSU), Dr Shun Chern Tsaur (TARI), Dr R. Emmrich (SMT), Dr K.-H. Lampe (ZFMK), Dr I. M. Kerzhner (ZMMA), Dr Kuldip Rai (ZSI).

Introduction

About ten years ago I started the study of *Oliarus* s.l. with the African species. The advantages for this choice were clear: easy access to type material which was primarily stored in Belgian museums and in the British Museum (Natural History) and the comparatively large amount of work already done by the late Dr SYNAVE. The work resulted in five publications revising the afrotropical fauna of Pentastirini (VAN STALLE, 1989) and showed relatively large well-defined groups with a relatively low number of "taxonomically isolated" species, usually situated in isolated areas such as mountains. One of the conclusions of this study was the fact that a good genus definition of *Oliarus* could only be given by the study of its type species *O. walkeri* and related oriental groups. The work presented below is an attempt to do so. As several advantages and considerations influenced me to make a study of the African Pentastirini, none of these advantages were true for the study of the oriental fauna. Moreover, holotypes are deposited in a large number of museums, some difficult to contact. This frequently hinders comparison at hand, and rechecking of types on new ideas or characters used etc.
It will not be exaggerated to state that species identification was virtually impossible prior to the publication of this study, which solves a large number of taxonomic problems. On the other hand relatively few new species have been described here. The reason for this is the lack of sufficient material. I am also convinced that description of new species is not the most important task here and I consider this as subordinate to the object of this study. Taxonomy has suffered too much and too long from irrelevant new species descriptions without a sound background, while the most relevant information on the identity of already known species often remains buried in the files a few specialists.
The species are ordered as much as possible in species groups. Groups which are taught to be phylogenetically related are placed close to each other although this was not always possible, due to practical reasons or due to the fact the phylogeny of the group is unknown or uncertain.

Taxonomic history

The genus group name *Oliarus* was first proposed by STÅL (1862) to accomodate eight species previously described in *Cixius* LATREILLE and among which the oriental species *Cixius bohemani* and *Cixius walkeri*. The type species, *C. walkeri*, was designated by DISTANT (1906) who also transferred several species described by Walker. Until the first world war one species was described by MOTSCHULSKY (1863) from Sri Lanka, one by UHLER (1896) from Japan and MELICHAR (1903) from Sri Lanka and one by BREDDIN (1905) from Borneo (presently placed in *Mnemosyne*). Two species were described by NOUALHIER (1896) from Cambodja, two by BIERMAN (1908 & 1910) from Java, 11 species by DISTANT (1906 & 1911) primarily from India and Sri Lanka, four species from India by MUIR (1922) and 12 species by MATSUMURA (1914) primarily from Taiwan. Species descriptions are based on external characters such as width of the vertex, colour and venation and species recognition based on these descriptions is virtually impossible. A thorough study of the morphology of *Oliarus* species occurring in the oriental species is presented by MUIR (1924) together with a further 23 species. For the first time many new species are illustrated with figures of the male genitalia but unfortunately a number of species still is described on female material. Two further species are described by SCHMIDT (1926 & 1930) bringing the total number to 75 nominal taxa. Since MUIR (1924) the genus *Oliarus* in the oriental region had little attention. Three species were described by Jacobi (1941 & 1944), One by LALLEMAND & SYNAVE (1953) two by METCALF (1954), one by FENNAH (1956) and three by ISHIHARA (1961). A revision of the Taiwanese fauna was recently presented by TSAUR, HSU & VAN STALLE (1988), and a synopsis of the New Guinean fauna was given by myself.

Material examined

The material studied below has been deposited in the followings museums; they are mentioned in the text with the abbreviations as follows (in alphabetic order):

BMNH	British Museum (Natural History), London, U.K.
BPBM	Bernice P. Bishop Museum, Honolulu, Hawaii.
CAS	California Academy of Sciences, San Francisco, U.S.A.
COB	Collection of Lois O'Brien from the Florida Agricultural and Mechanical University, Tallahassee, Florida.
DEI	Institüt für Pflanzenschutzforschung, Bereich Eberswalde, Abt. Taxonomie der Insekten, Eberswalde-Finow, DDR.

EUM	Entomological laboratory, College of Agriculture, Ehime University, Matsuyama, Japan (coll. Prof. T. ISHIHARA).
HM	Museum für Naturkunde der Humboldt-Universität zu Berlin, Zoologisches Museum, BRD.
HU	Hokkaido University, Japan.
ITZ	Instituut voor Taxonomische Zoölogie, Amsterdam, Nederland.
IZP	Instytut Zoologici PAN, Warsaw, Poland.
KBIN	Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussel, Belgium.
KMMA	Koninklijk Museum voor Midden Afrika, Tervuren, Belgium.
ML	Museum voor Natuurlijke Historie, Leiden, Nederland.
MZB	Museum Zoologicum Bogoriense, Bogor, Java.
NCHU	National Chun Hsing University, Taichung, Taiwan.
NCSU	North Carolina State University, U.S.A.
NTU	National Taiwan University, Taipei, Taiwan.
SMT	Staatliches Museum für Tierkunde, Dresden, D.D.R.
TARI	Taiwan Agricultural Research Institute, Taichung, Taiwan.
ZFMK	Zoologisches Forschungsinstitut und Museum A. Koening, Bonn, BRD.
ZMMU	Zoological Museum, Moscow University, USSR.
ZSI	Zoological Survey of India, Calcutta, India.

All primary type material has been examined and where necessary a lectotype was selected, by preference the male. A number of types has not been studied for various reasons :

artemisiae MATSUMURA
: described and illustrated by ANUFRIEV & EMELJANOV (1988).

annandalei DISTANT, 1911
: the type is not in the BMNH, nor in the ZSI (pers. comm. Kuldip Rai).

bimaculatus SCHMIDT, 1930
: the type is not deposited in any of the museums listed above; I have also written several times to the Zoological Institute in Warszawa, Poland but without any result.

buruanus SCHMIDT, 1926
: the type is not deposited in any of the museums listed above; I have also written several times to the Zoological Institute in Warszawa, Poland but without any result.

goae MUIR, 1922
: the type remains in the ZSI but it was impossible to have it on loan.

kempi MUIR, 1922
: the type is not in the BMNH nor in the ZSI (pers. comm. Kuldip Rai).

nigronervatus FENNAH, 1956
: deposited in the Zoological Institute in Warzsawa; I have written several times but without any result.

tabrobanensis MELICHAR, 1903
: I don't know where this species is deposited.

tsoui MUIR, 1925
: the type of this species is missing; not in the BMNH and not in the BPBM.

turae MUIR, 1922
: the type is deposited in the ZSI but it was impossible to have it on loan.

quadricinctus MATSUMURA, 1914
: described and illustrated by various authors such as ANUFRIEV & EMELJANOV (1988).

yangi TSAUR, 1989
: the type was sufficiently described and illustrated by the author.

The types of *O. hachijonis* MATSUMURA, 1914, *O. harimaensis* MATSUMURA, 1914, *O. iguchii* MATSUMURA, 1914, *O. kagoshimensis* MATSUMURA, 1914 species from adjacent regions more to the north and to my knowledge not yet redescribed in literature, were not examined.

In addition, unidentified collections of various museums were loaned to obtain as much material as possible; the most important and most diversified collections on oriental Pentastirini belong to the BMNH, NCSU, and BPBM. In fact, we have worked the reverse way : prior to the study of the type material the unidentified collections were studied first in order to recognize as much species as possible without naming them. This method has several advantages : this way I became familiar with the diversity, the problems in distinguishing closely related forms and finding additional characters. Only when the taxonomic value of all characters was understood and males matched to females we examined the type material, first the species with male types, then the species with female types. This reduces the chance that a type had to be rechecked during the course of the investigation.
Where possible the male and female genitalia are figured. For some species we have not figured the female although specimens are listed in the material examined. In this case it was not 100 % sure that the female is conspecific with the male, or that the female is damaged.

Species description

In Fulgoroid taxonomy and no doubt in Pentastirini the most important characters for species recognition are supported by the structure of the male genitalia and more particularly by the structure of the aedeagus. The best

way of explaining these three dimensional structures is a detailed illustration, if necessary drawn from several points of view. There is, to my opinion, no better way to describe these structures, and therefor the descriptive part of the genitalia is usually limited to information not given on the figures, such as information on bilateral symmetry, variation, damage etc. In the diagnosis the most important differences with closely related species are given. Rather than giving a perfect account of all the small differences between species it has do be considered as a guide for the search of closely related species. I think that the figures speak for themselves and fit much better the purpose of an identification rather than an elaborate description with words.
As a general rule new species have been described only when more than one male specimen was present. However, exceptions occur. In the case where a species is only described on a female and I failed to find a conspecific male in museum collections, I have described related species also if only one male was available. This has the advantage that a hint is given on the structure of the male genitalia of the species only known from the female by describing a species which is supposed to be closely related. This probably helps identification of "female" species in the future.

Species identification

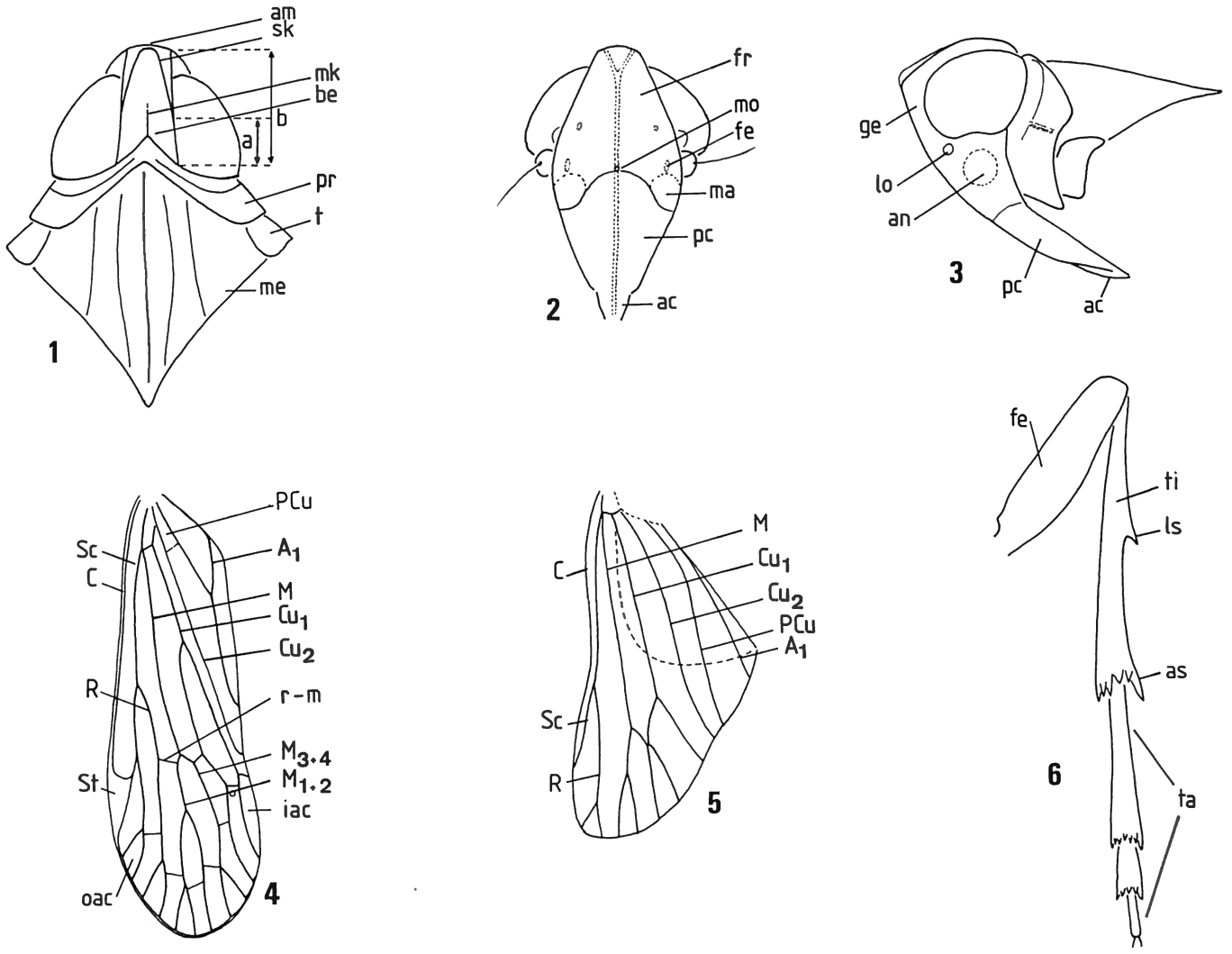
The above mentioned ideas are also adopted for the construction of the identification key. In contrast to my earlier work on the African Pentastirine fauna I have decided to give a key which only goes to species group level. The most important reason for this is the fact that, once at species level, the structure of the male genitalia has to be compared with the drawings in this work and that therefor an elaborate description in a key would be a loss of time, as for each couplet and corresponding species a figure of the aedeagus has to be consulted.
Identification of Pentastirini is, with a few exceptions, impossible without the presence of males. For each collection the species are first separated on their general habitus and structure of the externally visible male and female genitalia. For each series which is thought to be monotypic one or several males are then dissected by taking the abdomen and macerate it in 10 % KOH during one night or boiling it for 3 to 5 minutes. Prior to examination of the aedeagus, the abdomen is washed in water and a drawing is made of the anal segment and pygofer. This is necessary as the pygofer might be damaged upon removal of the aedeagus. The latter is removed by using a thin needle and cutting it from the lateral margins of the pygofer to which it is attached. The aedeagus is then examined in dorsal, ventral and lateral view. After examination the abdomen is stored in PVC microvials (Ø 4 mm) containing a small amount of glycerine.

As every taxonomic revision I have tried to be as complete as possible to incorporate all species occurring in the Indo-Malayan region. However, some species occurring in adjacent regions might have been overlooked; e.g. some species of the Australian fauna might occur in New Guinea, and some species of Japan and southern Russia might occur in the region covered by this revision. I have not been able to examine the Pentastirini of Northern tropical Australia, or those of Southern Russia. There are no recent works covering the Australian Pentastirine fauna, but EMELJANOV (1988) has given an important contribution to our knowledge of the Russian fauna. The fauna more to the West has partly been described by Dlabola.

Morphology

(figs 1-6)

The terminology is adopted from O'Brien & Wilson (1985). The length of the vertex is measured from the tip of the basal emargination to the apex, the width is taken at the level of the tip of the basal emargination (be). The place of junction between the subapical keel and the lateral margin is expressed as a portion of the total distance of the lateral margin, from the base to the fork (a/b). The length of the tegmina is taken from tip to apex, the width is measured at the tip of the clavus. The chaetotaxy of the hind tarsomeres is given, as usual, in the following form : [number of teeth on first tarsomere] / [number of teeth on second tarsomere]. the total length is measured from the apex of the head to the tip of the tegmina.
The frons and postclypeus posses a distinct median keel, forked near the vertex. At the place of junction between frons and vertex, this fork is equally broad as the width of the junction in species with a narrow vertex, and much less wider in species with a broad vertex. The keel is always present in the oriental species studied here. On each side of the frons near the frontoclypeal suture many species groups have a pale round to oval macula (ma) and sometimes a small, hyaline fenestra (fe), which might be the remnants of a larval pit (FENNAH, 1958). There are always three ocelli (lo), one on each side on the gena and one in the middle of the frontoclypeal suture (mo). The antennae are rather simple, two-segmented, and with a long terminal arista.
The proportions of the vertex vary considerably, from wider than long to six times as long as wide. A subapical transverse keel (sk) divides the vertex into an anterior compartment and a large posterior part. This transverse keel can be almost straight to deeply U-shaped, and might be connected to the anterior border of the vertex by two small longitudinal keels which are not always present. The basal compartment might have a median longitudinal keel (mk) with is usually incomplete or which might even be totally lacking. The lateral margins



Figs 1-6 : Oliarus walkeri *STÅL, external morphology - 1 : head, pronotum and mesonotum, dorsal view, a/b : distance fork subapical keel and lateral margin, am : apical margin, sk : subapical keel, be : basal emargination, mk : median longitudinal keel, pr : pronotum, t : tegula, me : mesonotum; 2 : head, frontal view; fr : frons, pc : postclypeus, mo : median ocellus, fe : fenestra, ma : macula, ac : anteclypeus; 3 : head, pronotum and mesonotum, lateral view; ge : gena, lo : lateral ocellus, an : place of antenna, pc : postclypeus, ac : anteclypeus; 4 : left tegmen; C : costal margin, Sc : subcosta, R : radius, St : stigma, M : medial vein, Cu : cubital vein, A : anal vein; 5 : left wing; 6 : left hindleg, ventral view; fe : femur, ti : tibia, ta : tarsus, ls : lateral spine, as : apical spine.*

of the vertex might be very prominent in some species, usually those with a narrow vertex.

On the thorax the pronotum is small and bears a postocular keel which runs parallel to the margin of the compound eyes. The mesonotum bears five longitudinal keel.

On the tegmina (fig. 4) the veins are covered with small granules bearing setae; these granules might be very obsolete or very obvious. The costal margin can be granulated or smooth, devoid of granules. Sc+R and Cu might fork at different levels and M3+4 is also refered to as the first medial branch in the text. In most species the apical transverse veins are brown fumated. Indistinct brown spots are usually present but rarely result into a recognisable pattern.

The tibiae have one to three, sometimes four unmovable lateral spines and six terminal spines on the hind femora. The first and second hind tarsomeres bears a number of terminal teeth sometimes places in a double row (see above) and which might be very useful to distinguish species groups.

The external parts of the male genitalia consist of the anal segment, pygofer and genital styles, which enclose a genital chamber with the aedeagus. They have a number of characters which are very helpful to distinguish species groups. The aedeagus is connected to the pygofer and to the genital styles, and consists of two articulating pars which are called here the basal perandrium which usually has some unmovable spines, and a membraneous flagellum, which is usually directed cephalad

among the dorsal or left lateral margin of the aedeagus. The "apex of the aedeagus" refered to in the text is not the apex of the flagellum but the most caudal part of the aedeagus, namely the place of articulation between the basal periandrium and the flagellum.
On the female genitalia the shape of the caudal border of the pregenital sternite can be of importance for species recognition. In some species related to *O. microstylus* the pregenital sternite might be very large and surpass the base of the ovipositor. The ovipositor consists of three pairs of valvulae. The first two pairs might be reduced in various degrees and sometimes be very small. The third pair is rarely fused. The anal segment can be much smaller than half the width of the pygofer, or as wide as the pygofer, round, rectangular or diamond-shaped.

Biology

Precise data on the ecology and life history of Pentastirini in the oriental region are lacking. The available information in other regions suggests that the nymphs live subterranean in chambers composed of wax fibers, close to roots or in rotten wood (Myers, 1929; Hacker, 1925). The wax is produced by the nymphs from wax plates on the abdomen which gives them a white wax fiber "tail". This tail becomes often detached when they are disturbed. Several species have been reported associated with ants (Hudson, 1924; Sheppard, Martin & Mead, 1979), and Thompson, Nickerson & Mead (1979) suggest a symbiotic relationship between the American *O. vicarius* (WALKER) and certain ants.

Key to the genera of oriental Pentastirini

I. - Tegmina with costal margin intermittently mottled brown yellow (fig. 53 & 61), apical border beyond clavus sinuate (fig. 61), like in Achilidae . . . . . *Adzapala* (p. 17)
- Tegmina with costal margin uniformously coloured, commisural margin going straight into the apical border beyond the clavus (fig. 4) 2

II. - Chaetotaxy hind tarsi 7/5, consisting of a single row of black teeth 3
- Chaetotaxy hind tarsi otherwise : or more teeth on one or both segment, or consisting of a double row of black teeth and pale scale-like teeth 4

III. - Vertex narrow, in transverse section deeply U- or V-shaped with highly elevated, foliaceous lateral margins, subapical keel in dorsal view U-shaped, much longer than widest part; Sc+R forking at same level as Cu or slightly distad, r-m situated basad of first medial branch; apex of the genital styles with two tapering processes as illustrated in fig. 70 & 75 . . . . . *Oecleopsis* (p. 20)
- Above characters not united, apex of genital styles otherwise shaped . . . *Oliarus* (p. 27)

IV. - Costal margin not granulate, first or second tarsomere with a double row of apical teeth, consisting of a row of small black teeth and a row of membraneous, scale-like teeth . . . 5
- Costal margin granulate of not granulate, chaetotaxy of hind tarsi often 6/5, 7/7 or more but always with a single row of black teeth; apex of genital styles without long finger-shaped processes . . . *Oliarus* (p. 27)

V. - First hind tarsomere with seven or eight black teeth, second tarsomere with a double row of 7 to 10 teeth; genital styles with long finger-shaped processes (fig. 46); anal segment with an apical, ventrally directed process (fig. 45) . . . . . *Reptalus* (p. 16)
- Hind tarsi with usually more than 10 teeth with a double row on the first as well as the second tarsomere; genital styles without finger-shaped processes; anal segment without a ventrally directed apical process . . . . . *Pentastiridius* (p. 10)

Genus *Pentastiridius* KIRSCHBAUM

Pentastiridius KIRSCHBAUM, 1868 : 45, type species *Flata pallens* Germar, 1821. *Nesopompe* Kirkaldy, 1907 : 107, type : *Oliarus felis* Kirkaldy, 1907.

Dark brown to black species with contrasting yellow keels and borders. Vertex one to 1.5 times as long as broad, lateral margins slightly converging anteriorly and basal margin angulately incised at base. Subapical keel arcuate, forking from lateral margin in the apical half and connected with anterior border by two small longitudinal keels which can be obsolete. Median longitudinal keel absent or slightly developed or well-developed at base or sometimes reaching to subapical keel. Face usually uniform in colour, median keel well-developed, median ocellus distinct. Mesonotum with five distinct longitudinal keels. Tegmina about three times as long as broad, milky hyaline, apical part distad of tip of clavus usually brown fumated in various degrees. Veins smooth by the fact that the granules are very small and concolorous, apex with 11 cells, stigma well-developed. Legs relatively short, hindtibiae with unmovable lateral spines, hind tarsi with a double row of teeth on the first and second tarsite, variyng from 9 to 20, usually more teeth on the first than on the second tarsomere. Females are usually larger, may sometimes have a slightly broader vertex and can be paler.
Male genitalia : very uniform throughout the genus.

Anal segment, pygofer and genital styles symmetrical. Genital styles bearing a ridge on inner side of apex. Aedeagus on right side with a large process emerging from the base of the periandrium, two spines inserted apically on the flagellum (apical spines) and running parallel to it, and a small ventral spine inserted near the two former and running parallel to these. Flagellum with or without an apical spine. This pattern is slightly modified in *P. ogasawarensis* and *P. tsoui*.
Female genitalia : very uniform. pregenital sternite small, ovipositor with three pairs of valvulae, as long as sclerotised part of anal segment. First pair thickened basally, tapering distally; second pair hair-shaped, thin, third pair broad, stout. Anal segment in dorsal view less broad than half width of pygofer, rectangular.

Key to species

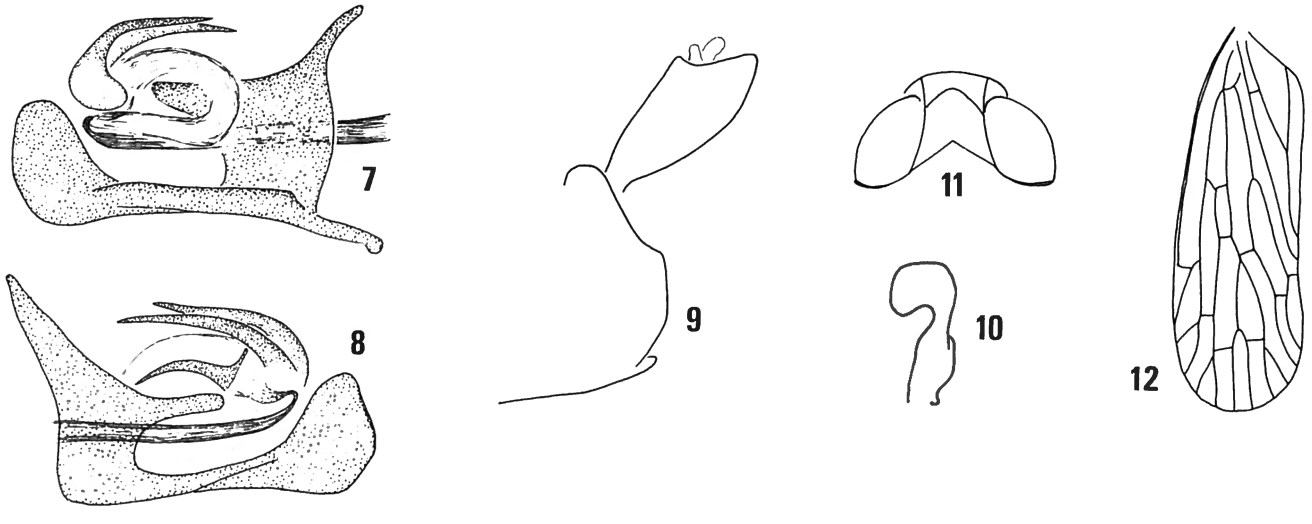
1. - Vertex 1.5 times as long as broad 2
   - Vertex as long as broad 5
2. - Vertex with one longitudinal keel between subapical keel and apex 3
   - Vertex with two longitudinal keels between subapical keel and apex, or keels obsolete . . 4
3. - Aedeagus without a ventral spine (based on Muir's description) (fig. 43) . . . *P. tsoui* (p. 16)
   - Aedeagus with a ventral spine (fig. 36) . . . . . *P. apicalis* (p. 15)
4. - Right process of periandrium spoon-shaped (fig. 16, 17, 18) . . . . . *P. suezensis* (p. 12)
   - Right process of periandrium spine-shaped (fig. 31) . . . . . *P. ogasawarensis* (p. 15)
5. - Aedeagus without a ventral spine . . . . . *P. hodgarti* (p. 13)
   - Aedeagus with a ventral spine 6
6. - Flagellum recurved to apex of aedeagus (fig. 7) . . . . . *P. lucidipes* (p. 11)
   - Flagellum not recurved 7
7. - Aedeagus with first apical spine shorter than second (fig. 13 & 14) . . *P. bohemani* (p. 12)
   - Aedeagus with first apical spine longer than second 8
8. - Aedeagus with first apical spine slightly bent in middle (fig. 25 & 26) . . *P. pachyceps* (p. 13)
   - Aedeagus with first apical spine gently curved from base to apex (fig. 28 & 29) . . . . . *P. fuscoapicatus* (p. 14)

Pentastiridius lucidipes (Muir) comb. n.
(Figs 7-12)

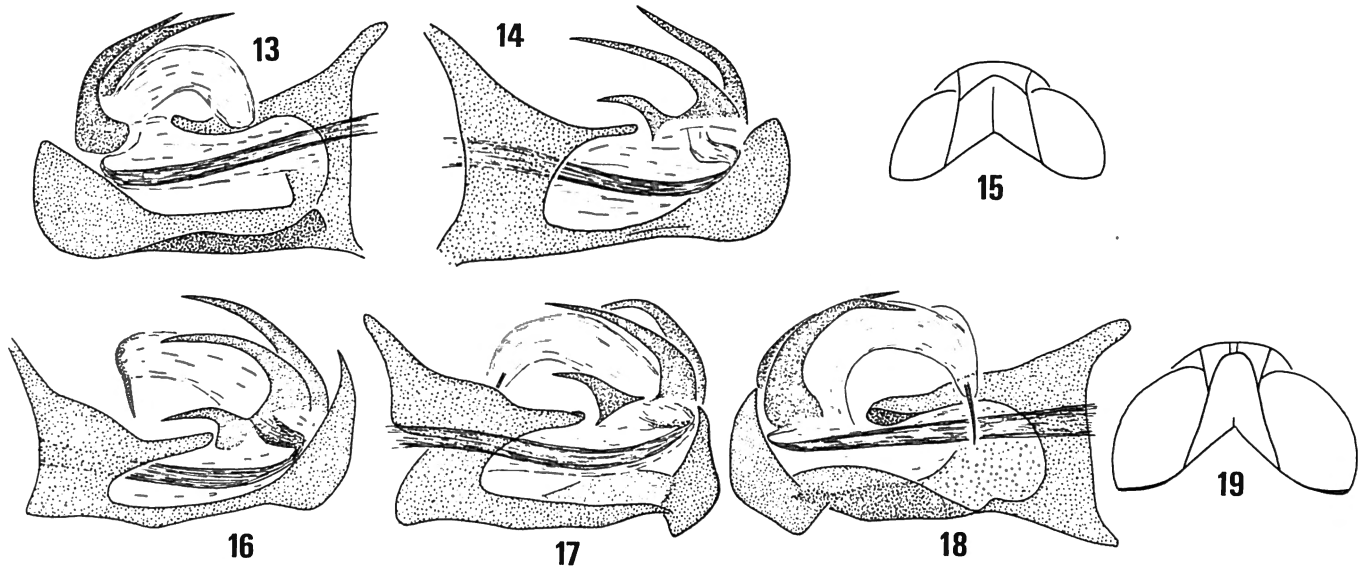
Oliarus lucidipes Muir, 1924 : 512, pl. I, figs 3a-b.

Description :
Head, pronotum and mesonotum black, keels and borders of head and pronotum contrasting, yellow, on mesonotum only very faintly tinged with yellow. Vertex as long as broad. Tegulae yellow; tegmina hyaline with pale yellowish, smooth veins. Legs yellowish, chaetotaxy of hind tarsi (12)/(9) on both sides in holotype. Length : 4.5 mm.
Male genitalia : anal segment, pygofer and genital styles symmetrical; pygofer with lateral margins slightly angulate. Aedeagus with apical spines slightly unequal and ventral spine relatively long.

Diagnosis :
P. lucidipes closely resembles *P. pachyceps* and *P. bohemani*. It differs from both species in the presence of a very long flagellum.



Figs 7-12 : Pentastiridius lucidipes *(Muir) - 7-8 : aedeagus, holotype, dorsal and ventral view; 9 : pygofer and anal segment; 10 : left genital style; 11 : head; 12 : left tegmen.*



Figs 13-15 : Pentastiridius bohemani *(Stål) - 13-14 : aedeagus, lectotype, dorsal and ventral view; 15 : head.*
Figs 16-19 : Pentastiridius suezensis *(Matsumura) - 16 : aedeagus, lectotype* kierpurensis, *ventral view; 17-18 : aedeagus, holotype* flavipes, *ventral and dorsal view; 19 : head.*

Remark :
The reference "type N° 1075" in the original description is considered as a holotype designation.

Distribution :
The Philippine Islands.

Material :
Holotype ♂ (Malaysia), I. of Penang, Baker, labeled "holotype", BPBM (examined).
Paratypes : 2 ♂♂, 1 ♀, same data as holotype (1 ♀ examined); 1 ♂, Phil. I., Basilan; 1 ♂, Mindanao, Dapitan; 2 ♂♂, Luzon, Mt Maquiling; 2 ♂, Los Baños, X.1915, BPBM.

Pentastiridius bohemani (Stål) comb. n.
(Figs 13-15)

Cixius bohemani Stål, 1859 : 272.
Oliarus bohemani; Stål, 1862 : 306.

General colour black with yellow keels on head, pronotum and mesonotum. Vertex 0.9 times as long as broad, subapical keel arcuate and median longitudinal keel indicated by a yellow line. Tegmina milky hyaline, 2.9 times as long as broad, apex slightly brown fumated, Sc+R forking at about the same level as Cu, r-m basad of first medial branch and apex with 11 cells. Legs yellow with brown femora, chaetotaxy hind tarsi (12-15)/(10-12). Length : 4.3-4.9 mm.
Male genitalia : apical keel shorter than subapical keel.

Diagnosis :
P. bohemani closely resembles *P. lucidipes* in the structure of the aedeagus. In *P. lucidipes* the ventral spine is proportionally longer and the flagellum is much longer and recurved to the apex of the aedeagus.

Distribution :
China, Hongkong according to the original description.

Material :
Lectotype ♂, here designated, "China", NR (examined).
Paralectotypes : 3 ♂♂, same data.

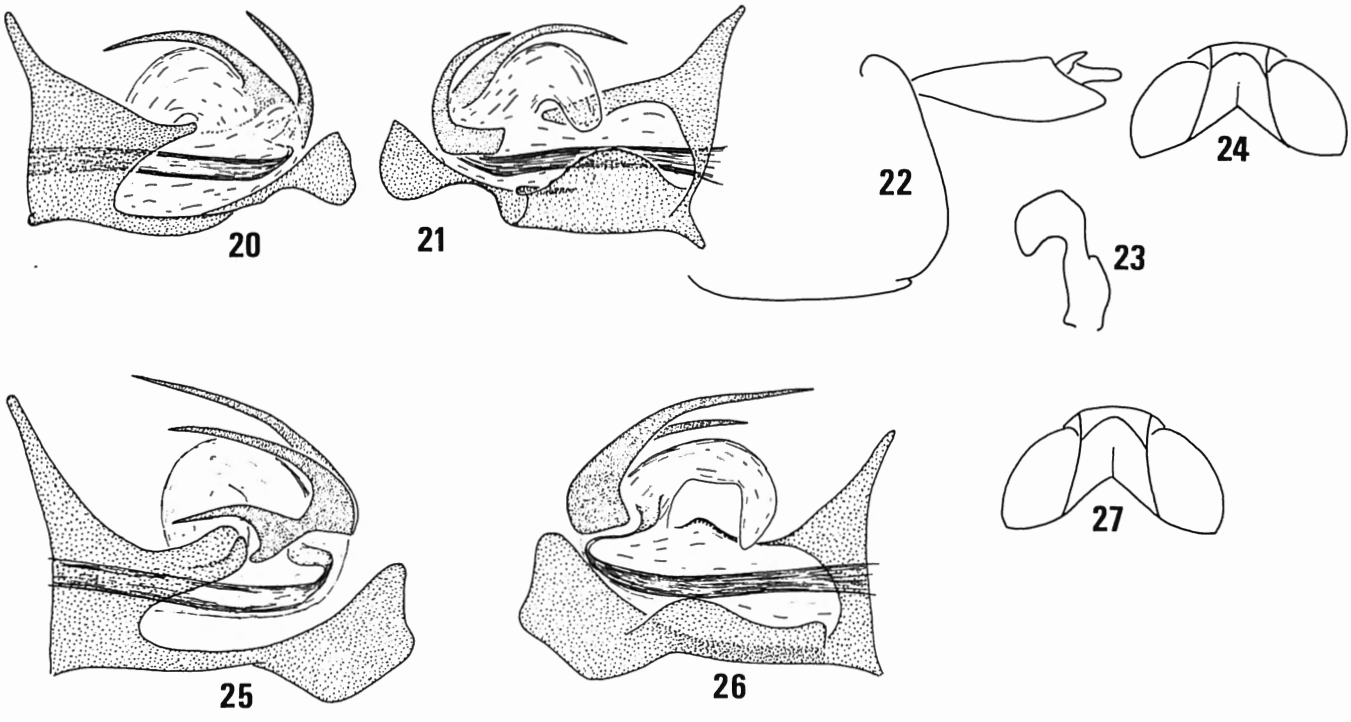
Pentastiridius suezensis (Matsumura)
(Figs 16-19)

Oliarus suezensis Matsumura, 1910 : 7.
Pentastiridius suezensis; Van Stalle, 1986, fig. 20.
Oliarus kierpurensis Muir, 1922 : 344. syn. n.
Oliarus flavipes Muir, 1924 : 514; pl. 1, figs 4a, 4b. syn. n.

Head, pronotum and mesonotum black, keels and borders yellow (also from mesonotum). Vertex 1.5 times as long as broad. Tegmina hyaline with smooth, yellow veins, fumated with brown in the apical part, Sc+R forking slightly distad of Cu, r-m basad of first medial branch, apex with 11 cells. Legs yellowish, chaetotaxy (17-15)/(16-12). Length : 5-7 mm.

Distribution :
A southern palearctic species which is here also recorded from India and the Philippine Islands.

Material :
Lectotype ♂ *Oliarus kierpurensis,* here designated, Kierpur, Purneah dist. Bihar, 9-12.X.1915, Indian



Figs 20-24 : Pentastiridius hodgarti *(Distant) - 20-21 : aedeagus, lectotype, ventral and dorsal view; 22 : anal segment and pygofer; 23 : left genital style; 24 : head.*

Figs 25-27 : Pentastiridius pachyceps *(Matsumura) - 25-26 : aedeagus, lectotype, ventral and dorsal view; 27 : head.*

Museum (examined); holotype ♂ *Oliarus flavipes,* Luzon, Mt Maquiling, Baker (examined); 1 ♀ paratype of *Oliarus flavipes,* same data as holotype (examined).

Pentastiridius hodgarti (Distant) comb. n.
(Figs 20-24)

Oliarus hodgarti Distant, 1911 : 736.

Colour black, keels and margins yellow. Vertex as long as broad, subapical keel arcuate. Tegmina 3.2 times as long as broad, milky hyaline, apex fumated with brown, veins yellowish, smooth. Legs yellow, femora embrowned, chaetotaxy hindtarsi (12-14)/(10-12).
Male genitalia : aedeagus without a ventral spine. Apical spines unequal in size.

Diagnosis :
Easily distinguished from other species by the lack of a ventral spine on the aedeagus.

Distribution :
India.

Material :
Lectotype ♂, here designated, Goalbathan, East Bengal, 9.VII.1909, R. Hodgart, BMNH.
Additional : 1 ♂, 3 ♀♀, Goalbathan, East Bengal, 9.VII.1909, R. Hodgart, BMNH; 2 ♂♂, Pusa, Bengal, 21.VII.1909; 1 ♂, Bankutwa, Gonda distr., 7.III.1910; 3 ♂♂, 1 ♀, Calcutta, at light, 15.IX.1912; 1 ♂, Lahore, Punjab, 5.V.1908, BMNH.

Pentastiridius pachyceps (Matsumura) comb. n.
(Figs 25-27)

Oliarus pachyceps Matsumura 1914 : 420.
Pentastiridius pachyceps; Tsaur, Hsu & Van Stalle, 1988 : 66, fig. 18, A-G.

Description :
Female paler and larger than male. Face in male black with broad yellow keels, brown to ochreous in female. Vertex as long as broad or slightly broader, anterior compartment black, posterior compartment yellow in female, entirely black in male. Pronotum fumated with brown, tegulae yellow. Mesonotum brown to black, with five concolorous keels, sometimes slightly marked with yellow. Tegmina hyaline, apical part behind stigma slightly fumated with brown, 3.2 times as long as broad, veins yellow; apical transverse veins fumated with brown; Sc+R forked distad of Cu, r-m basad of first medial branch, apex with 11 cells. Legs yellowish, femora fumated with brown; chaetotaxy hind tarsi (14-16)/(11-12). Length : ♂ : 4.5-5 mm; ♀ : 5.5-6 mm.
Male genitalia : aedeagus of lectotype as illustrated in fig. 26, ventral spine relatively long; no spines on flagellum. No differences were observed in the aedeagus of

the male paralectotype; The specimens from Ryukyu I. have a rounded apex on the spoon-shaped process of the aedeagus. These differences are tentatively interpreted as being of infraspecific value.
Female genitalia : caudal border of pregenital sternite straight. Anal segment small, rectangular.

Diagnosis :
P. pachyceps closely resembles *P. fuscoapicatus* in the structure of the aedeagus. They differs from each other in the shape of the first apical spine which is slightly angulate in *P. pachyceps*.

Material :
♂ lectotype (examined), designated by TSAUR, HSU & VAN STALLE, 1988, "Formosa, MATSUMURA, Koshun", 6.VII.1906, HU.
Paralectotypes : 1 ♂, 1 ♀, type, Koshun, 6.VII.1906, HU (examined).
Additional : 2 ♂♂, 1 ♀, Ryukyu I., Iriomote I., Ohara 50 m, 1.XI.1963, G.A. Samuelson, BPBM; 1 ♂, Ryukyu I., Iriomote I., Shirahama, Sonai, 16.III.1965, BPBM.

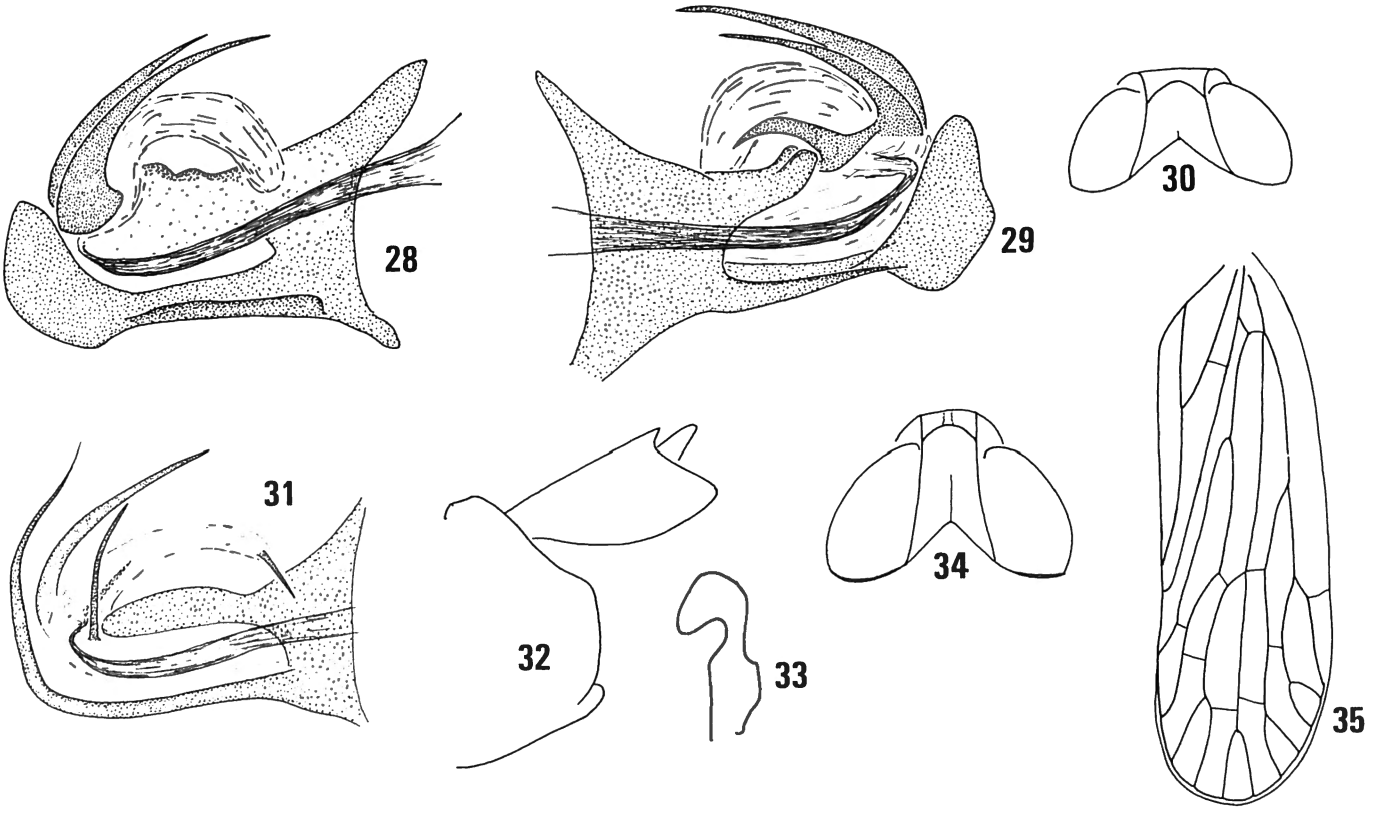
Pentastiridius fuscoapicatus (METCALF) comb. n.
(Figs 28-30)

Oliarus fuscoapicatus METCALF, 1954 : 606, pl. 1, figs 4-6.

General colour black carinae and margins of head paler, carinae on mesonotum black. Vertex as long as broad, subapical keel arcuate, forking from lateral margin at 0.7 distance of base and not connected with anterior border. Tegmina milky hyaline, 2.9 times as long as broad, veins yellow with concolorous granules, apex brown fumated. Sc+R forking distad of Cu, r-m basad of first medial branch, apex with 11 cells. Legs brown, partly missing, hind legs missing. Length : 4.6 mm.
Male genitalia : aedeagus with both apical spines almost parallel, first apical spine slightly longer than second. Ventral sine relatively long, no spine on flagellum.
Female unknown.

Diagnosis :
This species closely resembles *O. pachyceps* in the structure of the male genitalia and in the proportions of the vertex. There are small differences in the structure of the first apical spine but nevertheless both might be synonym. They are tentatively treated as separate taxa until more material becomes available.

Material :
Holotype ♂, Luzon, 14.X.1913, G. Boettcher, DEI (examined).



Figs 28-30 : Pentastiridius fuscoapicatus *(METCALF) - 28-29 : aedeagus, holotype, ventral and dorsal view; 30 : head.*
Figs 31-35 : Pentastiridius ogasawarensis *(MATSUMURA) - 31 : aedeagus, lectotype, dorsal view; 32 : anal segment and pygofer; 33 : left genital style; 34 : head; 35 : right tegmen.*

Pentastiridius ogasawarensis (MATSUMURA) comb. n.
(Figs 31-35)

Oliarus ogasawarensis MATSUMURA, 1914 : 422.
nec *Oliarus ogasawarensis* MATSUMURA; FENNAH, 1956b : 83, fig. 17, r, s (error).

Description :
Face dark brown with yellow keels and borders. Vertex 1.5 times as long as broad, subapical keel strongly convex, connected to apical border by two very obsolete keels. Pronotum and tegulae yellow. Mesonotum brown, paler between the two outer keels. Tegmina hyaline, 3.3 times as long as broad, stigma, costal margin and veins yellowish, transverse veins fumated with brown. Legs yellowish, chaetotaxy hind tarsi (12-13)/(11-12). Length : 6-7.5 mm.
Male genitalia : aedeagus with in total four spines on apex, on ventral margin near flagellum and on apex of flagellum, and spoon-shaped process inserted on base not broadened distally but tapering.

Diagnosis :
Easily distinguished from any other *Pentastiridius* by the very long spines on the aedeagus. It somewhat resembles *P. apicalis* but the spines are implanted otherwise and the process on the periandrium is more slender and longer in *P. ogasawarensis*.

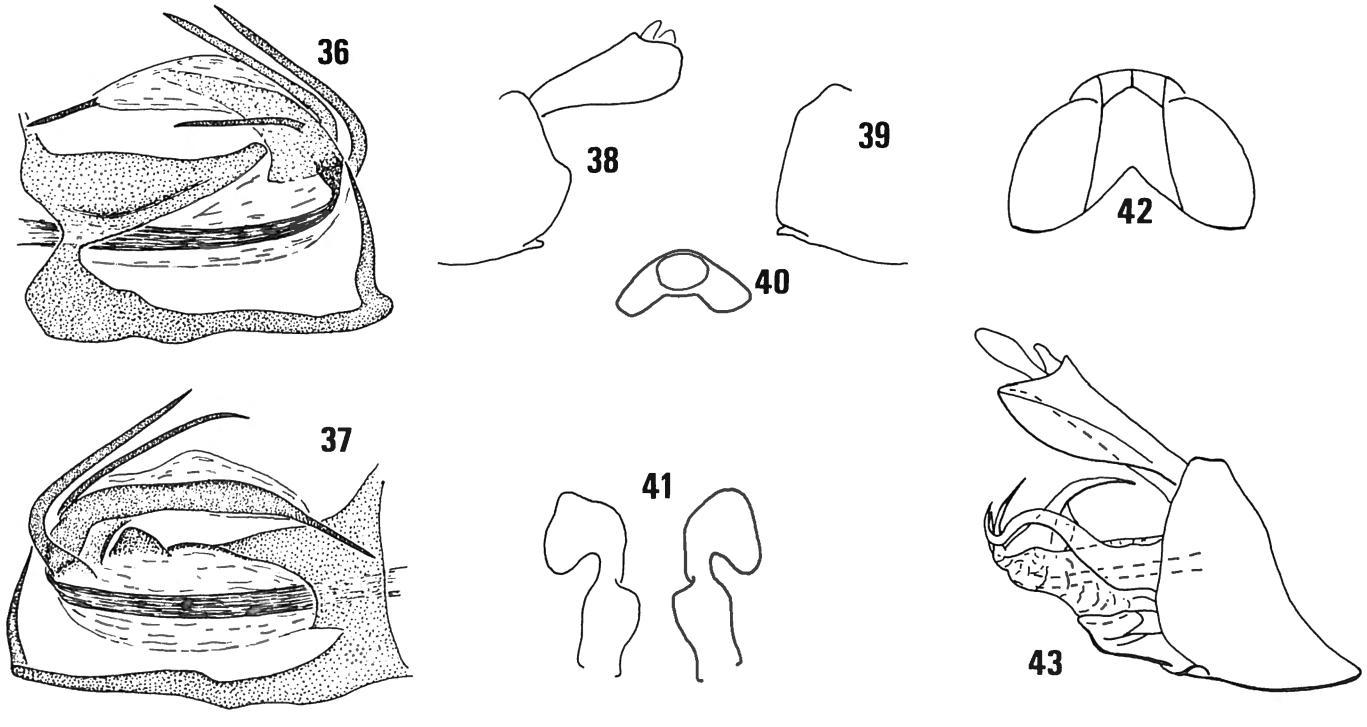
Remark :
The specimens identified by FENNAH (1956b) as *O. ogasawarensis* belong to a different unknown *Oliarus* species.

Material :
♂ lectotype, here designated, Ogasawara, 20.VIII.1905, MATSUMURA, HU (examined).
Paralectotype : 1 ♀, on same *Sambucus* pin, same data as lectotype (examined). No other paralectotypes examined.

Pentastiridius apicalis (UHLER)
(Figs 36-42)

Myndus apicalis UHLER, 1896 : 281.
Oliarus apicalis; CHOU *et al.*, 1985 : 21, fig. 18.
Pentastiridius apicalis; ANUFRIEV & EMELJANOV, 1988 : 462, fig 361, 1-13.
Nesopompe tsoui; FENNAH, 1956a : 455, figs 4, A-F.

Head black with pale yellow keels and margins. Vertex 1.3 times as long as broad, subapical keel forking from lateral margin at 0.8 distance from base and connected to apical border by one small longitudinal keel. Pronotum fumated with brown laterally, mesonotum black. Tegmina 2.9 times as long as broad, milky hyaline, apex slightly fumated with brown, veins yellow, smooth,



Figs 36-42 : Pentastiridius apicalis *(UHLER) - 36-37 : aedeagus, lectotype, ventral and dorsal view; 38 : anal segment and pygofer; 39 : right margin of pygofer; 40 : anal segment, caudal view; 41 : genital styles; 42 : head.*

Fig. 43 : Pentastiridius tsoui *(MUIR) - 43 : anal segment, pygofer, genital style and aedeagus, right lateral view, after MUIR, 1925.*

transverse veins brown. Sc+R forking only slightly distad of Cu, r-m situated before first medial branch, apex with 11 apical cell, costal margin not granulate. Legs yellow, hind legs missing. Length tegmen : 5.1 mm.
Male genitalia : anal segment slightly broadening distally. Pygofer asymmetrical, lateral margin straight on right side, with a small angular process on left side. Genital styles as illustrated. Aedeagus with on the right side of the flagellum a large spine which is connected to the flagellum at its base and surpasses the apex. Two more long spine on apex of aedeagus and one more spine along the ventral margin. Process emerging from the base of the periandrium narrowing distally and terminating into a spine.

Diagnosis :
P. apicalis is closely related to the palaearctic species *P. leporinus* (Linné). It differs from this species in the different outline of the basal process on the periandrium, the different implantation of the spines on the apex of the aedeagus and the different implantation of the terminal spine of the flagellum, subapical in *P. leporinus* and inserted near the base of the flagellum and surpassing it in *P. apicalis*. As to the oriental species, it is closely related to *P. ogasawarensis* and *P. tsoui*. From *P. ogasawarensis* it is easily distinguished by the different form of the basal process on the periandrium and the different implantation of the apical spines, and on the vertex the subapical keel is connected to the apical border by one keel instead of two in *P. ogasawarensis*; the differences with *P. tsoui* are discussed under this species.

Remark :
The type is deposited in the BMNH and not in the United States National Museum. The species illustrated by ANUFRIEV & EMELJANOV (1988 : 463, fig. 361) as *P. apicalis* must be another species close to *P. verheyeni* (SYNAVE) from Africa. The species illustrated by FENNAH (1956a) as *Nesopompe tsoui* from China is undoubtedly this species.

Distribution :
Japan, China (?).

Material :
Lectotype ♂, here designated, "Japan, Dr K. Mitzukuri", BMNH.

Pentastiridius tsoui (MUIR), comb. n.
(Fig. 43)

Oliarus tsoui MUIR, 1925 : 365.
Nesopompe tsoui; FENNAH, 1956a : 455.

Description based on MUIR (1925) :
Head dark brown, keels paler, vertex 1.6 times as long as broad (how measured ?), subapical keel subangular, forking from lateral margin at 0.6 distance from base and connected to anterior border by one keel [an incomplete median carina partly divides ...], and an incomplete median keel at base. Pronotum, paler, brown laterally. Mesonotum dark brown. Tegmina milky hyaline on basal 2/3, apical part brown fumated, veins concolorous, smooth, Sc+R, Cu and claval fork all at about the same level. Legs yellow with brown femora. Length tegmen 4-4.3 mm.
Male genitalia : according to MUIR's description the aedeagus has a terminal spine on the flagellum and two spines on the apex. MUIR does not mention a third spine along the ventral margin as is the case in *P. ogasawarensis* and *P. apicalis*. The description comes very close to that of *P. apicalis*.

Diagnosis :
Although I have not been able to examine the type, the description of *P. tsoui* comes close to that of *P. apicalis*, especially in the presence of only one longitudinal keel on the vertex, and the shape the anal segment, the pygofer and the genital styles. The slightly asymmetrical shape of the pygofer is striking as this character is also present in *P. apicalis* and is lacking in other *Pentastiridius* species. According to MUIR there is no ventral spine, which is present in *P. apicalis*, but which might have been overlooked or broken off. Possibly both are synonyms but we would like to await the examination of the type (if not lost), or more material from the type locality.

Remark :
The species identified and illustrated by FENNAH (1956a) as *Nesopompe tsoui* is in fact *P. apicalis*; this once more illustrates the resemblance between both taxa.

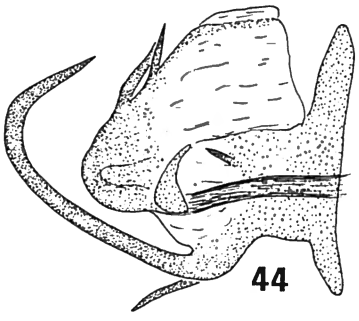
Distribution :
China.

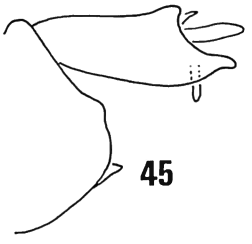
Material :
Holotype N° 1210, China, Nanking, taken on rice; I have been unable to locate the type of this species. It is not present in the BPBM nor in the BMNH.

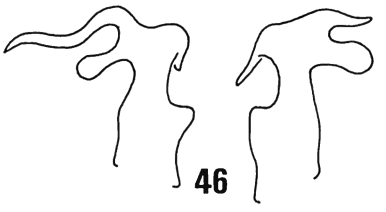
Genus ***Reptalus*** EMELJANOV

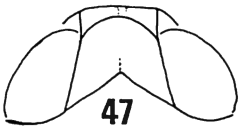
Reptalus EMELJANOV, 1971 : 621, type species : *Cixius quinquecostatus* DUFOUR, 1833.

Vertex as long as broad, rather flat, subapical keel arcuate, joined with the anterior border by two indistinct longitudinal keels. Lateral margins almost parallel and therefor giving a quadrate aspect to the vertex; median keel developed at base. Keel between vertex and frons present but obsolete. Frons and postclypeus with a distinct median carina, median ocellus small but distinct.









Figs 44-47 : Reptalus quadricinctus *(Matsumura) - 44 : aedeagus, holotype* trifasciatus, *dorsal view; 45 : anal segment and pygofer; 46 : genital styles; 47 : head.*

Pronotum with postocular carina sharp, reaching or practically reaching anterior margin of sides of prosternum beneath eyes. Mesonotum with five sharp longitudinal carinae. Tegmina with veins bearing setiferous granules, hyaline and often provided with brown transverse bands, apex with 11 cells. Legs relatively short, hind tibiae with unmovable lateral spines, hind tarsi with usually a single row of seven to eight black teeth on the first tarsomere, and 7 to 10 teeth on the second tarsomere, often accompanied by some membraneous teeth on the second tarsomere.

Male genitalia : anal segment with a distinct and often asymmmetrical apical process. Pygofer with convex to slightly sinuose lateral margins. Genital styles with characteristic, sometimes filiform processes and recurrent processes on the inner side. Aedeagus with a long processes on right side often accompanied by the smaller tooth on its base.

Reptalus quadricinctus (Matsumura)
(Figs 44-47)

Oliarus quadricinctus Matsumura, 1914 : 419.
Oliarus quadricinctus; Chou *et al.*, 1985 : 20, fig. 17.
R[eptalus] quadricinctus; Anufriev & Emeljanov, 1988 : 464, figs 342, 3 & 362, 1-4.
Oliarus trifasciatus Metcalf, 1954 : 605, Pl. 1, figs 1-3, syn. n.

Head black with strongly contrasting yellow keels and margins. Vertex 0.7 times as long as broad, subapical keel arcuate. Pronotum brown, mesonotum including keels totally black. Tegmina three times as long as broad, veins yellowish with dark granules, base, a transverse band at level of Cu- fork, a second transverse band at level of stigma, and apex brown. Sc+R forking slightly basad of Cu, costal margin with dark granules. Legs yellow with brown femora, chaetotaxy hind tarsi 7/(7). Length 5.3 mm.

Male genitalia : anal segment with a ventral process just before apex. Pygofer with lateral margins slightly sinuate at middle. Genital styles with long appendices and asymmetrical, as illustrated in fig. 46. Aedeagus with two subequal spines on base of flagellum, a very large process and a smaller spine on right side, two tooth-shaped processes on ventral margin, and one short tooth-shaped spine on dorsal margin.

Female not examined.

Diagnosis :
Reptalus quadricinctus is easily distinguished from any other Pentastirine species by the presence of brown bands on the tegmina.

Distribution :
China, Russia, Japan.

Material :
Holotype ♂ of *Oliarus trifasciatus* Metcalf, Süd China, Pingshiang, Dr Kreyenberg, DEI; 2 ♂♂, China, Hong San, SE Kiangsi, 25-30.VI.1936, NCSU.

Genus *Adzapala* Distant

Adzapala Distant, 1911 : 739; type species : *Adzapala greeni* Distant, 1911.

Description :
Length 6-7 mm. Head almost as broad as thorax. Face two-coloured, frons yellow with or without a pale brown transverse brown and postclypeus and anteclypeus black. Frons 1.3 times as broad on widest part as long in middle. Three ocelli present, a median one on frontoclypeal suture and two lateral ones on genae. Vertex yellowish, 1.4 to 1.9 times as long as broad, flat, subapical keel U-shaped and both parts fused together just before apex; median longitudinal keel developed at base. Pronotum and mesonotum yellow to yellowish brown, mesonotum with five longitudinal keels. Tegmina hyaline, three times as long as broad, apical border beyond clavus sinuate. Sc+R forking slightly basad or distad of Cu, both forking distad of claval fork. Veins yellowish with dark, contrasting granules, costal margin not granulate, gently bent near base and coloured with an alternating pattern of yellow and fuscous spots 11 apical cells. Fore and middle tibiae without lateral spines, hind tibiae

with unmovable lateral spines and six apical spines. Hind tarsi with seven black teeth on first tarsomere and five on second tarsomere.
Male genitalia : anal segment with or without a small apical process. Pygofer with lateral margins rounded or tapering into a spinose process. Genital styles simple. Aedeagus with spines on apex.
Female genitalia : anal segment rounded to diamond-shaped. Ovipositor with three pairs of valvulae, first and second pair thin, first pair thickened at is base. Caudal border of pregenital sternite with a distinct excavation border by two small tooth-shaped elevations.

The genus *Adzapala* can be recognised by the contrasting colours of the postclypeus and the frons, by the colour of the costal margin with alternating yellow and black spots and by the angulate apical margin of the tegmina just beyond the clavus.

Key

I. - Frons without a transverse brown band, base of tegmina not brown; male genitalia see fig. 48; Larat I. . . . . *A. maculipennis* (p. 18)
- Frons with a transverse brown band (fig. 60), base of tegmina brown 2
II. - Male genitalia as illustrated in fig. 54; India . . . . . *A. greeni* (p. 18)
- Male unknown; Thailand . *A. meridionalis* (p. 19)

Adzapala maculipennis (MUIR) comb. n.
(Figs 48-53)

Oliarus maculipennis MUIR, 1924 : 519, pl. 2, fig. 11.

Description :
Postclypeus and anteclypeus black, frons pale yellowish. Vertex 1.9 times as long as broad, yellow, median longitudinal keel rudimentary developed, subapical keel forking from lateral margin at 0.48 distance of base. Pronotum yellowish, mesonotum yellowish brown. Tegmina three times as long as broad, hyaline, veins yellow with very distinct dark granules; costal margin without granules, with brown, distinct spots; Sc+R forking slightly distad of Cu. Legs yellow, chaetotaxy of hind tarsi 7/5. Length : 6 mm.
Male genitalia : symmetrical, very small in comparison to the size of the body. Anal segment, genital styles and pygofer symmetrical, aedeagus with two spines as illustrated in fig. 48.
Female unknown.

Diagnosis :
Related to *A. greeni* from which it can be distinguished by the hyaline tegmina and by the structure of the anal segment, pygofer and aedeagus.

Distribution :
Larat I.

Material :
Holotype ♂, Larat, F. MUIR, XII.1907, BPBM.

Adzapala greeni DISTANT
(Figs 54-63)

Adzapala greeni DISTANT, 1911 : 739.
Oliarus greeni (DISTANT); MUIR, 1925 : 99.
Oliarus distanti METCALF, 1936 : 59, syn. n.

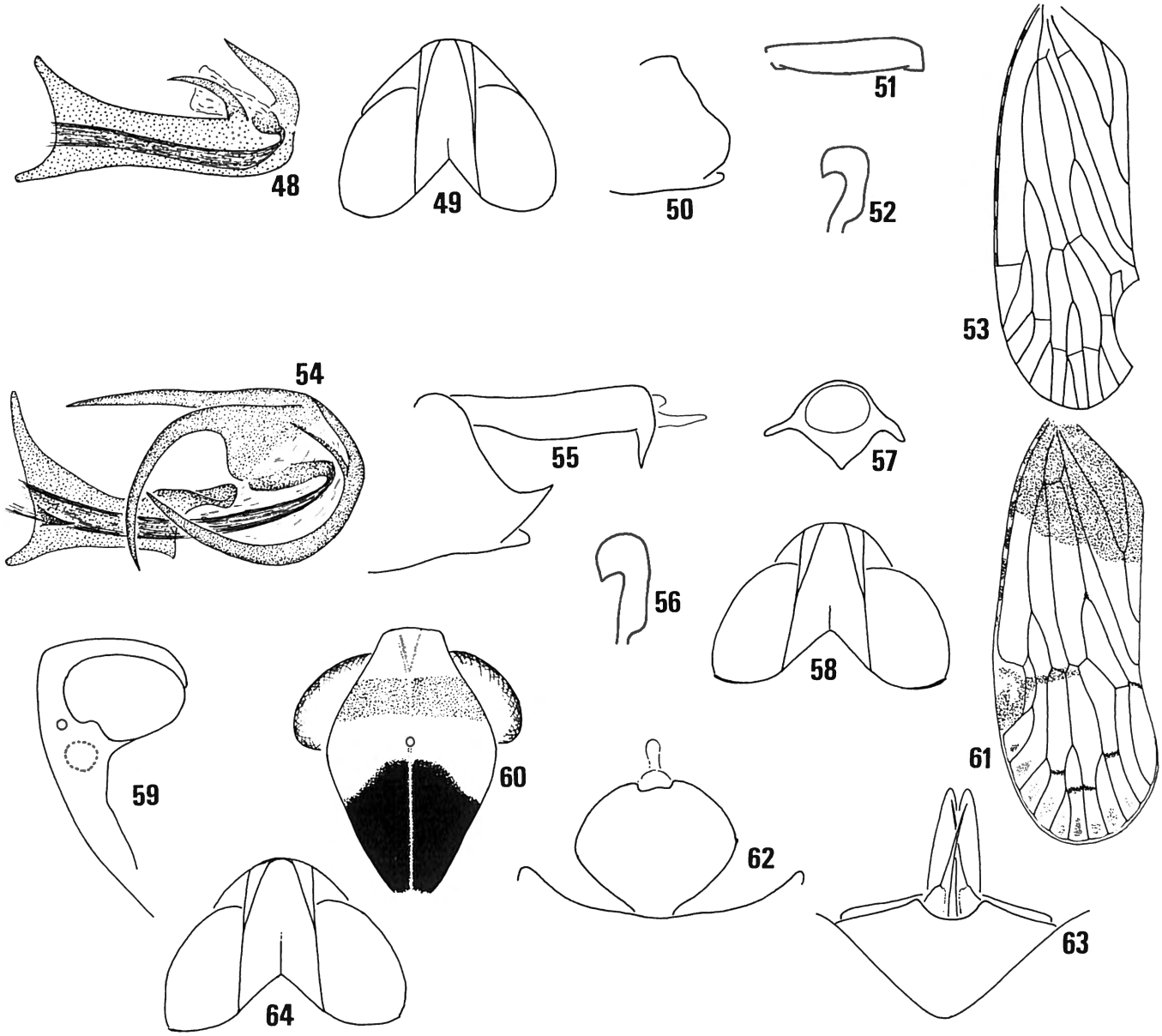
Description :
Anteclypeus and postclypeus black, frons yellow with a brown band as illustrated in fig. 60. Vertex 1.4 times as long as broad, yellow, without a median longitudinal keel. Pronotum and tegulae yellow. Mesonotum embrowned. Tegmina 2.9 times as long as wide, with a large basal spot as illustrated in fig. 61, this spot only very faintly indicated in the lectotype. Costal margin mottled with brown spots, not granulate, Sc+R forked at about same level or slightly distad of Cu. Legs yellow, chaetotaxy hind tarsi 7/5. Length : ♂ : 6.1 mm; ♀ : 6.9 mm.
Male genitalia : small; anal segment, pygofer and genital styles symmetrical. Aedeagus with three long spines and one chort basal spine on ventral margin.
Female genitalia : ovipositor slightly shorter than length of pregenital sternite, which has a distinct excavation on middle line. Anal segment diamond-shaped, width about 2/3 of width of pygofer.

Diagnosis :
Related to *A. maculipennis* from which it can be distinguished externally by the presence of a brown band on the frons and a large basal spot on the tegmina. In the male genitalia it can be distinguished by the tapering lobes of the pygofer, the presence of an apical lobe on the anal segment, and the presence of three long spines on the aedeagus.

Remark :
As the genus *Adzapala* DISTANT is restored from synonymy with *Oliarus* STÅL, the name *Oliarus distanti* METCALF, 1936 becomes an objective synonym of *Adzapala greeni* DISTANT.

Distribution :
India.

Material :
Lectotype ♀, here designated, "Ceylon, Trincomalee, XI.06", BMNH.
Additional : 1 ♂, 1 ♀, India, Rajasthan, Keoladeo Nat. Park at Baratpur, 6.IX.1985, night, C.W. & L. B.



Figs 48-53 : Adzapala maculipennis *(Muir) - 48 : aedeagus, holotype, ventral view; 49 : head; 50 : pygofer; 51 : anal segment; 52 : genital style; 53 : left tegmen, part of the apex is missing.*

Figs 54-63 : Adzapala greeni *Distant - 54 : aedeagus, lectotype, ventral view; 55 : anal segment and pygofer; 56 : left genital style; 57 : anal segment, caudal view; 58-59-60 : head; 61 : tegmen; 62-63 : female genitalia, dorsal and ventral view*

Fig. 64 : Adzapala meridionalis *(Ishihara) - 64 : head, holotype.*

O'Brien. 1 ♀, South India, Coimbatore, 6.VIII.1912, BMNH.

Adzapala meridionalis (Ishihara), comb. n.
(Fig. 64)

Oliarus meridionalis Ishihara, 1961 : 230; figs 10-11.

Very similar to *A. greeni*. Frons yellow with a pale brown indistinct fascia from one eye to the other. Post-clypeus black, strongly contrasting with frons. Vertex yellow, 1.4 times as long as broad, subapical keel U-shaped and forking from lateral border at 0.5 distance of base, median keel present but indistinct. Pronotum yellow. Mesonotum brown, yellow between outer longitudinal keels. Tegmina 2.9 times as long as broad, Sc+R forking at about same level as Cu, costal margin brown, with eight pale spots at regular intervals. Veins yellow, covered with many dark granules, base, and indistinct band at level of stigma, and apical cells and transverse veins fumated with brown. Legs yellow, chaetotaxy hind tarsi 7/5. Length from head to tip of female abdomen : 4.8 mm.

Male unknown.
Female genitalia : female type not dissected but the genitalia are externally totally identical to those of *A. greeni*. The excavation on the caudal border of the pregenital sternite is less deep.

Distribution :
Thailand.

Material :
Holotype ♀, Thailand, Chieng Mai, 21.IV.1958, H. Ikoma leg., EUM.

Genus *Oecleopsis* EMELJANOV

Oecleopsis EMELJANOV, 1971 : 621, type species : *Oliarus artemisiae* MATSUMURA.

Description :
Length 5-8 mm. General colour black, keels of head pale. Head distinctly narrower than thorax, Vertex V-shaped on base, with highly elevated borders, more than three times as long as broad in *O. articara, O. petasatus* and *O. yoshikawai,* about 1.5 to twice as long as broad in the other species; subapical keel deeply U-shaped, fused with the apical border and thereby divided into two lateral parts, or uniting just before the apex but then not fused with the apical border by small longitudinal keels; basal longitudinal keel rudimentary developed. Frons usually black, without maculae or fenestrae, median keel forked at apex and fork as wide as the junction between face and vertex in species with a narrow vertex and half as wide as the junction in species with a broad vertex; median ocellus present but small. Pronotum black with yellow borders and keels. Mesonotum usually shining black with concolorous keels, or keels slightly tinged with yellow. Tegmina three to 3.3 times as long as broad, costal margin without granules, stigma well-developed, triangular, Sc+R forking distad of Cu, r-m situated basad of first medial branch, apex with 10 or 11 cells.
Male genitalia : very characteristic and uniform throughout the genus. Anal segment without a distinct apical lobe, left ventral margin straight or slightly convex, right lateral margin usually excavated near apex. Pygofer with triangular lateral margins. Genital styles very characteristic in shape, with two tapering processes on apex. Aedeagus with flagellum terminating into one or several spinose processes, usually one or two subapical processes, and apex of aedeagus with one spine on right side and another on the left side; flagellum recurved along dorsal margin and not along the left margin as in many *Oliarus* species.
Female genitalia : caudal border of pregenital sternite usually shallowly excavated in middle. Anal segment small, rectangular, appreciably less broad than half the width of the pygofer. Ovipositor with first pair of valvulae very short, broad and tapering at apex, second pair only rudimentary developed, and third pair fused together at their base.

The genus *Oecleopsis* can be recognized by the deeply excavated surface of the vertex with highly elevated lateral borders in combination with the nervation of the tegmina (Sc+R forking distad of Cu, r-m before first medial branch). The most characteristic differences with related genera however are provided by characters on the male and female genitalia. In the male the genital styles are very characteristic, as well as the uniform shape of the anal segment, pygofer and aedeagus. In the female the short first valvulae in combination with the fused third pair distinguishes it from all other Pentastirini. The characters on the male and female genitalia are also good synapomorphic characters for the genus *Oecleopsis.*

Distribution :
Oecleopsis is a tropical and subtropical genus with 9 species recorded in Japan, Taiwan, China, Thailand, Cambodja and Borneo.

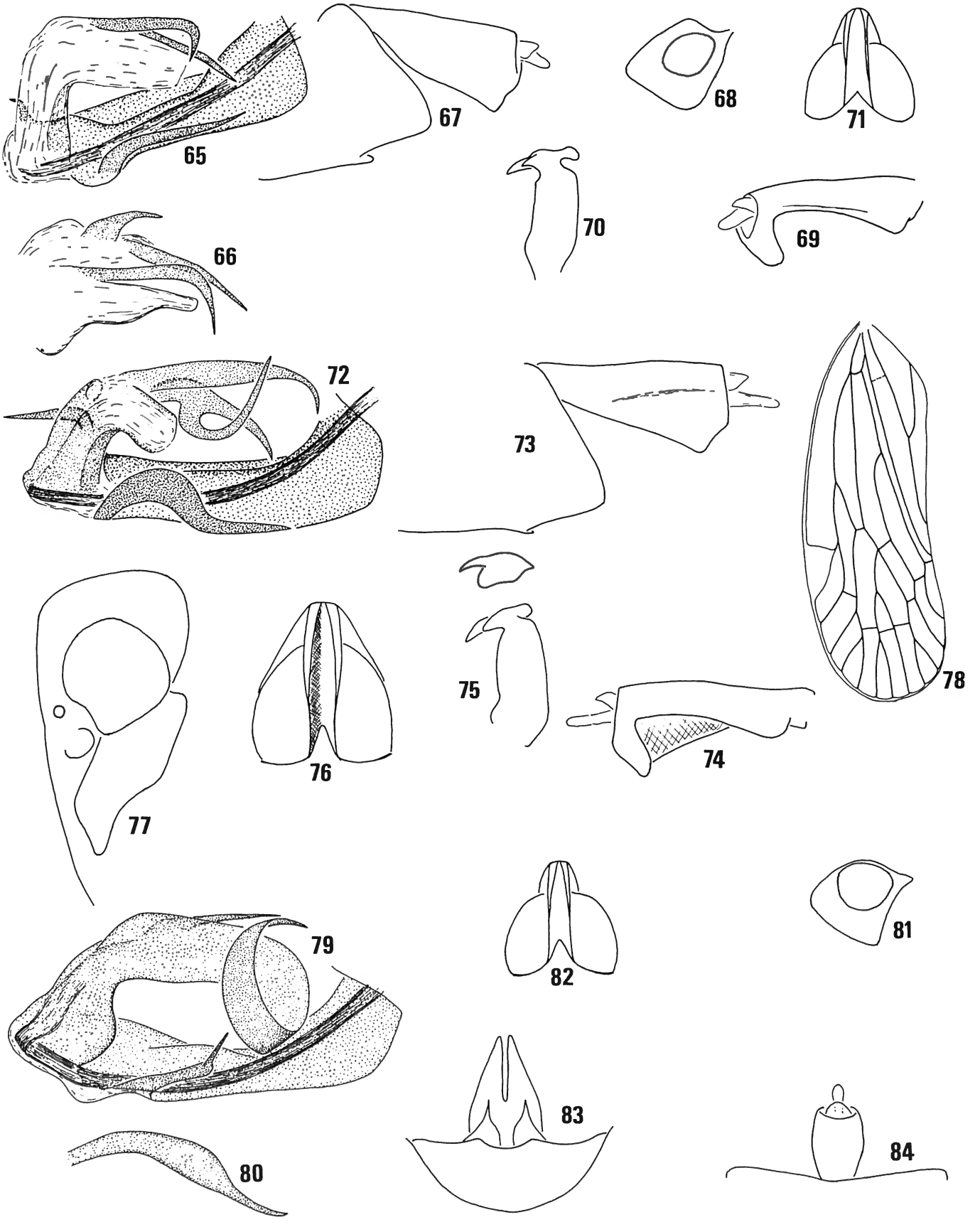
Key

I. - Vertex at least three times as long as broad (fig. 76 & 77), in lateral view highly elevated, with the ascending apical part and the descending basal part almost forming a rounded, right angle 2
- Vertex less than three times as long as broad (fig. 96 & 97), in lateral view not so high, ascending and descending part not forming a right angle, but with an obtuse rounded outline 4

II. - Apex of flagellum circular (fig. 79) . . . . . *articara*

Figs 65-71 : Oecleopsis yoshikawai *(ISHIHARA) - 65 : aedeagus, holotype, right lateral view; 66 : flagellum, dorsal view; 67 : anal segment and pygofer; 68 : anal segment, caudal view; 69 : anal segment, right lateral view; 70 : left genital style; 71 : head.* ▷

Figs 72-78 : Oecleopsis petasatus *(NOUALHIER) - 72 : aedeagus, lectotype, right lateral view; 73 : anal segment and pygofer; 74 : anal segment, right lateral view; 75 : left genital style, with another view of the apex; 76 : head, dorsal view; 77 : head, lateral view; 78 : left tegmen.*



Figs 79-84 : Oecleopsis articara *sp. n. - 79 : aedeagus, holotype, right lateral view; 80 : lateral spine from drawn from another view; 81 : anal segment, caudal view; 82 : head; 83-84 : female genitalia, ventral and dorsal view.*

- Apex of flagellum nor circular 3
III. - Apex of flagellum with a bifurcate process (fig. 72) . . . . . *petasatus*
- Apex of flagellum with two "simple" spinose processes (fig. 65 & 66) . . *yoshikawai*
IV. - Apex of flagellum bifurcate (fig. 92) . . . 5
- Apex of flagellum not bifurcate (fig. 105-108) 8
V. - Bifurcation asymmetrical, spines of unequal length (fig. 85) . . . . . *mori*
- Bifurcation symmetrical, spines of equal length (fig. 92) 6
VI. - Apical spine on the aedeagus relatively short (fig. 92) . . . . . *sinicus*
- Apical spine long (fig. 101 & 103) 7
VII. - Only one spine subapical on the flagellum (fig. 103 & 104) . . . . . *bifidus*
- Two spines subapical on the aedeagus (fig. 101) . . . . . *artemisiae*
VIII. - Aedeagus as illustrated in fig. 107 & 108, spines of flagellum directed cephalad . *elevatus*
- Aedeagus as illustrated in fig. 105 & 106, spines of flagellum short . . . . . *chiangi*

Oecleopsis yoshikawai (ISHIHARA), comb. n.
(Figs 65-71)

Oliarus yoshikawai ISHIHARA, 1961 : 228, fig. 6-7.

Face and vertex black with yellow keels. Vertex 3.3 times as long as broad, lateral keels highly elevated, subapical keel U-shaped, forking from lateral margin at 0.5 distance from base. Pronotum and mesonotum dark brown, keels slightly paler. Tegmina damaged, veins yellow with concolorous keels, Sc+R forking distad of Cu, r-m basad of first medial branch, stigma brown. Legs yellow, chaetotaxy hind tarsi 7/5. Length : 5.6 mm.
Male genitalia : anal segment excavated on right margin. Pygofer with a triangular lobe on each side. Genital styles as illustrated. Aedeagus with a short spine on left side of apex, a long spine implanted close to the apex and directed to its base, and three spines on the apex of the flagellum.
Female unknown.

Diagnosis :
Distinguished from other species by its small size and on the aedeagus by the shape of the three spines on the flagellum.

Distribution :
Thailand.

Remark :
The holotype is a male and not a female as marked in the original description.

Material :
Holotype ♂, Thailand, Doi Inthanon, 8.I.1958, K. YOSHIKAWA, EUM (examined).

Oecleopsis petasatus (NOUALHIER), comb. n.
(Figs 72-78)

Oliarus petasatus NOUALHIER 1896 : 255.
Oliarus petasatus; FENNAH, 1956a : 455.

Description :
general colour ochreous. Vertex narrow, 5.5 times as long as broad, black with yellowish keels, lateral margins very prominent, subapical keel deeply U- shaped, forking at 0.6 distance of base. Mesonotum brown. Tegmina three times as long as broad, hyaline, Sc+R forked distad of Cu, r-m basad of first medial branch, 11 apical cells, veins yellowish, covered with small black granules, transverse veins fumated with brown; costal margin without granules. Legs ochreous, chaetotaxy hind tarsi 7/5. Length : 7-7.5 mm.
Male genitalia : anal segment asymmetrical, right margin deeply incised near apex. Pygofer and genital styles symmetrical. Aedeagus with four spinose processes, one of these bifurcated.

Diagnosis :
O. petasatus is distinguished from related species by the form of the aedeagus, more particularly the proportions of the spines, the presence of a bifurcate process on the flagellum and the presence of a spine on the left side which is recurved to the apex of the aedeagus and almost surpasses it.

Distribution :
Cambodja, FENNAH (1956a) lists one specimen from China but I doubt if it would be conspecific.

Material :
lectotype ♂, here designated, "Cambodge, A. Pavie, 1886" (examined), MNHN. Paralectotypes : 2 ♀♀, same data, MNHN.

Oecleopsis articara sp. n.
(Figs 79-84)

Face, vertex, pronotum, mesonotum and abdomen brown- black, keels and bordes yellowish; mesonotum and its keels more yellowish in some specimens. Frontoclypeal suture yellowish on laterally; vertex about 3.5 times as long as broad, subapical keel deeply U-shaped, forking at 0.6 of base, keels very prominent as in *O. petasatus* and therefor surface of vertex deeply excavated, genae yellow, outer sides of vertex black with a yellow spot. Tegmina 3.1 times as long as broad, with

yellow, smooth veins and brown stigma, costal margin bent near base without granules, Sc+R forking distinctly distad of Cu, r-m basad of first medial branch, apex with 11 cells. Legs yellow with brown femora, chaetotaxy hind tarsi 7/5. Length : ♂ : 5.7-6.4, ♀ : 6.8-7.1; tegmen : ♂ : 4.6-5.1; ♀ : 5.5-5.8 mm.
Male genitalia : anal segment asymmetrical, right lateral margin excavated before apex, left margin not excavated. Pygofer on each side with a large triangular lobe. Genital styles as in *O. petasatus*. Aedeagus with flagellum tapering, apex curved in a semi-circle. One spine on 1/2 distance of flagellum on left side and a long spine on apex of aedeagus on right margin. This spine is longer than illustrated in the drawing because it is taken from a lateral view, and because the spine is diverging from the aedeagus.
Female genitalia : pregenital sternite with two small convex submedian lobes. Ovipositor with first valvulae very short, tapering and third valvulae fused together at their base. Anal segment small, rectangular.

Diagnosis :
Closely related to *O. petasatus, O. mori* and *O. sinicus* from which it can be distinguished by the number of spinose processes on the aedeagus : three in *O. articara* and more in the other species, and by the apex of the flagellum which is not bifurcated and which is curved in a semi-circle (straight in other species). From *O. bifidus,* which also has only three spinose processes on the aedeagus it can be distinguished by the absence on the flagellum of a bifurcate apex.

Distribution :
Malaya, Borneo.

Material :
Holotype ♂, British N. Borneo, W. Coast Residency, Kundasan, 1240 m, 15.X.1988, BPBM. Paratypes : 1 ♂, Malaya, Pahang, Kuala Tahan, 12-14.XII.1958; 8 ♂♂, 6 ♀, British N. Borneo, Ranau, 30.IX.1958, BPBM. 1 ♂ 1 ♀ British N. Borneo, Ranau, 30.IX.1958, K.B.I.N.

Oecleopsis mori (Matsumura), comb. n.
(Figs 85-91)

Oliarus mori Matsumura 1914 : 426.
Oliarus mori; Tsaur, Hsu & Van Stalle, 1988 : 48, figs 7, A-G.

Description :
General colour black; head and pronotum black with yellow keels and borders. Mesonotum totally black, or keels slightly marked with yellow. Vertex moderately narrow, 1.6 to 1.7 times as long as broad, subapical keel U-shaped, touching apical border and forking laterally at 0.6 distance from base, no median keel, lateral keels prominent. Abdomen brown, genital styles and part of pygofer yellowish. Tegmina 3.1 times as long as broad, slightly yellowish, all veins and stigma yellowish, veins covered with concolorous granules; costal margin without granules, Sc+R forked at same level as Cu, r-m basad of first medial branch, apex with 11 cells. Legs yellow, femora fuscous, chaetotaxy hind tarsi 7/5. Length : ♂ : 5.1-5.7; ♀ : 6.4-6.8 mm; tegmen : ♂ : 4.1-4.6; ♀ : 5.1- 5.4 mm.
Male genitalia : anal segment slightly excavated on right lateral margin; pygofer slightly asymmetrical, on each side with a triangular lobe. Genital styles as illustrated. Aedeagus in total with five spines; a spinose process on dorsal margin of periandrium (twice as large in one specimen labeled "Formosa, M. Kato"), and a small spine at base of flagellum before sclerified periandrium, on ventral margin (not visible on fig. 85); flagellum with two short spines on halfway its length, and one terminal spine bearing a smaller process.
Female genitalia : I have not been able to examine females topotypic with males.

Diagnosis :
Closely related to *O. sinicus* from which it differs in the proportion and implantation of the spines on the aedeagus.

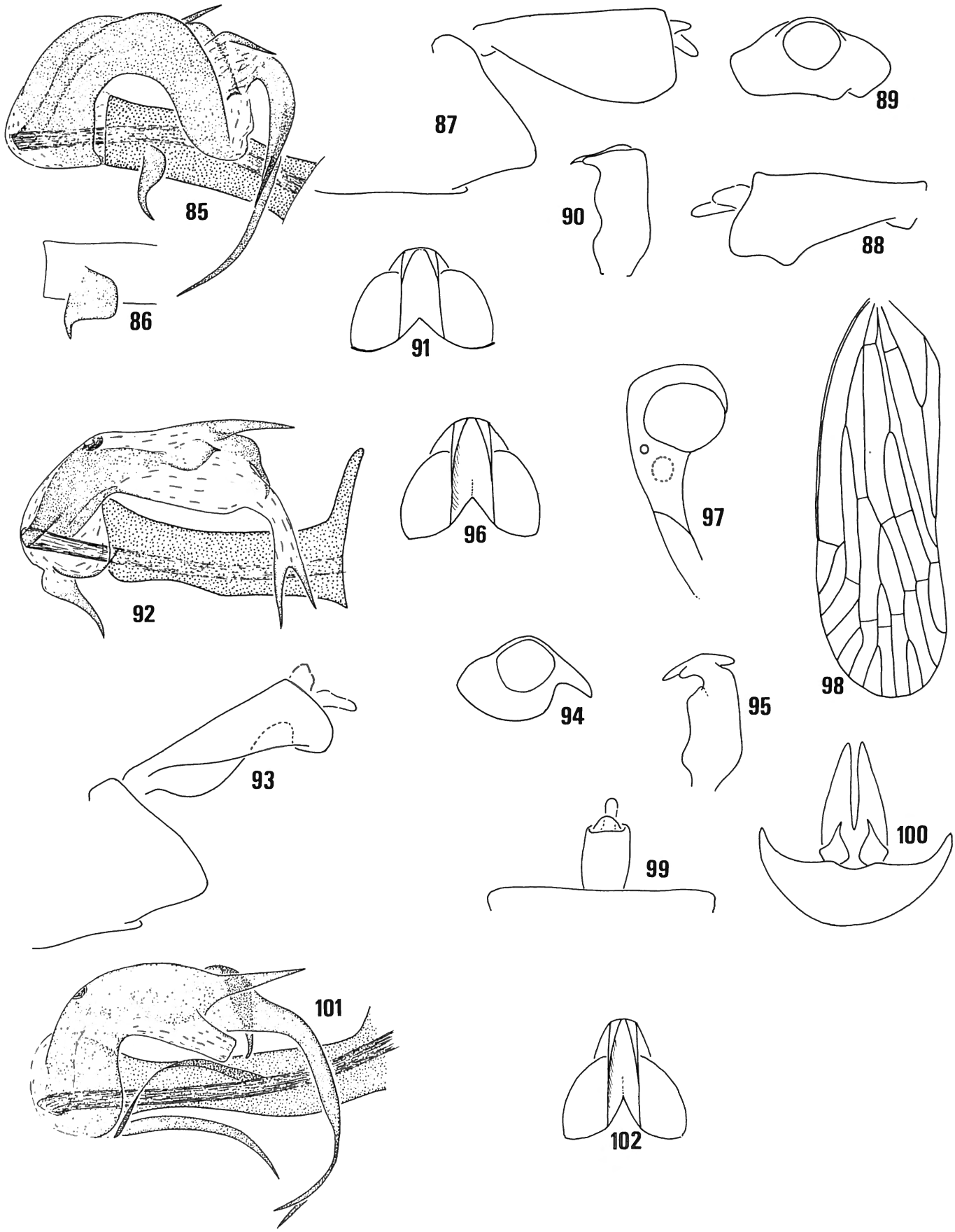
Distribution :
Known from many localities in Taiwan.

Material :
Lectotype ♂, designated by Tsaur, Hsu & Van Stalle, 1988, "Formosa, Takao, 4.IV.1907", HU (examined). Paralectotype : 2 ♂♂ and 2 ♀♀ (examined), same data as lectotype, HU.
Additional : 2 ♂, Formosa, Musha, 20.V.1932, L. Gressit, NCSU; 1 ♂, Taiwan : Wulai Taipei hsien 150 m, 17.IV.1965, C. M. Yoshimoto, BPBM; 1 ♂, Urai, 1.IV.1932, NCSU; 1 ♂, Formosa, M. Kato, BMNH.

Oecleopsis sinicus (Jacobi), comb. n.
(Figs 92-100)

Mnemosyne sinica Jacobi, 1944 : 12.
Oliarus sinicus; Van Stalle, 1988 : 46 (transferred from *Mnemosyne*).
Oliarus cucullatus; Fennah, 1956a : 453, figs 3, G-H [misidentification]; Chou *et al.*, 1985 : 23, fig. 20 [misidentification].

Frons, vertex, pronotum, mesonotum and abdomen black, borders and carinae yellow; postclypeus yellowish brown and thus face two-coloured but with a small contrast. Vertex with surface excavated and pronminent keels, 1.7 to 2.1 times as long as broad, subapical keel U-shaped, forked at 0.3-0.5 distance of base. Tegmina 3.3 times as long as broad, hyaline with yellowish



Figs 85-91 : Oecleopsis mori *(Matsumura) - 85 : aedeagus, lectotype, right lateral view; 86 : process on right side near apex, another specimen; 87 : anal segment and pygofer; 88 : anal segment, right lateral view; 89 : anal segment, caudal view; 90 : left genital style; 91 : head.*

smooth veins; costal margin without granules, Sc+R forked at same level as Cu, r-m basad of first medial branch, apex with 11 cells. Legs yellow with brown femora, chaetotaxy of hind tarsi 7/5. Total length ♂ : 5.8-6.8, ♀ : 6.4-7.1; tegmina : ♂ : 4.6-5.3, ♀ : 5.2-5.7. Male genitalia : anal segment asymmetrical, right side excavated near apex. Pygofer and genital styles symmetrical. Aedeagus : flagellum with a bifurcate apex and two subapical short processes, slightly variable in shape, one of these sometimes recurved or straight; furthermore one spine on the apex with a variable length : from moderately long as illustrated to very short. The specimen illustrated is from Kwantung, Waichow, and agrees well with the lectotype, where the right apical spine at the end of the flagellum is slightly shorter and the curved subapical spine of the flagellum is slightly recurved externally.
Female genitalia : pregenital sternite with two small submedian lobes. Ovipositor with first and second pair of valvulae strongly reduced, first pair short, second pair rudimentary developed. Anal segment small, quadrate.

Diagnosis :
O. sinicus closely resembles *O. mori, O. bifidus* and *O. artemisiae* (sensu ANUFRIEV & EMELJANOV) in the presence of a bifurcate apex of the flagellum. It differs from *O. bifidus* in the presence on the flagellum of two subapical spines instead of one, and from *O. mori* in the insertion of the right apical spine which is inserted closer to the apex in *O. sinicus,* and in the asymmetrical aspect of the bifurcate apex of the flagellum. *O. sinicus* is very closely related or maybe synonymous with *O. artemisiae* as illustrated by ANUFRIEV and EMELJANOV (1988), but the spine inserted at the apex of the right side of the aedeagus is longer in *O. artemisiae,* as illustrated in pl. 358, fig. 2 of ANUFRIEV & EMELJANOV (1988).

Distribution :
Southern China, Japan ?, Taiwan ?

Material :
Lectotype ♂, here designated, Shaowu-Fukien (500 m), J. Klapperich, 19.V.1937, SMT (examined). Paralectotype : 1 ♀, same data, ZFMK (examined).
Additional : 2 ♂♂, 1 ♀, S. China, E. Kwantung, Tsin-Leong San, 6.VI.1936, leg. L. Gressitt; 3 ♂♂, 2 ♀♀, Formosa, Hori, 5.VI.1934, L. Gressitt, NCSU; 1 ♂, Hong Kong, Tsek-Ohu, 6.V.1940, F. K. To, NCSU; 1 ♂, S. China, Kwangtung, Waichow, Hwei-Yang Distr., 4.IV.1940, L. Gressitt & F. K. To, NCSU; 1 ♂, 2 ♀♀, S. China, Kwangtung, Ying-To, Hwei-Yang Distr., 5.IV.1940, L. Gressitt & F. K. To, NCSU; 1 ♂, Japan, Kagoshima P., Chiran, 200-300 m, 12.VIII.1963, BPBM; 1 ♂, 1 ♀, China, Foochow, VI.1936, M. S. Yang, BMNH.

Oecleopsis artemisiae (MATSUMURA)
(Figs 101-102)

Oliarus artemisiae MATSUMURA, 1914 : 428.
Oecleopsis artemisiae; EMELJANOV, 1971 : 621.

Colour of head, pronotum and mesonotum black. Vertex 2.4 times as long as broad, subapical keel forking from lateral margin at 0.5 distance from base. Characters on legs and tegmina as those of the preceding species.
Male genitalia : anal segment, pygofer and genital styles as those of *O. sinicus;* Aedeagus with a long spine on the right side of the apex. Flagellum terminating into a bifurcate process and two shorter spines subapical.
Female not examined.

Diagnosis :
Closely related to *O. sinicus* from which it can be distinguished by the spine on the right side of the apex of the aedeagus which is much longer. As these differences are very small further material is necessary to check the status of these taxa. It also closely resembles *O. bifidus,* but from this species it can be distinguished by the presence of two subapical spines on the flagellum instead of one in *O. bifidus.*

Distribution :
Japan, southern Russia.

Material :
(Type not examined) 1 ♂, Amami-Oshima I., Yuwan-Daka, 550 m, 17.VII.1963, BPBM.

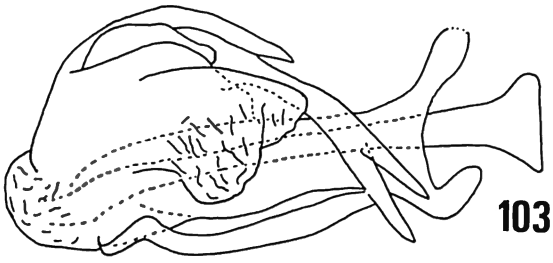
Oecleopsis bifidus (TSAUR, HSU & VAN STALLE), comb. n.
(Figs 103-104)

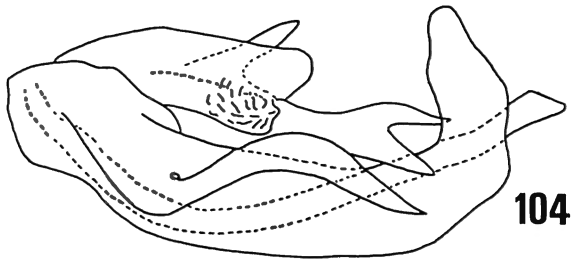
Oliarus bifidus TSAUR, HSU & VAN STALLE, 1988 : 52, figs 9, A-G.

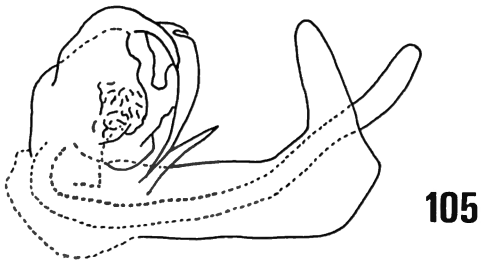
I did not examine this species myself but it is probably very similar to *O. mori* and *O. sinicus* : vertex 1.6 times as long as broad and lateral keels moderately elevated. It can be distinguished from these species by the detailed structure of the aedeagus, namely the presence of only

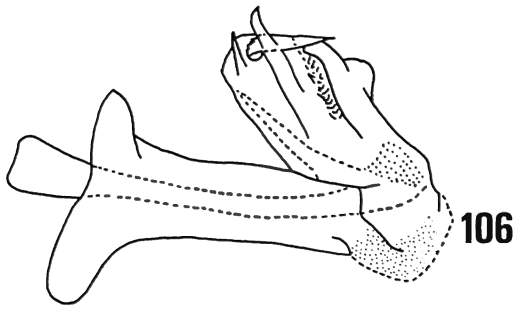
◁ Figs 92-100 : Oecleopsis sinicus *(JACOBI) - 92 : aedeagus, lectotype, right lateral view; 93 : anal segment and pygofer; 94 : anal segment, caudal view; 95 : left genital style; 96 : head, dorsal view; 97 : head, lateral view; 98 : left tegmen; 99-100 : female genitalia, dorsal and ventral view.*

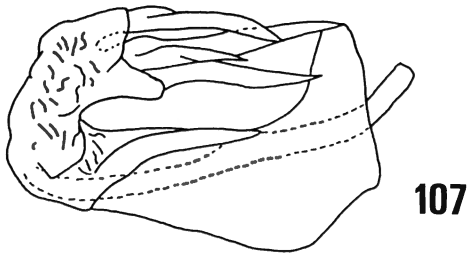
Figs 101-102 : Oecleopsis artemisiae *(MATSUMURA) - 101 : aedeagus, dorsal view; 102 : head.*

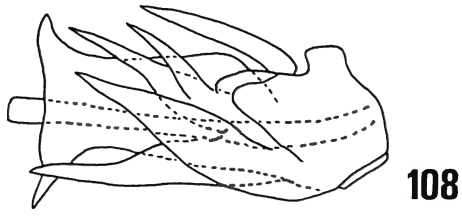












Figs 103-104 : Oecleopsis bifidus *(Tsaur, Hsu & Van Stalle) - 103-104 : aedeagus, dorsal and lateral view (after Tsaur et al., 1988).*

Figs 105-106 : Oecleopsis chiangi *(Tsaur, Hsu & Van Stalle) - 105-106 : aedeagus, lateral and ventral view (after Tsaur et al., 1988).*

Figs 107-108 : Oecleopsis elevatus *(Tsaur, Hsu & Van Stalle) - 107-108 : aedeagus, lateral and dorsal view.*

three spinose processes as in *O. articara*; from the latter it can be easily distinguished by the bifurcate flagellum. Length : 6.9 mm; tegmen : 5.5 mm.

Distribution :
Taiwan.

Material (not examined) :
Holotype ♂, Litao, Taitung Hsien 13.VIII.1987, NTU.
Paratype : 1 ♂, Shanpalin, Taoyuan Hsien 15.V.1985, NCHU.

Oecleopsis chiangi (Tsaur, Hsu & Van Stalle), comb. n.

Oliarus chiangi Tsaur, Hsu & Van Stalle, 1988 : 50, figs 8, A-E. (Figs 105-106).

Very similar to the preceding species *O. mori, O. sinicus* and *O. bifidus*. It is characterized by the shape of the aedeagus. Length : 5.5-5.7 mm; tegmen : 4.7-4.8 mm.

Distribution :
Taiwan.

Material (not examined) :
Holotype ♂, Palin, Taoyuan Hsien, 18.IV.1986, NTU.
Paratype : 1 ♂, Tungpu, Nantou Hsien, 16-20.IV.1984, TARI.

Oecleopsis elevatus (Tsaur, Hsu & Van Stalle), comb. n.
(Figs 107-108)

Oliarus elevatus Tsaur, Hsu & Van Stalle, 1988 : 53, figs 10, A-I.

The structure of the anal segment, pygofer and genital styles suggest that it is related to the preceding species. The species is characterized by the structure of the aedeagus which has five spinose processes which are running straight cephalad. Length : ♂ : 6.2 mm; ♀ : 7.4 mm; tegmen : ♂ : 5.5; ♀ : 6.2 mm.

Distribution :
Taiwan, Honshu (Japan).

Material :
Holotype ♂, Wanfeng Hill, Taichung Hsien, VIII.1984, TARI. Paratypes : 1 ♂, without collecting label, NTU; 1 ♀, Ibuki, Honshu, Japan, 2.VIII. ?, NTU.

Genus *Oliarus* Stål

Oliarus Stål, 1862 : 306; type species : *Cixius walkeri* Stål, 1862.
Palaeoliarus Jacobi, 1941 : 294, nomen nudum.

Total length 5 to 11 mm. General colour brown to black on mesonotum and abdomen, yellow, brown to black on face and vertex, and pronotum usually yellow to yellowish brown. Head almost as broad as thorax, vertex angulately incised at base. Subapical keel varying from straight to deeply U-shaped, connected to the anterior border by one or two longitudinal keels or not connected to the anterior border. Median keel present or absent on base, usually obsolete. Surface of vertex flat or deeply excavated, in the latter case lateral keels foliaciously elevated. Frons usually unicolorous with or without maculae and fenestrae, and median ocellus always visible. Pronotum with an indistinct median keel and two subocular keels. Mesonotum with five longitudinal keels. Tegmina three to 3.5 times as long as broad, hyaline, often with indistinct brown spots. A distinct colour pattern is usually lacking. Fore and middle tibiae without lateral spines, hind tibiae with unmovable lateral spines. Chaetotaxy of hind tarsi 7/5, 7/6 in most species, less common 7/7 or more teeth.
Male genitalia : anal segment with or without an apical process. Pygofer with rounded, triangular or finger-shaped processes on its lateral margin. Genital styles usually with a rounded apex. Aedeagus consisting of a basal periandrium and a terminal, movable membraneous flagellum, each with a number of spines.
Female genitalia : anal segment round, oval, rectangular or diamond-shaped. Caudal border of pregenital sternite straight, with a median excavation or with submedian teeth. In the species related to *O. microstylus* the pregenital sternite is produced caudad over the basal part of the ovipositor. Ovipositor reduced, first and second pair or valvulae thin, reduced in various degrees.

Key to species and species groups

This key is primarily based on external characters. Genitalic characters have been omitted as much as possible to allow the identification of females to the level of species groups.
Not included : *O. siporiensis.*

1. - Tegmina completely brown except for a hyaline window on costal margin basad of stigma . . . . . *bakeri* (p. 96)
   - Tegmina not coloured as described above . . . 2
2. - Tegmina 3.8 times as long as broad . . . . . *fuscipennis* (p. 44)
   - Tegmina less narrow; proportion between length and width smaller 3
3. - Tegmina with Sc+R forking basad of Cu; difference between forking levels equal to or greater than width of the radial cell . . . 4
   - Sc+R forking at the same level or distad of Cu-fork 23
4. - Tegmina with 10 apical cells (fig. 353) . . . . . *madrasensis* (p. 58)
   - Tegmina with more apical cells 5
5. - Tegmina with 11 apical cells . . . . . *nilgiriensis* (p. 58)
   . . . . . *bilineatus* (p. 38)
   - Tegmina with 12 or more apical cells 6
6. - Tegmina with r-m basad or at same place as branching point of M3+4 (fig. 408) 7
   - Tegmina with r-m distad of branching point of M3+4 (fig. 397) 14
7. - Chaetotaxy hind tarsi 7/5 8
   - Chaetotaxy 7/6 . . . . . *brunnifrons* (p. 66)
   . . . . . *bidiensis* (p. 66)
8. - Vertex longer than or equally long as broad . . 9
   - Vertex broader than long (fig. 444) . . . . . *pundaloyensis* (p. 72)
   . . . . . *binghami* (p. 71)
9. - Vertex with subapical keel arcuate (326, 340) 10
   - Vertex with subapical keel straight (fig. 470) 12
10. - Pygofer with left lateral margin triangular in outline (fig. 336) . . . . . *lawitensis* (p. 57)
    - Pygofer with left lateral margin not triangular, more like a rounded lobe 11
11. - Pygofer with left lateral margin slightly incised on apex (fig. 322) . . *tamangensis* (p. 55)
    - Pygofer with left lateral margin rounded at apex (fig. 313) . . . . . *malayensis* (p. 54)
12. - Vertex with subapical keel connected to apical border by two longitudinal indistinct keels (fig. 483) 13
    - Vertex with subapical keel not connected to anterior border (fig. 470) . . . *muluensis* (p. 75)
13. - Vertex as broad as long (fig. 483) left margin

of pygofer with a long, finger-shaped process (fig. 479) . . . . . *penrissensis* (p. 76)
- Vertex 1.5 times as long as broad (fig. 346); left margin of pygofer triangular in outline (fig. 342) . . . . . *sabahensis* (p. 57)

14. - Chaetotaxy 7/7 or 8/7 15
- Chaetotaxy not as above 16

15. - Genital styles with a spine on inner side of apex (fig. 581) . . . . . *niuginiensis* (p. 90)
- Genital styles without such a spine (fig. 364) . . . . . *thekkadiensis* (p. 60)

16. - Chaetotaxy 7/5 or 7/6 19
- Chaetotaxy 6/5 17

17. - Left margin of pygofer with a finger-shaped process, excavated along its ventral margin and upcurved distally (fig. 489) . . . . . *microstylus* (p. 78)
- Left margin of pygofer with a finger-shaped process, not excavated and not upcurved at apex (fig. 447) 18

18. - Aedeagus with two bifurcate processes (fig. 445) . . . . . *mogogonipae* (p. 73)
- Aedeagus with one bifurcate process (fig. 455) . . . . . *sulawesiensis* (p. 74)

19. - Vertex with subapical keel straight or nearly so, arc appreciably less deeper than wide (with *fusconebulosus,* only known from female) 21
- Vertex with subapical keel arcuate, arc almost or deeper than wide.

20. - Vertex with subapical keel as wide as deep (fig. 333); length 7.2 mm . *pahangensis* (p. 56)
- Vertex with subapical keel deeper than wide; length 8.7-9.9 mm; . . . . *busoensis* (p. 64)

21. - Vertex with subapical keel connected with apical (anterior) border by two small longitudinal keels 22
- Vertex with subapical keel not connected with apical border . . . . . *muluensis* (p. 75)

22. - Pygofer with lateral margin having a long, finger-shaped process (fig. 447) . *inermis* (p. 76)
. . . . . *penrissensis* (p. 76)
. . . . . *microstylus* (p. 78)
. . . . . *agusani* (p. 79)
. . . . . *modicus* (p. 77)
- Pygofer without such a process on lateral margins (fig. 371) . . . . . *indiensis* (p. 61)
. . . . . *greeni* (p. 61)

23. - Vertex with U-shaped subapical keel, U longer than wide or as long as broad 30
- Vertex with subapical keel wider than long or straight, or if as long as wide, chaetotaxy 7/7 24

24. - Pygofer without medioventral process (fig. 276) 25
- Pygofer with a distinct ("normal") medioventral process 26

25. - Aedeagus as illustrated in fig. 281 & 282 . . . . . *tappanus* (p. 51)
- Aedeagus as illustrated in fig. 275 . . . . . *kurseongensis* (p. 51)

26. - Chaetotaxy hind tarsi 6/5 . *longicauda* (p. 67)
. . . . . *geniculatus* (p. 69)
. . . . . *prolongulus* (p. 70)
. . . . . *longulus* (p. 71)
- Chaetotaxy hind tarsi 7/7 27
- Chaetotaxy hind tarsi 8-9/8-10 29

27. - Vertex with subapical keel connected to anterior border by one median longitudinal keel (fig. 597) . . . . . *decumbens* (p. 92)
- Vertex with subapical keel connected to anterior border by two median longitudinal keels 28

28. - Size 6-6.5 mm . . . . . *granulatus* (p. 89)
- Size greater than 8 mm . . *horishanus* (p. 82)
. . . . . *nigronervatus* (p. 82)
. . . . . *yangi* (p. 82)
. . . . . *ryukyucola* (p. 86)

29. - Colour of face yellow; chaetotaxy hind tarsi 9/9-10 . . . . . *laratensis* (p. 93)
- Colour of face black; chaetotaxy hind tarsi 8/7-8 . . . . . *morobensis* (p. 93)

30. - Chaetotaxy hind tarsi 7/5, 6/6, 6/5 (*inficitus* is interpreted as having 6/6) 31
- Chaetotaxy hind tarsi 7/7, 8/7, or more . . 40

31. - Tegmina very long, 3.8 times as long as wide at level of tip of clavus . . *fuscipennis* (p. 44)
- Length/width ratio smaller 32

32. - Tegmina with transverse vein r-m distad of branching point of M3+4 33
- Tegmina with transverse vein r-m basad of branching point of M3+4 37

33. - Costal cell narrow; costal margin and Sc not parallel (fig. 4, 302) . . . . *anamalaii* (p. 51)
. . . . . *stigma* (p. 53)
. . . . . *simlae* (p. 53)
. . . . . *acuminatus* (p. 39)
. . . . . *walkeri* (p. 41)
. . . . . *proprius* (p. 42)
. . . . . *vilis* (p. 86)
- Costal cell not narrow; costal margin and Sc parallel (fig. 397) 34

34. - Chaetotaxy 6/6 . . . . . *intertectus* (p. 64)
. . . . . *inficitus* (p. 66)
- Chaetotaxy 6/5 . . . . . *hyalinipennis* (p. 69)
- Chaetotaxy 7/5 35

35. - Tegmina with 11 apical cells; fig. 248 (number of apical cells unknown in *singularis* - apex of type damaged) . . . . *velox* (p. 45)
. . . . . *hopponis* (p. 46)
. . . . . *boninensis* (p. 45)
. . . . . *cucullatus* (p. 47)
. . . . . *singularis* (p. 86)
. . . . . *borneensis* (p. 40)

. . . . . *bilineatus* (p. 38)
- Tegmina with 12 apical cells (fig. 266) . . 36

36. - Size max. 7 mm . . . . . *exiguus* (p. 48)
- Size greater than 7 mm . . *angsensis* (p. 48)
. . . . . *undabundus* (p. 61)

37. - Genital styles shaped like those in fig. 113 & 124; aedeagus shaped like those in fig. 109 & 115 or with a similar structure; flagellum recurved along dorsal margin (*formosanus* group); tegmina with 11 apical cells . .
. . . . . *scalenus* (p. 29)
. . . . . *okinawensis* (p. 30)
. . . . . *formosanus* (p. 31)
. . . . . *insetosus* (p. 30)
- Genital styles and aedeagus otherwise shaped, tegmina with 10 cells or more 38

38. - Pygofer with a spine on right lateral margin (fig. 160) . . . . . *dispar* (p. 35)
- Pygofer with a spine on left lateral margin (fig. 135) . . . . . *spinosus* (p. 33)
- Pygofer without a spine on lateral margins . 39

39. - Anal segment without an apical process, lateral margin in profile going straight to apex . . . . . *oryzae* (p. 33)
. . . . . *incisus* (p. 34)
. . . . . *subpunctatus* (p. 36)
. . . . . *ramiferens* (p. 36)
. . . . . *reductus* (p. 37)
. . . . . *muiri* (p. 38)
- Anal segment with an apical process; lateral margin bent ventrally in profile (fig. 223, 230) . . . . . *impeditus* (p. 42)
. . . . . *proimpeditus* (p. 44)

40. - Chaetotaxy hind tarsi 7/7, 8/7 41
- Chaetotaxy hind tarsi greater than above (15/11) . . . . . *pallidifrons* (p. 46)

41. - Vertex at least three times as long as broad (fig. 503) . . . . . *albomaculatus* (p. 79)
- Vertex at most 2.5 times as long as broad : *speciosus, granulatus* and *manbhumensis* (described from males); species only known from females are treated below 42

42. - Vertex 2.5 [1] times as long as broad . . .
. . . . . *tabrobanensis* (p. 96)
- Vertex broader, at most twice as long as broad 43

43. - Tegmina with a longitudinal brown fascia going from base of clavus to apex of tegmina (fig. 513) . . . . . *cingalensis* (p. 82)
- Tegmina without such a longitudinal brown band 44

44. - Tegmina almost completely hyaline; pregenital sternite not excavated in middle . . .
. . . . . *caudatus* (p. 80)
- Tegmina with a brown spot near fork of Sc+R and brown spots on the medial branches forming a small longitudinal spot in the apical part of the tegmina (fig. 505) . . .
. . . . . *indicus* (p. 80)

[1] according to Melichar's description.

Oliarus scalenus Tsaur, Hsu & Van Stalle (Figs 109-114)

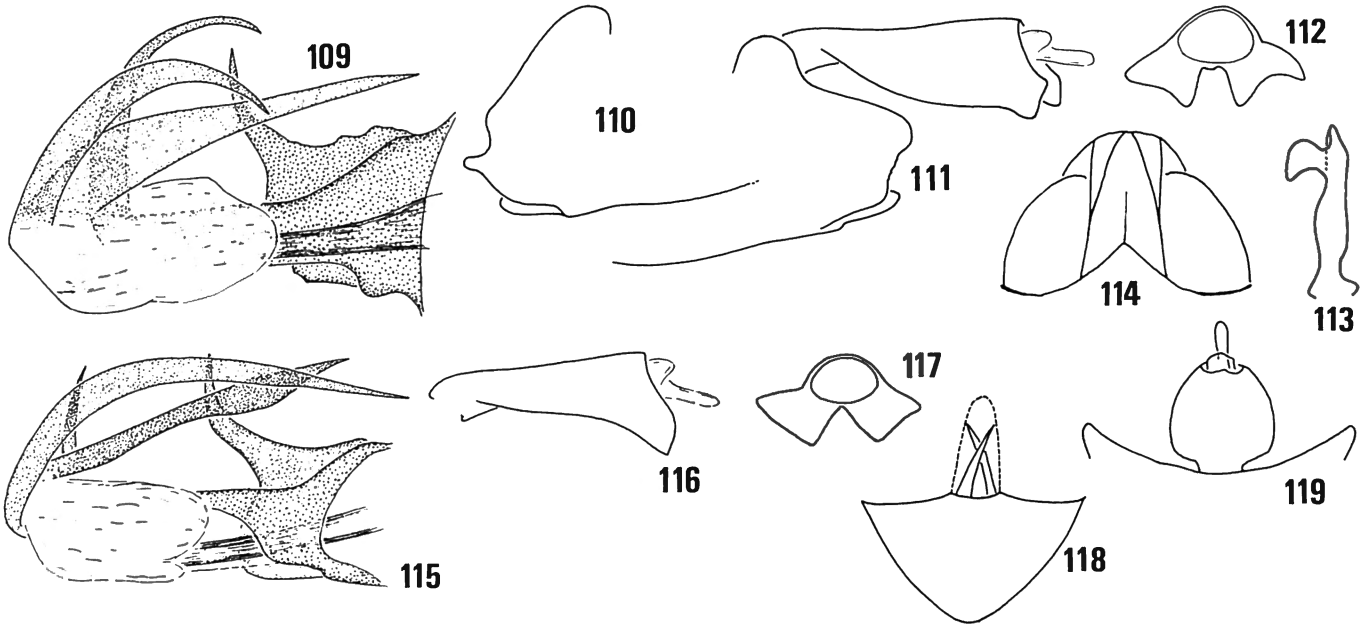
Oliarus scalenus Tsaur, Hsu & Van Stalle, 1988 : 41, figs 4, A-G.

Description :
General colour black. Face black with yellow keels. Vertex 1.4 to 1.6 times as long as broad, black with yellow keels, subapical keel strongly convex, U-shaped, middle part touching apical border and forking from lateral border at 0.4 distance from base; median keel slightly developed at base. Pronotum fumated with black; mesonotum black with yellow longitudinal keels. Tegmina 3.2 times as long as broad; veins yellow, covered with small concolorous granules; apical veins and stigma brown;costal margin yellow, without granules; Sc+R forked distad of Cu, 11 apical cells, r-m situated basad of first medial branch. Legs yellowish, chaetotaxy hind tarsi 7/5. Length : ♂ : 5.1-5.3; ♀ : 6.0-6.4 mm; tegmen : ♂ : 4.1-4.5 : ♀ : 4.9-5.1 mm.
Male genitalia : anal segment slightly asymmetrical at apex, the later excavated in middle. Pygofer asymmetrical, right side more triangular in outline, and with a small finger-shaped process. Genital styles bilobed at apex. Aedeagus with four spines, three at apex and one apically on left side of sclerified periandrium.
Female genitalia : anal segment in dorsal view small, subtriangular. Wax secreting pores larger in central area, smaller in other parts. Pregenital sternite with two very small convex processes submedially. Ovipositor with reduced awled-shaped second valvulae, each with three long setae. Third pair of valvulae blade-shaped, slightly shorter than anal segment.

Diagnosis :
Closely related to *O. okinawensis, O. insetosus* and *O. formosanus*. From the first species it can be distinguished in in the details of the structure of the aedeagus and by the different form of the apical excavation of the anal segment. From the second and third species, to which it is less related, it can be distinguished by the different form of the right margin of the pygofer, the larger excavation of the apex of the anal segment, and the place of implantation of the spines on the aedeagus.

Distribution :
Taiwan.

Material :
♂ holotype, "Formosa", Karenko, 23.IV.1932, NCSU.



Figs 109-114 : Oliarus scalenus *Tsaur, Hsu & Van Stalle, specimen from karenko - 109 : aedeagus, dorsal view; 110 : pygofer; 111 : pygofer and anal segment; 112 : anal segment, caudal view; 113 : left genital style; 114 : head.*

Figs 115-119 : Oliarus okinawensis *sp. n. - 115 : aedeagus, holotype; 116 : anal segment, lateral view; 117 : anal segment, caudal view; 118 : female genitalia, ventral view; 119 : female pygofer and anal segment, dorsal view.*

Paratypes : specimens from various localities; see Tsaur, Hsu & Van Stalle, 1988.

Oliarus okinawensis sp. n.
(Figs 115-119)

Description :
Externally like *O. scalenus.*
Male genitalia :like those of *O. scalenus. O. okinawensis* differs in the structure of the apex of the anal segment and in the different proportions of the spines on the aedeagus.

Distribution :
Ryuku Isl., Okinawa Isl.

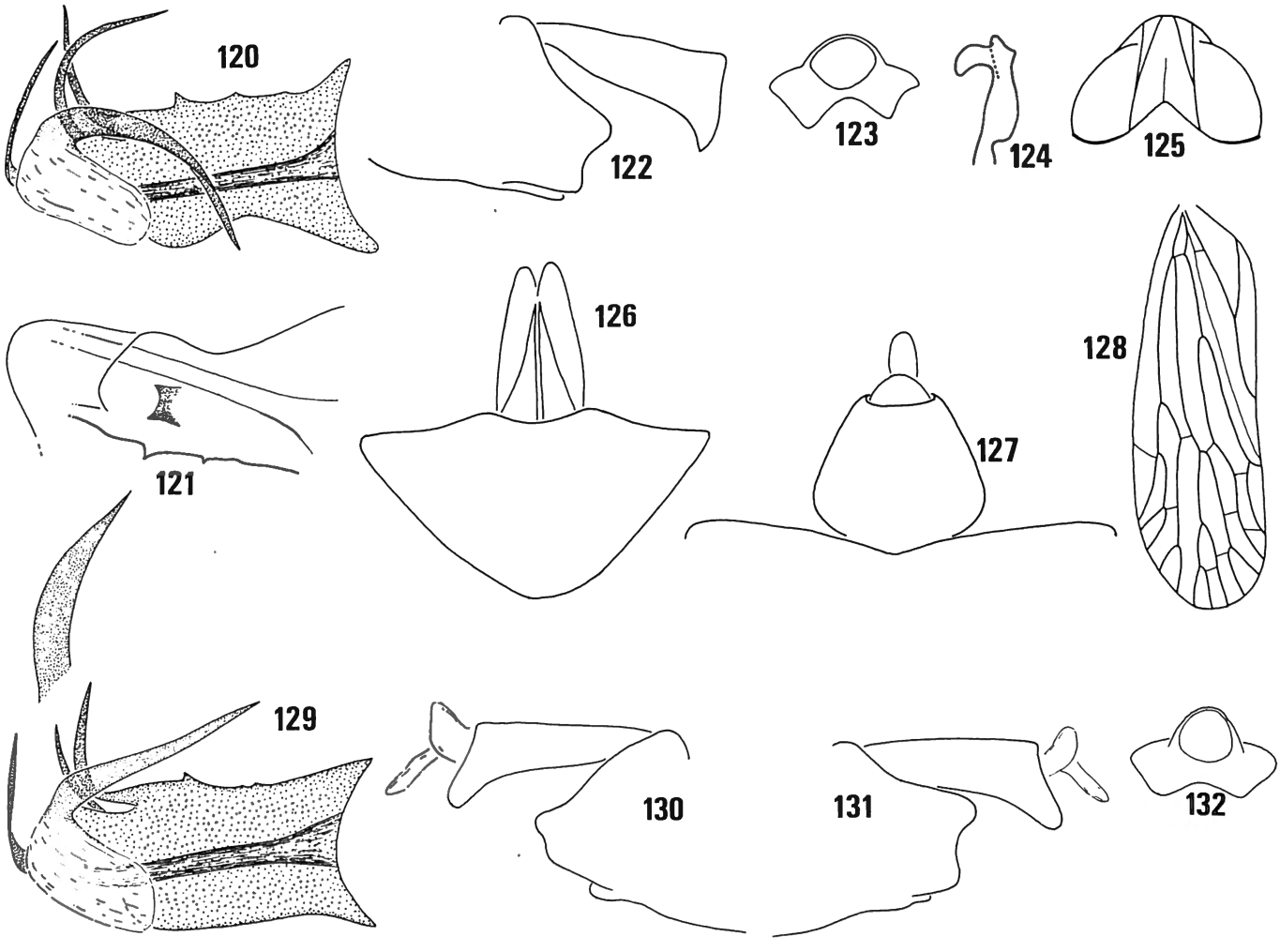
Material :
♂ holotype, Ryuku Isl., Okinawa I., Chinen, 10.V.1964, BPBM. Paratypes : 3 ♂♂, 5 ♀♀, same loc., V.1964, BPBM. 1 ♂, 1 ♀ same loc., V.1964 K.B.I.N.

Oliarus insetosus Jacobi
Figs 120-128)

Oliarus insetosus Jacobi 1944 : 13.
Oliarus insetosus Jacobi; Fennah, 1956a : 454, fig. 3, I-N.
Oliarus insetosus Jacobi; Chou & Jinsheng *et al.*, 1985 : 21, fig. 19.

Description :
General colour black; keels of head and pronotum yellow; keels of mesonotum slightly marked with yellow or concolorous. Vertex 1.4 times as long as broad, subapical keel U-shaped, forking from lateral keel at 0.5 of base and touching the apex in middle; median keel developed at base. Tegmina 3.2 times as long as broad, Sc+R forked distad of Cu, apex with 11 cells, r-m situated basad of first medial branch; veins yellowish, covered with small dark granules; stigma and apical veins brown, anterior margin of stigma yellow. Legs yellow, femora brown, chaetotaxy hind tarsi 7/5. Length : ♂ : 4.7-5.1, ♀ : 5.5-5.9; tegmen ♂ : 3.8-4.2, ♀ : 4.5-4.7.
Male genitalia : anal segment, pygofer and genital styles symmetrical. Anal segment with a shallow incision in middle; lobe of pygofer slightly excavated at apex. Aedeagus with four long spines at apex; teeth on left margin of periandrium variable in shape; one spinose process on ventral margin as illustrated in fig. xx, variable, with two (lectotype) or three teeth.
Female genitalia : pregenital sternite with a very shallow excavation in middle. Ovipositor with three pairs of valvulae subequal in length. Anal segment trapezoid, in dorsal view half as braod as pygofer.

Diagnosis :
O. insetosus closely resembles *O. scalenus, O. okinawensis* and *O. formosanus,* but can be distinguished from these species by the shallow excavation of the apex of



Figs 120-128 : Oliarus insetosus *Jacobi* - *120 : aedeagus, dorsal view, lectotype; 121 : aedeagus, ventral view; 122 : pygofer and anal segment; 123 : anal segment, caudal view; 124 : left genital style; 125 : head; 126-127 : female genitalia, ventral and dorsal aspect; 128 : left tegmen.*

Figs 129-132 : Oliarus formosanus *Matsumura* - *129 : aedeagus, dorsal view, with a side view of the large apical spine, specimen from Wulai; 130-131 : anal segment and pygofer, right and left lateral view; 132 : anal segment, caudal view.*

the anal segment and by the implantation of the spines on the aedeagus.

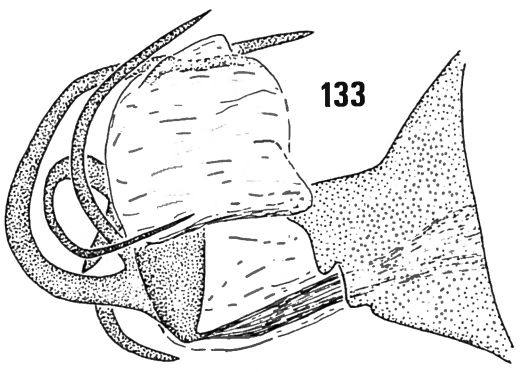
Distribution :
Southern China; Taiwan (?).

Material :
Lectotype ♂, here designated, Fukien, Shaowu (500 m), J. Klapperich, 5.VI.1937, ZFMK (examined). Paralectotype : 1 ♂, same data as lectotype, ZFMK (examined). Additional : 2 ♂♂, 2 ♀♀, Hong Kong, Ta'uen-Wan, 5.V.1940, F. K. To, NCSU; 1 ♂, 2 ♀♀, Hong Kong, N. T. Castle Peak, 6-13.VIII.1964, BPBM; 2 ♂♂, 2 ♀♀, Hong Kong, N. T. Sai Kung Station, 4.V.1965, hand net, BPBM; 1 ♂, Hong Kong, N. T. Taipokau, 28.IV.1965, hand net, BPBM; 2 ♂♂, Hong Kong, Hong Kong Colony, IV.1958, N. Kraus, BPBM; 1 ♂, S. China, Kwangtung, Kan-Liu San, 700-900 m, Lien-p'ing Distr., 20.IV.1940, J. L. Gressit and F. K. To, NCSU; 1 ♂, China, Mei-haien, E. Kwantung, 9.VI.1956, NCSU; 5 ♂♂, 7 ♀♀, E. Kwangtung, Yim Na San, 11.VI.1936, NCSU; 1 ♂, S. China, S. Kiangi pr., Tai An Hong, 5.VII.1936, NCSU; 5 ♂♂, 3 ♀♀, China, Swatow, Kwantung; 26.V.1936, NCSU; 1 ♂, Formosa, Hori, 5.VI.1934, NCSU.

Oliarus formosanus Matsumura
Figs 129-132)

Oliarus formosanus Matsumura, 1914 : 427.
Oliarus formosanus; Tsaur, Hsu & Van Stalle, 1988 : 43, figs 5, A-G.

Description :
Externally like *O. insetosus*; chaetotaxy of the hind tarsi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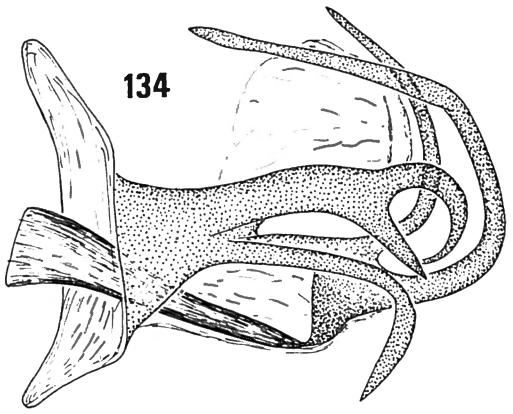
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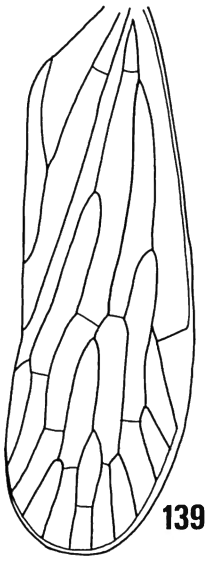
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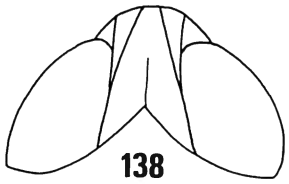
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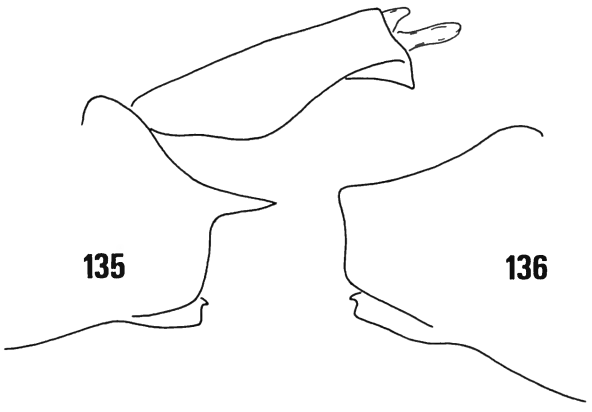
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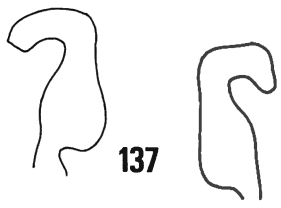
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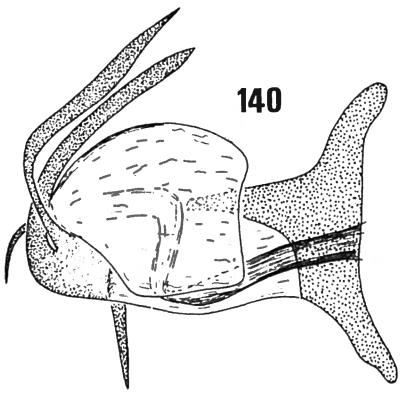
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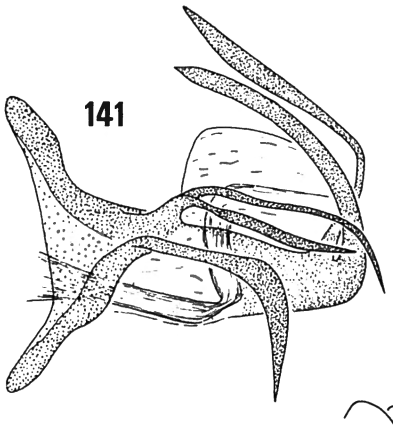
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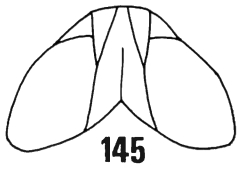
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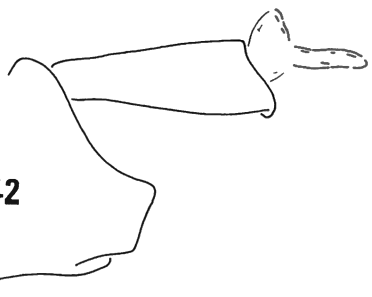
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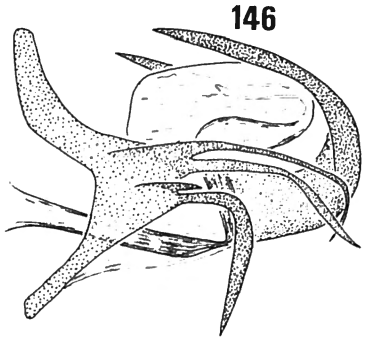
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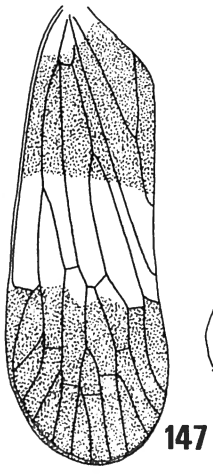
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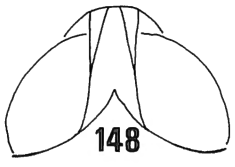
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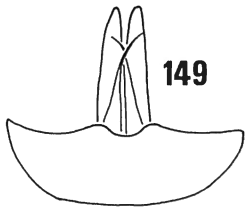
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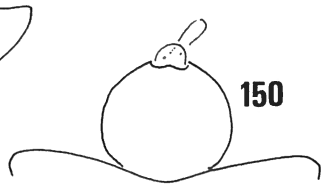

150

7/5, sometimes 7/6. Length ♂ : 5.0-5.3, ♀ : 5.8- 6.5; tegmen ♂ : 3.9-4.3; ♀ : 4.6-5.3 mm.
Male genitalia : anal segment, pygofer and genital styles like *O. insetosus*. In all examined specimens the aedeagus differs in the proportions of the apical spines which are shorter than the homologous spines in *O. insetosus*; like in *O. insetosus* the basal spine on the ventral margin is also variable in shape but is generally smaller.

Diagnosis :
O. formosanus closely resembles *O. insetosus, O. scalenus* and *O. okinawensis*; from *O. scalenus* and *O. okinawensis* it is easily distinguished by the fact that the periandrium is much longer and that accordingly the left spine on the periandrium is situated much closer to the apex. *O. formosanus* is most closely related to *O. insetosus* which is known from Southern China and from some specimens from Taiwan. The observed differences are constant in all examined specimens and is therefor considered as a valid species.

Distribution :
Taiwan, probably very common.

Material :
♂ lectotype, designated by Tsaur, Hsu & Van Stalle (1988), Hokudo, 31/VII/1906, HU (examined). Paralectotypes : 4 ♀♀, "Formosa, Koshun,7/7/...", HU (examined); 8 ♂♂, 12 ♀♀, same data, HU (examined).
Additional material examined : 8 ♂♂, 19 ♀♀, Taiwan, Wulai nr Taipei, 300-500 m, 23.IX.1957, BPBM; 1 ♂, Taiwan, Liukuei, Kaohsiung hsien, III-IV.1964, T. C. Maa, BPBM; 1 ♂, 2 ♀♀, Taiwan, Kwantzeling, Tainan Hsien, 250 m, 6-7.IV.1965; 2 ♂♂, 1 ♀, Taiwan, Santiaoling, 19.XI.1957, BPBM; 1 ♂, "Formosa, Shonoryo", 11.VI.1932, NCSU; many more Taiwanese data are listed in Tsaur, Hsu & Van Stalle (1988).

Oliarus spinosus Bierman
(Figs 133-139)

Oliarius [sic] *spinosus* Bierman, 1910 : 17.

Description :
Head and pronotum yellowish brown with paler keels, anteclypeus tinged with black. Pronotum yellow, slightly fumated with brown. Mesonotum black with concolorous keels, strongly contrasting with anterior part of body. Vertex 1.2 times as long as broad, with a well-developed median longitudinal keel in the basal half; subapical keel U-shaped forking at 0.5 distance from base, each meeting separately the anterior border. Tegmina 3.2 times as long as broad, Sc+R forked distad of Cu fork, apex with 10 cells, r-m situated basad of first medial branch; costal margin not granulate; veins smooth, yellowish brown, with very small concolorous granules, stigma and transverse veins fumated with brown. Legs yellowish brown, chaetotaxy hind tarsi 7/5. Length : 6.0-6.6 mm; tegmen : 5.2-5.5 mm.
Male genitalia : anal segment without a distinct apical lobe. Pygofer on left side with a spine on lateral margin. Genital styles as illustrated in fig. xx. Aedeagus with two spines on apex fused at their base, and two spinose processes inserted on ventral margin : one curved spine, and one bifurcate process. The male from Sumatra bears an additional tooth on the base of the ventral, curved spine.
Female genitalia : not examined.

Diagnosis :
O. spinosus can be distinguished from all other species from the "*spinosus* group" by the presence of a spine on the left lateral margin of the pygofer. *O. dispar* also bears a similar spine, but on the right margin of the pygofer.

Distribution :
Java, Borneo, Sumatra.

Material :
Lectotype ♂, here designated, "C. Mulié/Java orient./ aug. 1871", ML (examined). Paralectotype : 1 ♀, same label, LM (examined).
Additional : 1 ♂, W. Java, 700 m, Bandoeng, 9.VI.1940 (J. Olthof), "op de lamp", MZB; 2 ♂♂, Brit. N. Borneo, Ranau, 30.IX-5.X.1958, NCSU; 1 ♂, 1 ♀, Sumatra, ... (illegible), Mjöberg, KMMA.

Oliarus oryzae Matsumura
(Figs 140-150)

Oliarus oryzae Matsumura 1911 : 134.
Oliarus oryzae; Tsaur, Hsu & Van Stalle, 1988 : 64.
Oliarus cocosivora Muir, 1929 : 409, syn. n.
Oliarus annandalei Distant, 1911 : 736, syn. n.
Oliarus annandalei cocosivora Muir; Fennah, 1978 : 214.

◁ Figs 133-139 : Oliarus spinosus *Bierman - 133-134 : aedeagus, dorsal and ventral view, lectotype; 135 : pygofer and anal segment, left lateral view; 136 : pygofer, right lateral view; 137 : right and left genital style; 138 : head; 139 : right tegmen.*

Figs 140-150 : Oliarus oryzae *Matsumura - 140-141 : aedeagus, dorsal and ventral view, lectotype; 142 : pygofer and anal segment; 143 : anal segment, caudal view; 144 : left genital style; 145 : head; 146 : aedeagus, lectotype* O. cocosivora*; 147 : tegmen, lectotype* O. cocosivora*; 148 : head; 149-150 : female genitalia.*

Description :
Head, pronotum and tegulae pale ochreous with yellowish keels or totally black. Vertex twice as long as broad, subapical keel U-shaped, touching apex in middle and forking at 0.6 distance from base; median keel well-developed. Mesonotum brown with five pale longitudinal keels or black. Abdomen brown, pygofer and genital styles partly yellow. Tegmina 3.1 times as long as broad, hyaline, part between base to level of Cu-fork, and a second area from level of stigma to apex brown; veins yellow, covered with very small, concolorous granules, Sc+R forked distad of Cu, r-m situated basad of first medial branch, apex with 11 cells; costal margin not granulated. Legs yellowish, chaetotaxy hind tarsi 7/5. Length : 5-6 mm.
Male genitalia : anal segment, pygofer and genital styles symmetrical; aedeagus with five spines, three on ventral margin, sometimes with an additional small spine on ventral margin (fig. xx) which is variable in length.
Female genitalia : pregenital sternite with a rounded excavation bordered by two blunt elevations. Ovipositor as long as anal segment; anal segment round, less than half as broad as pygofer.

Diagnosis :
Easily recognised from other *Oliarus* species by the presence of two brown fasciae on the tegmina.

Distribution :
Taiwan (*oryzae*), probably from India to Malaysia, and S. China and Taiwan; recorded on rice and cocos.

Remark :
The description of *O. annandalei* was published later in the same year than the description of *O. oryzae*. The type of *O. annandalei* is missing, but the description of this species leaves no doubt.

Material :
Lectotype ♀ *Oliarus oryzae* selected by TSAUR, HSU & VAN STALLE (1988) but wrongly listed there as a male, label illegible, HU; 2 ♂♂, "Formosa", MATSUMURA, Koshun, 31.VII.1906, HU. The label on the two males does not correspond with the locality listed in the original description; in the drawer with the type series of *Oliarus oryzae* there is only one female left (Dr Takagi, in litt.) with a label which is illegible for me; lectotype.
Additional : 2 ♂♂, 1 ♀, Laos, Borikhane Prov. Paksane, I.II.1966, BPBM; 3 ♂♂, 1 ♀, Laos, Vientane, 31.V-3.VI.1960, BPBM; 1 ♂, Bangladesh, Dacca Distr., Joydebpur, 1975, BMNH.

Oliarus incisus BIERMAN
(Figs 151-155)

Oliarius [sic] *incisus* BIERMAN, 1908 : 152; pl. 3, figs 2a, b.
Oliarus sumbensis LALLEMAND & SYNAVE, 1953 : 240, fig. 7. syn. n.

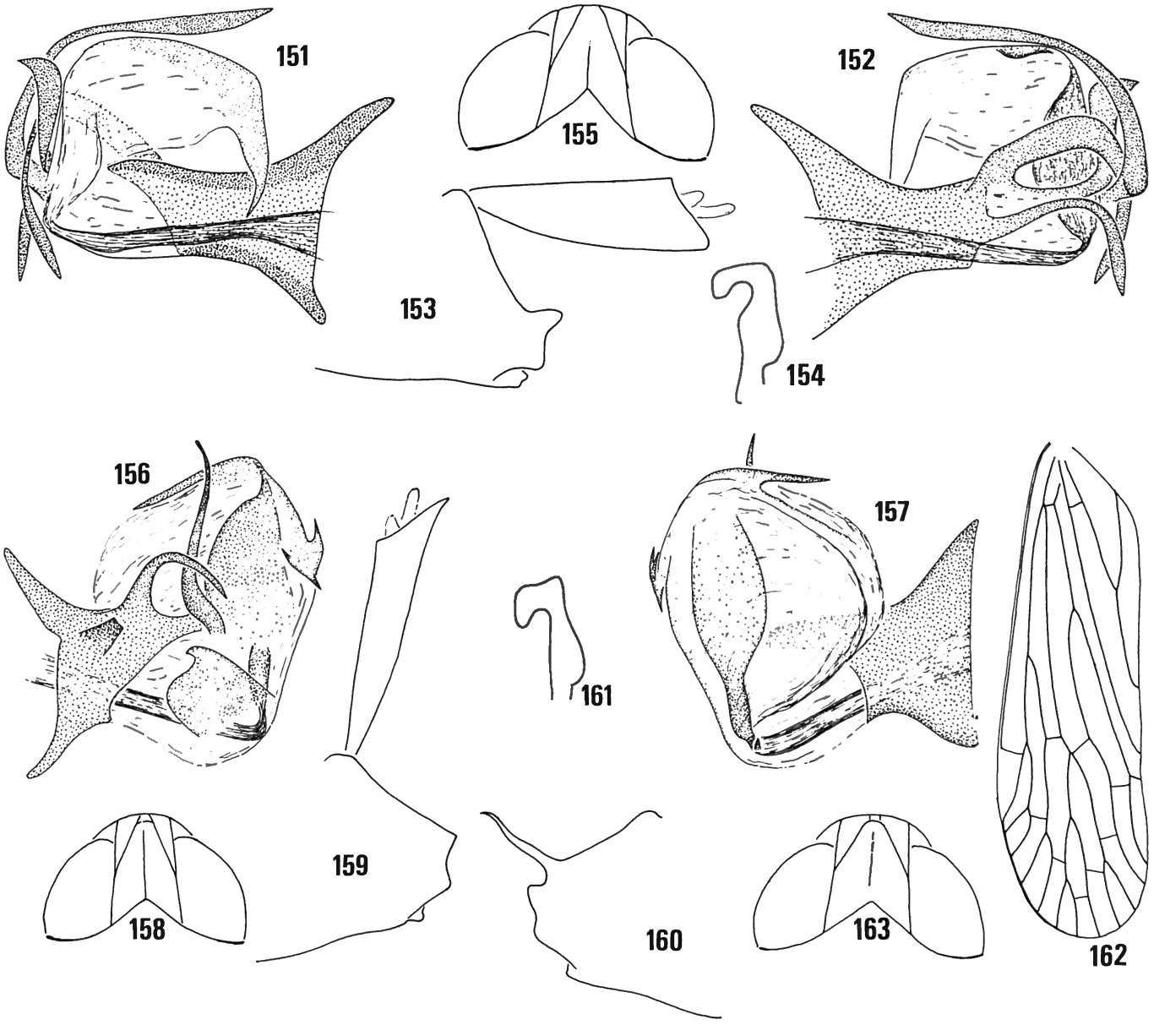
Description :
Head, pronotum and legs yellow; mesonotum brown, sometimes with two paler streaks each situated between the two outer keels, these pale. Vertex as broad as long, with a well-developed median longitudinal keel in the basal half; subapical keel U-shaped, forking at 0.5 distance from base. Tegmina 3.2 times as long as broad, costal cell narrow in comparison to many other species, not granulate, r-m situated basad of first medial branch, apex with 10 cells; all veins and stigma yellow, with small concolorous granules. Sc+R forking distad of Cu. Chaetotaxy hind tarsi 7/5.
Length : ♂ : 6.5-7 mm; ♀ : 8.5 mm.
Male genitalia : anal segment, pygofer and genital styles symmetrical or nearly so. Anal segment without a distinct apical lobe. Pygofer with a lobe which is slightly incised at apex. Aedeagus with one spine on apex running parallel to flagellum, and three spinose process inserted on ventral margin; flagellum tapering, with a spine-shaped apex. The length of the spines differs in specimens from different island populations.
Female genitalia : anal segment large, diamond-shaped; caudal border of pregenital sternite feebly sinuate, with two very indistinct submedian lobes.

Diagnosis :
O. incisus can be distinguished from *O. spinosus* by the absence of a spine on the pygofer, and from *O. annandalei* by the absence of brown fasciae on the tegmina; the aedeagus differs from both species by the shape of the flagellum which terminates into a spine which is lacking in both *O. spinosus* and *O. annandalei*.

Remark :
According to Somadikarta, Kadarsan & Djajasasmita (1970) the male holotype and one female paratype of *O. sumbensis* are deposited in the Museum Zoologicum Bogoriense. Although we have written several times we did not have the type on loan. Nevertheless, the figures published in the original description and examination of the paratype deposited in the BMNH allow us to synonymize *O. sumbensis* with *O. incisus*.

Distribution :
Java, Timor, Sumba.

Material :
Holotype ♀ *O. incisus*, Java, Semarang, E. Jacobson, coll. Dr McGillavry, ITZ (examined).
Additional : holotype ♂ *O. sumbensis*, W. Sumba : Waimangura, 2.VIII.1949, MZB (?); 1 ♀ paratype of *O. sumbensis*, Melolo, Laiwushi, BMNH; 3 ♂♂, 1 ♀, Indonesia, Timor I., Balical, 200-300 m, 14-24.XII.1963, BPBM.



Figs 151-155 : Oliarus incisus *Bierman* - *151-152 : aedeagus, dorsal and ventral view, specimen Timor; 153 : pygofer and anal segment; 154 : genital style; 155 : head.*

Figs 156-161 : Oliarus dispar *Muir* - *156-157 : aedeagus, ventral and dorsal view, specimen Java, Semarang; 158 : head; 159 : anal segment and pygofer; 160 : pygofer; 161 : genital style.*

Figs 162-163 : Oliarus subpunctatus *(Walker)* - *162 : tegmen, lectotype; 163 : head, lectotype.*

Oliarus dispar Muir
(Figs 156-161)

Oliarus dispar Muir, 1924 : 518, pl 1, figs 9a, 9b.

Description :
Head, pronotum, tegulae and legs yellowish. Vertex embrowned, 1.2 times as long as broad, with a distinct median longitudinal keel at base; subapical keel forking at 0.5 distance of base. Mesonotum brown, yellowish between submedian and outer keels, the latter also yellowish. Tegmina three times as long as broad, with yellow veins which are covered with very small concolorous granules. Costal margin not granulate, stigma yellowish. Sc+R forking distad of Cu, r-m situated basad of first medial branch, apex with 11 cells. Chaetotaxy hind tarsi 7/5. Length : 6.5 mm.
Male genitalia : anal segment without an apical lobe. Pygofer with a spine on right side. Genital styles as illustrated in fig. xx. Aedeagus as illustrated in fig. xx and xx.
Female genitalia not examined.

Diagnosis :
Oliarus dispar can be distinguished from other species by the presence of a spine on the right side of the pygofer. *O. spinosus* has a similar spine, but situated on the left side of the pygofer.

Remark :
The reference in the original description "Type N° 1082" in the original description is considered as a holotype designation.

Distribution :
Java.

Material :
Holotype ♂, Pekalongan, BPBM (examined). Paratypes : 1 ♂, 1 ♀, same data, BPBM.
Additional : 1 ♂, 1 ♀, Java, Semarang, E. Jacobson, IV.1909, ITZ; 1 ♂, Krakatau, IX.1920, MZB.

Oliarus subpunctatus (WALKER)
(Figs 162-163)

Brixia subpunctata WALKER, 1868 : 112.

Face yellow, postclypeus and last segment of labium embrowned; frons with two brown spots just above frontoclypeal suture, on each side of median carina. Vertex as long as broad, flat, pale yellowish brown, keels yellow; median carina present, subapical keel U-shaped, forking from lateral border at 0.5 distance from base and united with apical border by two indistinct short keels. Pronotum yellow, mesonotum dark brow to black, keels yellow and two fasciae border by external carinae yellow. Tegmina long, 3.5 times as long as broad, completely hyaline, veins and stigma yellow, apical veins brown; the yellow veins are covered with small brown granules which are therefor distinct. Costal margin without granules, Sc+R forking distad of Cu, r-m situated basad from first medial branch, apex with 10 cells. Chaetotaxy hind tarsi 7/5. Length : 6.5 mm.
Male unknown.
Female genitalia : caudal border of pregenital sternite straight. Ovipositor with first pair broad at base and slightly narrowing to apex. Anal segment about half as broad as pygofer, ovoid and broadest at base.

Diagnosis :
By the fact that the male genitalia are unknown it is difficult to place this species. The structure of the tegmina with a narrow costal margin and smooth veins with dark granules, the chaetotaxy of the hind tarsi and the structure of the vertex and female genitalia suggest that this species is closely related to *O. spinosus, O. ramiferens* and *O. incisus*. It differs from *O. ramiferens* and *O. spinosus* by the proportions of the vertex which is broader in *O. subpunctatus*. From *O. incisus* it differs by the fact that in this species the caudal border of the pregenital sternite is sinuate instead of straight and by the smaller size of *O. subpunctatus*.

Distribution :
Flores.

Material :
Lectotype ♀, here designated, "Flores", Wallace, BMNH.

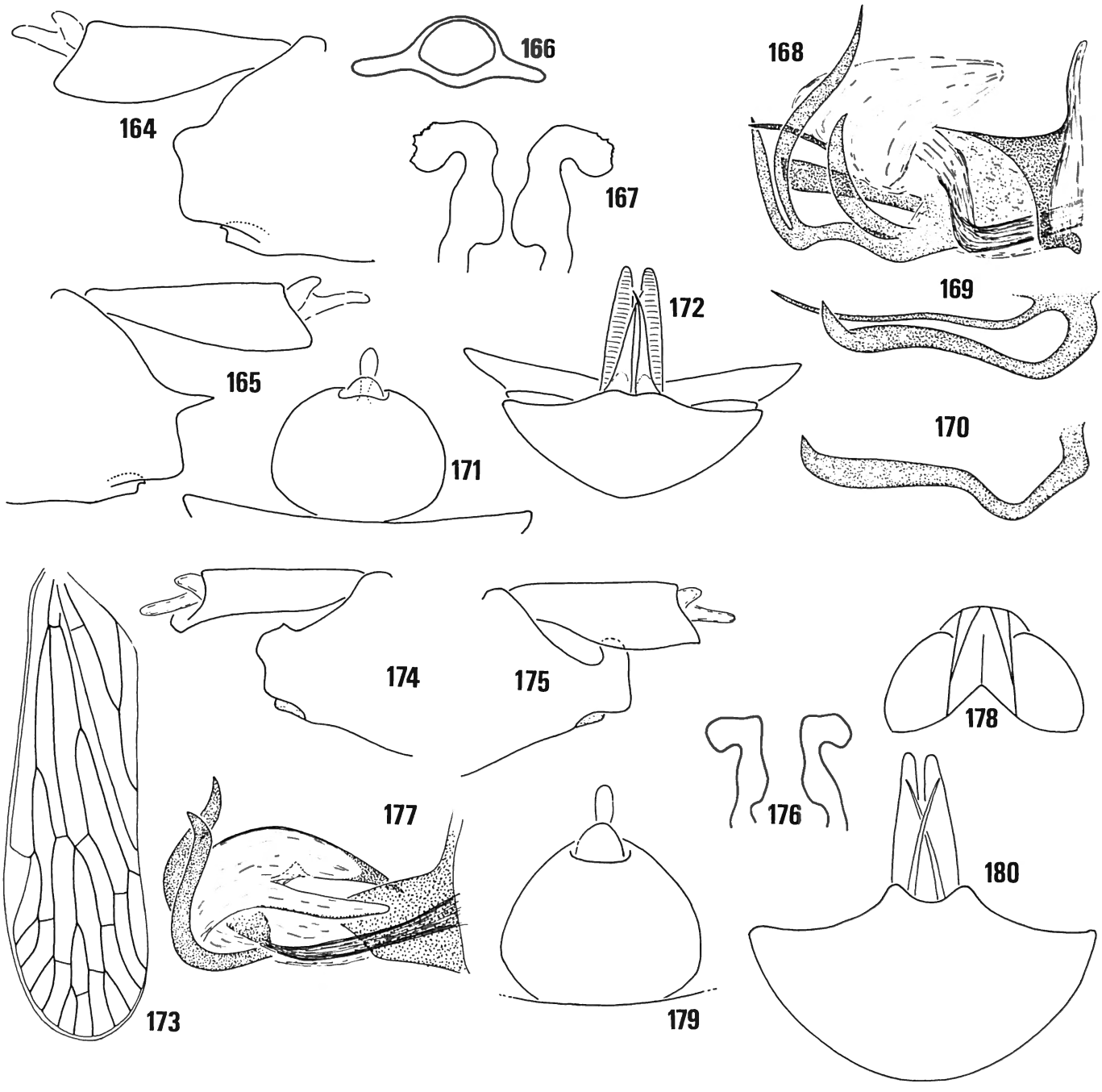
Oliarus ramiferens VAN STALLE
(Figs 164-172)

Oliarus ramiferens VAN STALLE, 1990 : 179, figs 44-52.

Head entirely yellow, anteclypeus slightly embrowned. Vertex flat, carinae not prominent and with a well-developed median keel, 1.6 times as long as broad, transverse keel divided into two separate parts each forking from lateral margin at 0.4 distance of base, and running straight to apex. Pronotum and tegulae yellow, mesonotum brown with slightly paler keels. Tegmina hyaline, 3.3 times as long as broad, Sc+R forking distad of Cu, r-m situated basad of first medial branch, 11 apical cells, all veins yellow and smooth, without granules, apical transverse veins slightly fumated with brown; costal margin without granules. Legs yellow, chaetotaxy hind tarsi 7/5. Length ♂ : 7.5 mm, ♀ : 8.5-9 mm.
Male genitalia : anal segment without an apical process. Pygofer asymmetrical, left lateral margin with a short spine, right margin without such a spine but lobe slightly excavated at apex. Genital styles irregularly denticulated at apex. Aedeagus with an apical ramose process with three branches, and a ventral process consisting of one very slender and one stout spine.
Female genitalia : pregenital sternite slightly protruding in middle and shallowly excavated. Ovipositor with three pairs of valvulae, as long as anal segment. First pair gently narrowing to apex. Anal segment circular in shape and half as broad as pygofer.

Diagnosis :
O. ramiferens is related to *O. reductus* and can be distinguished from this species by its larger size and by the structure of the left lateral margin of the pygofer which bears a spine in *O. ramiferens* and by the structure of the aedeagus which bears more spines in *O. ramiferens* and which has a ventral spinose process which is absent in *O. reductus*. In the female genitalia the pregenital sternite of *O. reductus* has a median excavation which is lacking in *O. ramiferens*.

Distribution :
New Guinea.



Figs 164-172 : Oliarus ramiferens *Van Stalle - 164-165 : anal segment and pygofer, right and left lateral view; 166 : anal segment, caudal view; 167 : genital styles; 168 : aedeagus, dorsal view, holotype; 169 : ventral process on aedeagus; 170 : aedeagus, largest spine, other specimen; 171-172 : female genitalia, dorsal and ventral view.*

Figs 173-180 : Oliarus reductus *(Walker) - 173 : left tegmen; 174-175 : anal segment and pygofer, right and left lateral view; 176 : genital styles; 177 : aedeagus, dorsal view; 178 : head; 179 : female anal segment; 180 : female genitalia, ventral view.*

Oliarus reductus (Walker)
(Figs 173-180)

Material :
Holotype ♂, "Neth. Ind.-American New Guinea Exped.", Bernhard Camp 50 m, X.1938, J. Olthof, ML.
Paratypes : 4 ♂, 11 ♀, same data as holotype, ML.

Cixius reductus Walker, 1868 : 105.
Oliarus reductus Van Stalle, 1990 : 179, figs 36-43.

Face yellow to yellowish brown, anteclypeus and sometimes apex of postclypeus and frons near frontoclypeal suture brown fumated. Vertex 1.3 times as long as broad,

flat with weakly prominent keels, black or partly yellow near keels, these yellow; subapical keel U-shaped, branching from lateral border on 0.3 distance of base, and divided into two parts which are running to the middle of the anterior border; median keel well-developed in basal half. Pronotum yellow, embrowned laterally, mesonotum entirely black, longitudinal keels sharp, and tinged with yellow. Tegmina hyaline, 3.3 times as long as broad, costal margin straight, not granulate, Sc+R forking distad of Cu, r-m situated basad of first medial branch, 11 apical cells; veins, stigma and margins yellow, apical veins more embrowned, transverse veins fumated with brown; veins smooth, without granules. Legs yellow, chaetotaxy hind tarsi 7/5. Length : ♂ : 5.5, ♀ : 7 mm.
Male genitalia : anal segment without apical process. Pygofer asymmetrical, left margin with a blunt, upcurved process, right margin without such a process, but lobe slightly excavated at apex. Genital styles as illustrated. Aedeagus with two spines at apex, and flagellum with two processes, one spine and one blunt, membraneous and oblong process.
Female genitalia : pregenital sternite with two blunt submedian lobes separated by a median, almost semi-circular excavation. Ovipositor as long as anal segment, with three subequal pairs of valvulae, the first and second very slender, almost hair-shaped. Anal segment egg-shaped, broadest near base and half as broad as pygofer.

Remark :
This species has also been recorded from Borneo and the Philippines. The species is described as a male, but in fact it is a female. As the number of specimens is not specified we have selected a lectotype.

Distribution :
Sumatra, Borneo, the Philippines, New Guinea.

Material :
Lectotype ♀, designated in VAN STALLE (1989xx), Mys[ol], Wallace, BMNH (examined).
Additional material : 1 ♂, Philippines, Cagayan Sulu I., 27.II.1957, BPBM; 1 ♂, Phil. I., Mindanao Davao : Guitalan, 8 km NW of Mt Apo, 690 m, 17.VIII.1958, light trap, jungle clearing, H. Milliron, BPBM; 1 ♂, Philippines, Luzon I., Camarines Sur Prov. : Iriga, 30.IV.1962, H.M. Torrevillas, light trap, BPBM; 1 ♂, P.I., Mindanao, Sulu, Jolo I., Jolo, 1.IX.1958, light trap, H. E. Milliron, BPBM; 1 ♂, P.I., Misamis or. Hindangon, 20 km S. of Gingoog, 500-700 m, 20- 24.IV.1960, H. Torrevillas, BPBM; 1 ♂ 2 ♀♀, Phil. I., Z. del Sur, Milbuk, 5-10.VIII.1958, light trap, H. E. Milliron, BPBM.
1 ♂, Malaya, Kuala Lumpur, at light, 25.X.1938, N. C. E. Miller, BMNH; 1 ♂, 4 ♀♀, Borneo, Sarawak, Bau, Lake Area, 30.VIII.1958, BPBM; 1 ♂, 2 ♀♀, Sarawak, Gunung Mulu Nat. Park, J. D. Holloway, RGS Mulu Exped. 1978; 1 ♂, W. Borneo, Telok Ayer, F. MUIR; 4 ♂♂, 3 ♀♀, Sarawak, Semongoh For. res., 1°25'N 110°17'E, 15/19.XI.1976, P.S. Cranston, BMNH; 1 ♂, N. Borneo, Sandakan, 5.VII.1927, BMNH; 1 ♂, N. Borneo, Bettotan, nr Sandakan, 21.VII.1927, BMNH; 4 ♂♂, 2 ♀♀, Sabah, 200 ft, R. Karamuak, SSE Telupi, 1/7.IX.1977, BMNH.
2 ♂♂, Papua New Guinea, Madang Prov., Awar village, 31.V.1979, 26.VII.1981, light trap, J. Van Goethem, KBIN; 1 ♂, 2 ♀♀, Madang Prov., Sisimangum village, 31.V.1979, 15.VI.1979, light trap, J. Van Goethem, KBIN.

Oliarus muiri sp. n.
(Figs 181-188)

Oliarus walkeri (STÅL); MUIR, 1924 : 517; Pl. 1, figs 8a-c [error].

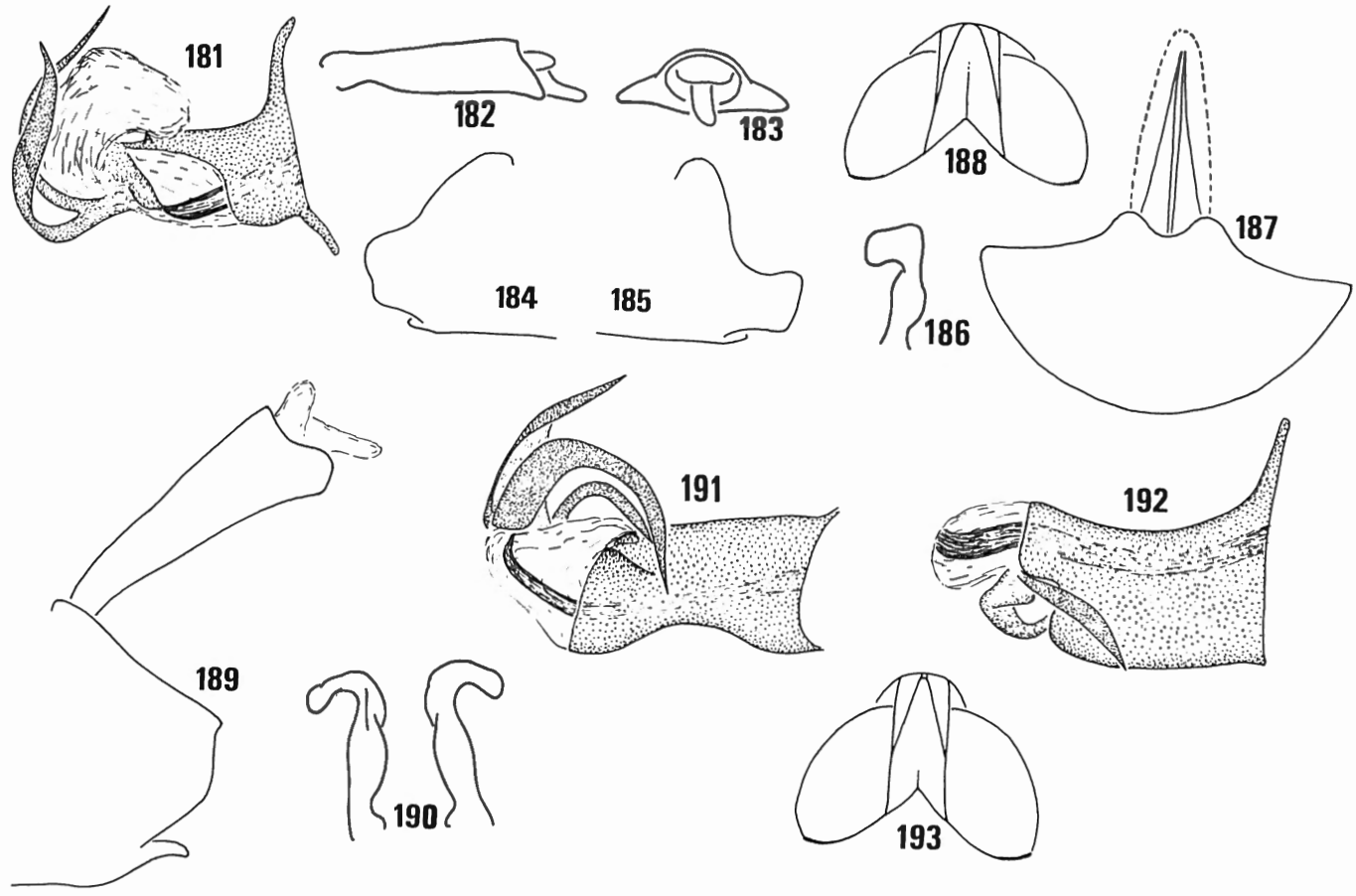
Externally identical to *O. reductus* except for the fact that the mesonotum bears a yellowish fascia on each side between the two outermost keels. Length ♂ : 5.7 mm, ♀ : 6.9-7.4 mm.
Male genitalia : anal segment without an apical process. Pygofer on left side with a truncate lobe, on right side with a similar lobe which is shallowly excavated. Genital styles as illustrated. Aedeagus with two spines on apex which are united at their base and without processes on the flagellum.
Female genitalia identical to those of *O. reductus*.

Diagnosis :
This species is closely related to *O. reductus*. It differs in the structure of the left lobe of the pygofer which bears an upcurved process in *O. reductus* and in the structure of the flagellum which has no processes in *O. muiri*.

Material :
Holotype ♂, Indonesia, Lesser Sunda I., Komodo I., 19.VIII.1965, J. Winkler, BPBM. Paratypes : 1 ♂, 5 ♀♀, same data as holotype, BPBM; 5 ♀♀, Port Blair, Andamans, 15.II/15.III.1915, Kemp "From Indian Museum, DISTANT coll. BM 1911-383", BMNH; 1 ♂, omg. Palembang, begin 1947, W.C. Verboom, ML.
1 ♂ Ind. Mus., Port Blair, Andamans 15.II/15.III.1915, Kemp "From Indian Museum, DISTANT coll. BM. 1911-383, K.B.I.N.; 1 ♀ same data as holotype, K.B.I.N.; 1 ♂ P.I. Mindanao, Sulu, Jolo I, Jolo, 1.IX.1958, K.B.I.N.

Oliarus bilineatus MUIR
(Figs 189-193)

Oliarus bilineatus MUIR, 1924 : 523; Pl. 2, figs 16a, 16b.



Figs 181-188 : Oliarus Muiri *sp. n. - 181 : aedeagus, dorsal view, holotype; 182 : anal segment, lateral view; 183 : anal segment, caudal view; 184-185 : pygofer, right and left lateral view; 186 : left genital style; 187 : female genitalia, ventral view; 188 : head.*

Figs 189-193 : Oliarus bilineatus Muir *- 189 : pygofer and anal segment; 190 : genital styles; 191-192 : aedeagus, dorsal and lateral view, holotype; 193 : head.*

Face yellow, slightly fumated with brown. Vertex brown, twice as long as broad, subapical keel forking from lateral margin at 0.4 of base, going straight to apex and connected two it by two small longitudinal keels; median keel rudimentary developed at base. Pronotum yellow, pectoral plates fumated with brown. mesonotum dark brown with a yellow longitudinal band between the outer keels. Tegmina three times as long as broad, costal margin without granules, Sc+R forking slightly distad of Cu. Veins pale yellow with small dark granules, stigma and apical veins brown fumated. Legs yellow to yellowish brown, chaetotaxy hind tarsi 7/5. Length : 6 mm.

Male genitalia : anal segment, pygofer and genital styles symmetrical. anal segment without an apical process. Aedeagus with four spines as illustrated in fig. xx and xx.

Female unknown.

Diagnosis :

This species can be recognised by the shape of the aedeagus; no closely related species have been observed.

Distribution :

Larat I.

Remark :

The reference "type N° 1091" in the original description is considered as a holotype designation.

Material :

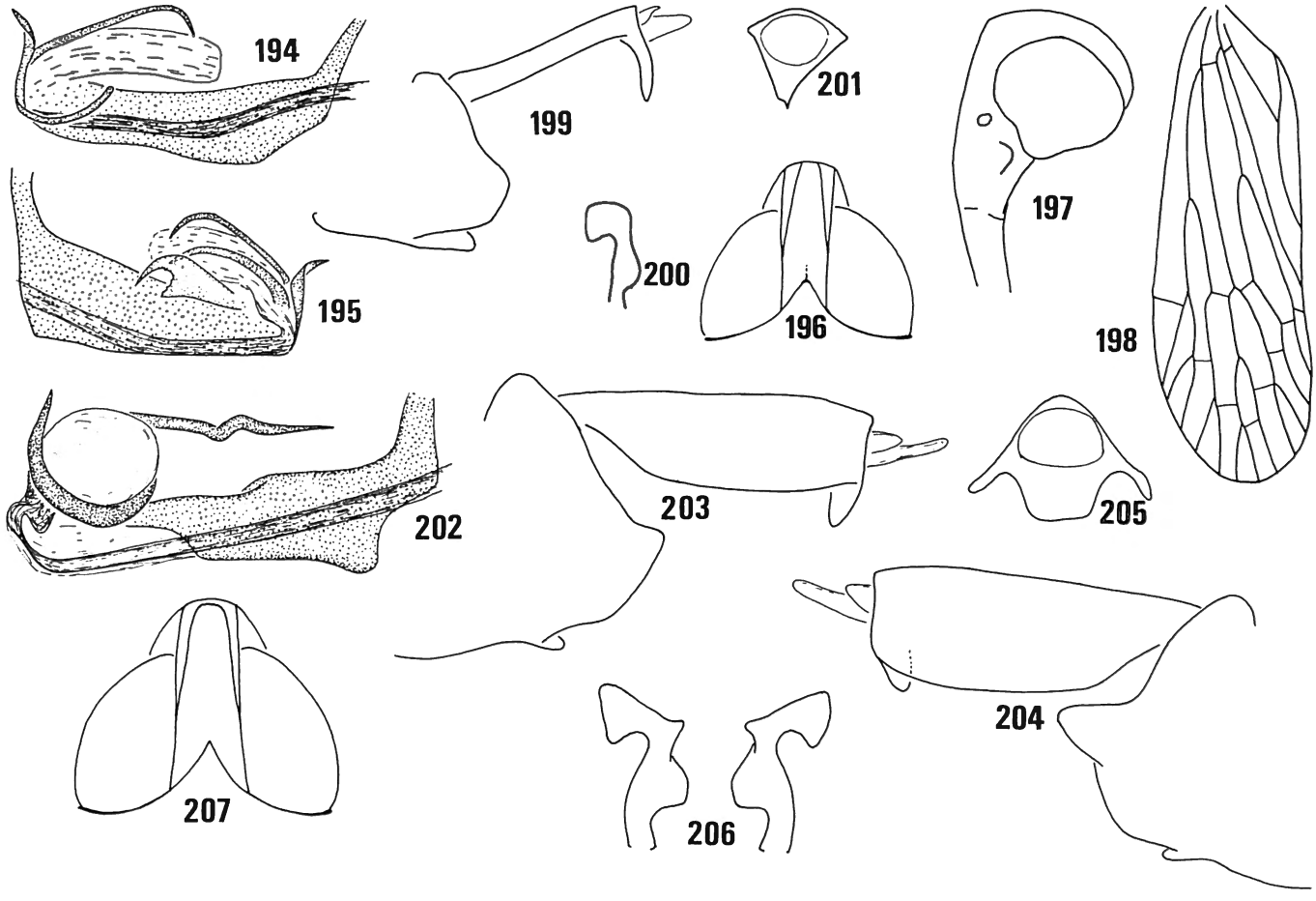
Holotype ♂, Larat, F. Muir, XII.1907, BPBM (examined).

Oliarus acuminatus Muir

(Figs 194-201)

Oliarus acuminatus Muir, 1924 : 524; Pl. 2, figs 17a-b.

Head yellow. Vertex 2.6 times as long as broad, lateral margins prominent and surface of vertex thereby strongly excavated, subapical keel U-shaped, forking at 0.4 distance of base and both halfs running straight to apical border; median keel only rudimentary developed at base.



Figs 194-201 : Oliarus acuminatus *Muir - 194-195 : aedegus, right and left lateral view, holotype; 196 : head, dorsal view; 197 : head, lateral view; 198 : left tegmen; 199 : anal segment and pygofer; 200 : left genital style; 201 : anal segment, caudal view.*

Figs 202-207 : Oliarus borneensis *Muir - 202 : aedeagus, right lateral view, holotype; 203-204 : anal segment and pygofer, left and right lateral view; 205 : anal segment, caudal view; 206 : genital styles; 207 : head.*

The female of the type series is darker, and has a yellowish brown face and dark brown vertex. Pronotum yellow, mesonotum brown, yellowish brown between outer keels. Tegmina 3.2 times as long as broad, veins yellowish brown with very small concolorous granules; stigma yellow, apical veins brown; Sc+R forking slightly distad of Cu, r-m situated distad of first medial branch, 11 cells on apex; costal margin without granules. Legs yellow, chaetotaxy hind tarsi 7/5. Length ♂ : 6 mm; ♀ : 7 mm.

Male genitalia : anal segment, pygofer and genital styles symmetrical. Anal segment with an apical tapering process. Pygofer with a large lobe on lateral margins. Genital styles with a quadrate apex. Aedeagus with three slender spines and a plate-shaped process on left side. Female genitalia not examined.

Diagnosis :
This species can be recognised by the structure of the aedeagus, namelly by the presence of a characteristic plate-shape process on the left side; no closely related species have been observed.

Distribution :
Larat I.

Remark :
The reference "Type N° 1092" in the original description is considered as a holotype designation.

Material :
Holotype ♂, Larat I., F. Muir", BPBM (examined). Paratypes : 2 ♂♂, 4 ♀♀, same data as holotype, 1 ♀ examined, BPBM.

Oliarus borneensis Muir
(Figs 202-207)

Oliarus borneensis Muir, 1924 : 525, pl. 2, fig. 18.

Description :
Head black with yellowish keels. Vertex twice as long as broad, without median longitudinal keel, subapical keel U-shaped, forking from lateral margin at 0.5 dis-

tance of base. Pronotum yellowish. Mesonotum black with keels slightly tinged with yellow. Tegmina three times as long as broad, hyaline with yellowish veins; veins smooth, covered with very small granules, stigma and veins embrowned in apical part; costal margin not granulate, Sc+R forking at same level as Cu, r-m forking distad of first medial branch, apex with 11 cells. Legs yellowish, chaetotaxy hind tarsi 7/5. Length : 7.6 mm.
Male genitalia : anal segment with a small apical lobe. Pygofer asymmetrical, right lateral margin more produced than left side. Genital styles as illustrated in fig. xx. Aedeagus with two spines on right side : one long spine slightly sinuate in middle, and a second curved in a semi-circle.
Female genitalia not examined.

Diagnosis :
O. borneensis can be recognised from any other species by the form of the aedeagus. No closely related species have been observed.

Remark :
The reference "type N° 1094" in the original description is considered as a holotype designation.

Distribution :
Borneo.

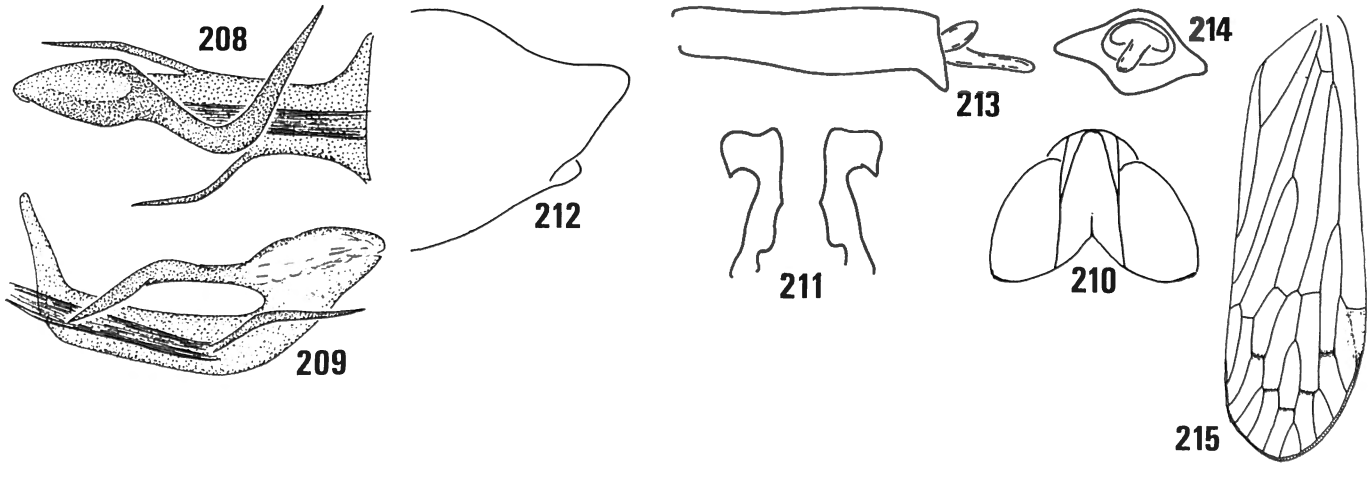
Material :
Holotype ♂, Borneo, Sandakan, Baker, BPBM (examined). Paratypes : 1 ♀, same locality, BPBM (not examined).
Additional : 2 ♂♂, North Borneo, Ranau, 22-25.II.1959, BPBM.

Oliarus walkeri (STÅL)
(Figs 208-215)

Cixius walkeri STÅL, 1859 : 272.
Oliarus walkeri; STÅL, 1862 : 306.

Face yellow, frons embrowned near frontoclypeal suture. Labium reaching to hind margin of coxae. Vertex yellowish brown with paler keels, 1.7 times as long as broad, subapical keel U-shaped, forking from lateral margin at 0.4 distance of base, both sides going straight to apex and fused with it; median keel developed at base. Pronotum yellow, brown fumated at borders, mesonotum with five distinct keels, black, space between outer keels yellowish brown and forming two longitudinal bands. Tegmina hyaline, 3.4 times as long as broad, veins yellow, brown in apical part, smooth, covered with very small granules; costal margin not granulate, costal cell narrow, Sc+R forking distad of Cu, r-m forking distad of first medial branch, apex with 10 cells (lectotype), 11 cells in another specimen by the fact that the outer apical vein is branched at the tip. Legs yellow, chaetotaxy hind tarsi 7/5. Length : 5.7 mm.
Male genitalia : anal segment, pygofer and genital styles as in fig. xx-xx, symmetrical. Aedeagus with three spinose processes, one large process on apex and recurved cephalad, the others on respectively the left and right side of the periandrium.
Female genitalia not examined.

Diagnosis :
This species can be recognised by the structure of the aedeagus; no closely related species have been observed.



Figs 208-215 : Oliarus Walkeri *(STÅL) - 208-209 : aedeagus, dorsal and lateral view, specimen Sarawak; 210 : head; 211 : genital styles; 212 : pygofer; 213 : anal segment; 214 : anal segment, caudal view; 215 : right tegmen.*

Distribution :
Malacca

Material :
Lectotype ♂, here designated, Malacca, NR (examined).
Paralectotype : 1 ♀, Manilla, NR (examined).
Additional : 1 ♂, Sarawak, Semongoh For. Res., 1°25'N 110°17'E, 15-19.XI.1976, BMNH.

Oliarus proprius MUIR
(Figs 216-220)

Oliarus proprius MUIR, 1924 : 519; pl 2, figs 10a-b.

Face brown to black with yellowish keels. Vertex black, keels paler, 1.9 times as long as broad, subapical keel U-shaped, forking from lateral border at 0.7 distance of base and fused with apical border in one point; median keel rudimentary developed at base. Pronotum brown. Mesonotum including keels black. Tegmina hyaline, 3.5 times as long as broad, veins yellow, apical and transverse veins fumated with brown, costal margin yellow, without granules, Sc+R forking distad of Cu, r-m situated distad of first medial branch, apex with 11 cells. Legs yellow, chaetotaxy hind tarsi 7/5. Length : 7 mm.
Male genitalia : anal segment without an apical process. Pygofer of holotype damaged. Genital styles with an elongate, tapering apex. Aedeagus with four spines at apex and one spine on base of periandrium on dorsal margin; one small tooth on dorsal margin of periandrium on 1/3 distance from base.
Female genitalia unknown.

Diagnosis :
The species can easily be recognised by the elongate shape of the genital styles and by the structure of the aedeagus. No closely related species have been observed.

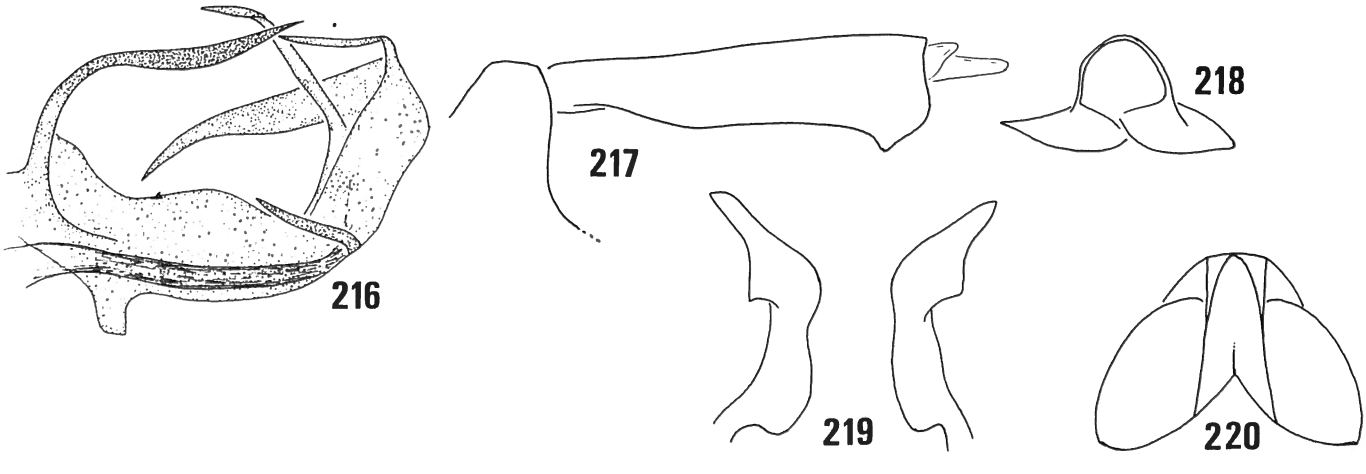
Distribution :
Java.

Material :
Holotype ♂, Java, Buitenzorg, F. MUIR, BPBM (examined).

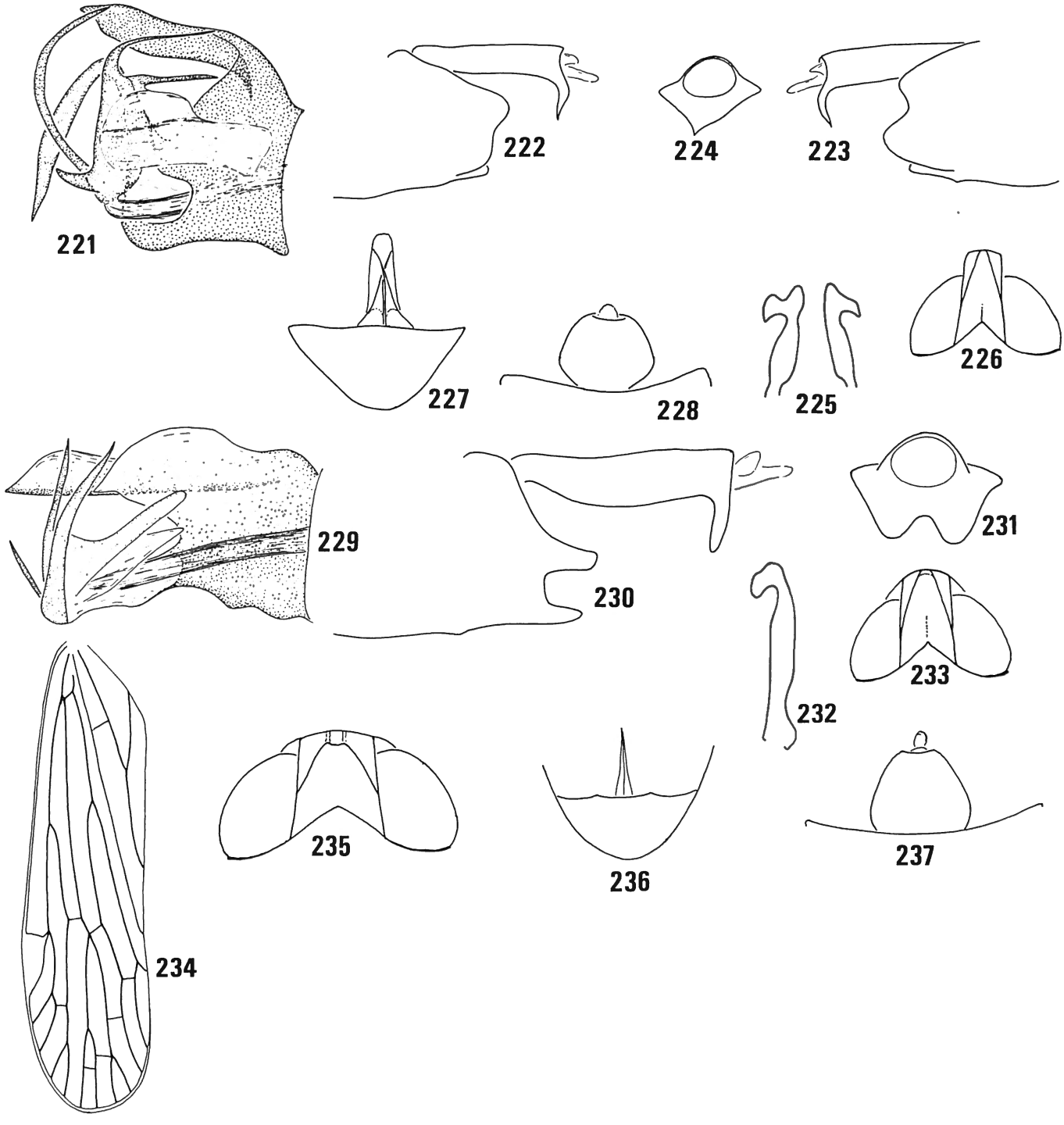
Oliarus impeditus MUIR
(Figs 221-228)

Oliarus impeditus MUIR, 1924 : 521; pl. 2, fig. 13a, 13b.

Description :
Face and vertex shining black with yellow keels. Vertex 1.5 times as long as broad, subapical keel forking from lateral margin at 0.5 distance of base and fused with apex in middle; basal median longitudinal keel very obsolete, almost lacking. Pronotum black, keels broadly bordered with yellow; mesonotum black, longitudinal keels somewhat tinged with yellow. Tegmina 3.2 times as long as broad, hyaline, veins yellow with small concolorous granules, apical and transverse veins embrowned; stigma yellowish; Sc+R forked distad of Cu fork, r-m forking basad of first medial branch, apex with 10 cells. Legs yellowish with brown femora, chaetotaxy hind tarsi 7/5. Length 4.9 (♂) 6.3 (♀) mm.
Male genitalia : asymmetrical; anal segment with a tapering apical lobe. Pygofer with left lateral margin less excavated than right one. Genital styles with apex of left genital style more excavated than right one. Aedeagus with a large process on left side of base and 5 spines as illustrated in fig. xx.
Female genitalia : pregenital sternite with caudal border straight. Ovipositor slightly longer than anal segment; the latter in dorsal view between trapezoid and oval, half as wide as pygofer.



Figs 216-220 : Oliarus proprius *MUIR - 216 : aedeagus, left lateral view; 217 : anal segment and dorsal margin of pygofer 218 : anal segment, caudal view; 219 : genital styles; 220 : head.*



Figs 221-228 : Oliarus impeditus *Muir - 221 : aedeagus, specimen Camarines; 222-223 : anal segment and pygofer, lateral view; 224 : anal segment, caudal view; 225 : genital styles; 226 : head; 227-228 : female genitalia.*

Figs 229-233 : Oliarus proimpeditus *Muir - 229 : aedeagus, dorsal view; 230 : anal segment and pygofer 231 : anal segment, caudal view; 232 : left genital style; 233 : head.*

Figs 234-237 : Oliarus fuscipennis *Muir - 234 : left tegmen, holotype; 235 : head, holotype; 236-237 : female genitalia.*

Diagnosis :
O. impeditus belongs to a group of species with large basal processes on the periandrium. This group consists of *O. impeditus, O. proimpeditus, O. pallidifrons.* All these species can be easily distinguished from each other by the number and shape of the spines on the aedeagus. It is easily distinguished from *O. proimpeditus* by the presence of five spines in *O. impeditus* and three in *O. proimpeditus.* Furthermore the apical lobe of the anal segment is tapering in *O. impeditus* while excavated in *O. proimpeditus,* the lateral margins of the pygofer are not or only slightly incised in *O. impeditus* (deeply excavated in *O. proimpeditus*) and the genital styles are shorter.

Remark :
The reference "Type N° 1087" in the original description is considered as a holotype designation.

Distribution :
The Philippine Islands.

Material :
Holotype ♂, Phil. Isl., Dapitan, Mindanao, Baker, BPBM (examined). Paratypes : 1 ♀, same locality, labeled "allotype", BPBM; one further ♂ listed in the original description.
Additional : 1 ♂, P. I., Camarines Sur, Mt Iriga 100 m, 23.III.1962, H. M. Torrevillas; 1 ♂, P. I., Mindanao, Z. Del Sur, Milbuk, 10.VIII.1958; 1 ♂, 1 ♀, Phil. Isl., Mindoro I. : 6 km N of Puerto Galera, 75 m, 9.VI.1984, R. Greenfield, BPBM.

Oliarus proimpeditus Muir
(Figs 229-233)

Oliarus proimpeditus Muir, 1924 : 520.

Description :
General colour black, borders and keels of head and pronotum yellowish. Vertex as long as broad, black with yellow keels and borders and a very obsolete median keel at base; subapical keel forking at 0.4 distance of base, and each part running straight to apex. Surface of face slightly corrugated transversely. Mesonotum with five sharp keels, concolorous, only the two submedian keels slightly marked with yellow. Tegmina 3.4 times as long as broad, hyaline with yellow veins, transverse veins and tips of apical veins fumated with brown; costal margin yellow, covered with very small inconspicuous granules, stigma yellow; Sc+R forking distad of Cu, r-m situated basad of first medial branch, apex with 10 cells. Legs fumated with brown, femora dark brown, chaetotaxy hind tarsi 7/5. Length 5.5 mm.
Male genitalia : anal segment, pygofer and genital styles symmetrical; genital styles very narrow. Aedeagus apically with three spines and a finger-shaped membraneous process running parallel to flagellum; periandrium on left side produced into a transparant broad process and a further large spinose process inserted near base on left side ventrally and directed caudad.
Female genitalia unknown.

Diagnosis :
Clearly distinguished from other species by the narrow shape of the genital styles and by the structure of the aedeagus, more particularly the presence of a large spinose process on left side.

Distribution :
Philippines.

Material :
Holotype ♂, Luzon, Baguio, Benguet, Baker, (no date), BPBM (examined).

Oliarus fuscipennis Muir
(Figs 234-237)

Oliarus fuscipennis Muir, 1924 : 513.
Oliarus fusciceps Metcalf, 1936 : 64. syn. n.

Frons dark brown between keels, postclypeus more yellowish, keels paler. Vertex 0.9 times as long as wide, flat, lateral margins not elevated, brown with yellow keels, subapical keel forking from lateral margin at 0.5 distance of base and connected with apical border by two short longitudinal keels; labium yellowish, terminal segment embrowned. Pronotum yellow, mesonotum brown with paler keels, area between the two outer keels paler. Tegmina very long, 3.8 times as long as broad, hyaline brown, costal margin without granules, straight, and Sc forking slightly distad of Cu, r-m situated basad of first medial branch, apex with 10 cells; all veins yellow with concolorous granules. Legs yellow, chaetotaxy hind tarsi 7/5. Length : 6.4 mm.
Male unknown.
Female genitalia : (not dissected) pregenital sternite with two small submedian teeth. Anal segment small, oval, size about one third of width of pygofer in dorsal view. Ovipositor short, slightly shorter than anal segment in lateral view, with first pair of valvulae gently becomming thinner to apex, as long as third pair.

Diagnosis :
This species does not resemble any other species known to me. It can be characterized by the exceptionally long tegmina, 3.8 times as long as wide and embrowned over its whole surface. The vertex is very flat and its habitus somewhat remembers to a *Pentastiridius* species, although the chaetotaxy of the hind tarsi is 7/5.

Remark :
Oliarus fusciceps METCALF, 1936 is a replacement name because at that time, *Oliarus fuscipennis* MUIR, 1924 was in homonymy with *Oliarus fuscipennis* (STÅL, 1855). The latter species was recently transferred to *Norialsus* by myself (VAN STALLE, 1986) and since both were secondary homonyms there is no reason to maintain the replacement name *fusciceps*.

Distribution :
Java.

Material :
Holotype ♀, "Java, IV.1914", BPBM.

Oliarus velox MATSUMURA
(Figs 238-243)

Oliarus velox MATSUMURA, 1914 : 425.
Oliarus velox; TSAUR, HSU & VAN STALLE, 1988 : 55, fig. 11, A-G.

Description :
Head ochreous to brown, with paler keels. Vertex 2.1 times as long as broad, surface deeply excavated and hereby forming prominent lateral keels; subapical keel U-shaped, meeting anterior border and thereby divided into two equal parts, forking from lateral margin at 0.5 distance from base. Pronotum pale ochreous; mesonotum brown, on each side with two paler longitudinal streaks between the two outer keels. Tegmina 3.2 times as long as broad, milky hyaline, veins yellowish with concolorous granules; stigma and transverse veins fumated with brown; costal margin yellow, without granules; Sc+R forked at the same level as Cu, r-m distad of first medial branch, apex with 11 cells. Legs yellow, chaetotaxy hind tarsi 7/5. Length : ♂ : 5.4-5.7, ♀ : 6.5-7.3 mm.
Male genitalia : pygofer and genital styles symmetrical; anal segment excavated at apex and slightly asymmetrical. Aedeagus with four spines : three long and straight spines inserted at apex and directed cephalically, and a fourth hook- shaped spine directed caudad.
Female genitalia : not examined.

Diagnosis :
O. velox somewhat resembles *O. hopponis* and *O. boninensis* in the structure of the vertex, the nervation of the tegmina and the general pattern of the male genitalia; *O. velox* is brown instead of black. The main differences are found in the structure of the male genitalia : in *O. velox* the aedeagus bears a hook-shaped spine while such a spine is lacking in *O. hopponis* and *O. boninensis*.

Remark :
In 1988 we (TSAUR, HSU & VAN STALLE) have illustrated the female genitalia of this species. While compiling this work on oriental Pentastirini I now wonder if the figured female is conspecific with *velox*. The short first valvulae and fused third valvulae are usually characteristic of *Oecleopsis* species. On the other hand the resemblances between species of the *velox* group and *Oecleopsis* are striking, although there are basic differences in the shape of the male genitalia.

Distribution :
Taiwan; TSAUR, HSU & VAN STALLE (1988) list several localities from Taiwan other than the type locality.

Material :
Lectotype ♂, designated by TSAUR, HSU & VAN STALLE (1988), "Formosa, MATSUMURA, Koshun, 5.VII.1906", HU (examined) Paralectotype : 1 ♀, same data.

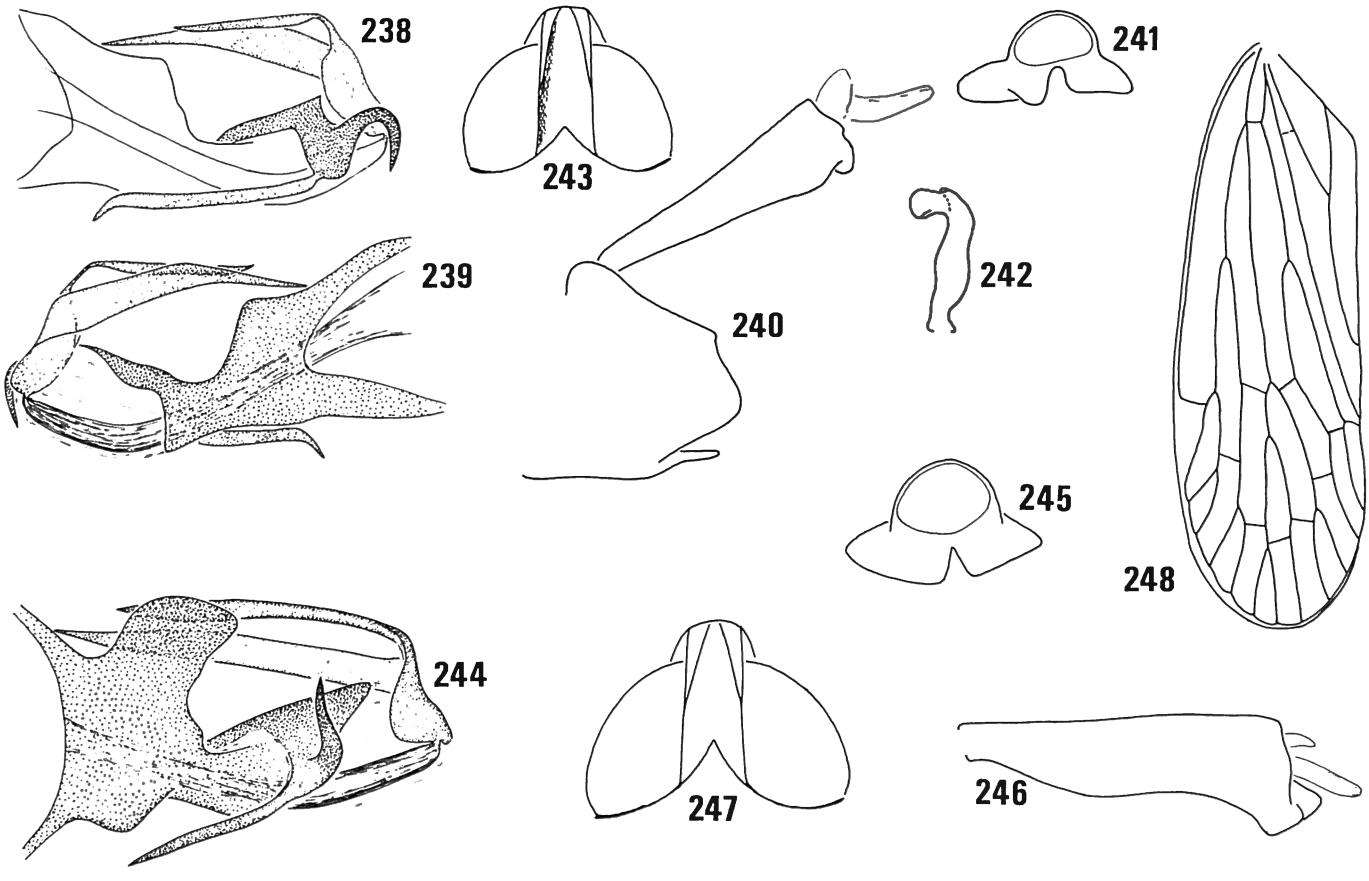
Oliarus boninensis MATSUMURA
(Figs 244-248)

Oliarus boninensis MATSUMURA 1914 : 423.
Oliarus boninensis MATSUMURA; FENNAH, 1956b : 83, figs 17, p, q.

Description :
Face two-coloured, frons brown, postclypeus paler, ochreous, and keels yellowish; rostrum fuscous. Vertex twice as long as broad, surface deeply excavated, and keels yellow; no median keel at base; subapical keel forking at 0.5 distance from base. Mesonotum, including longitudinal keels, black. Tegmina 3.1 times as long as broad, milky hyaline and slightly yellowish; Sc+R forked at same level as Cu, r-m distad of first medial branch, apex with 11 cells; veins yellowish brown, apical veins and stigma fuscous; costal margin yellowish brown, with a few very small granules between base and stigma. Legs yellowish, chaetotaxy hind tarsi 7/5. Length : 6-6.5 mm.
Male genitalia : pygofer and genital styles like those of *O. velox* and *O. hopponis*; anal segment as illustrated, with a deep incision at apex. Aedeagus with a large lobe on the left side of the basal periandrium, two long spines at apex, and two short spines on ventral margin, as illustrated in fig. xx.

Diagnosis :
O. boninensis is closely related to *O. velox*. It differs from this species in the two-coloured face and in the presence of a large lobe on the left side of the periandrium.

Remarks :
MATSUMURA lists 8 specimens in his original description of this species; five of these were examined by me and from these series a lectotype was selected.



Figs 238-243 : Oliarus velox MATSUMURA - *238-239 : aedeagus, lectotype, ventral and dorsal view; 240 : anal segment and pygofer; 241 : anal segment, caudal view; 242 : left genital style; 243 : head.*

Figs 244-248 : Oliarus boninensis MATSUMURA - *244 : aedeagus, lectotype, ventral view; 245 : anal segment, caudal view; 246 : anal segment, left lateral view; 247 : head; 248 : left tegmen.*

Distribution :
Bonin I.

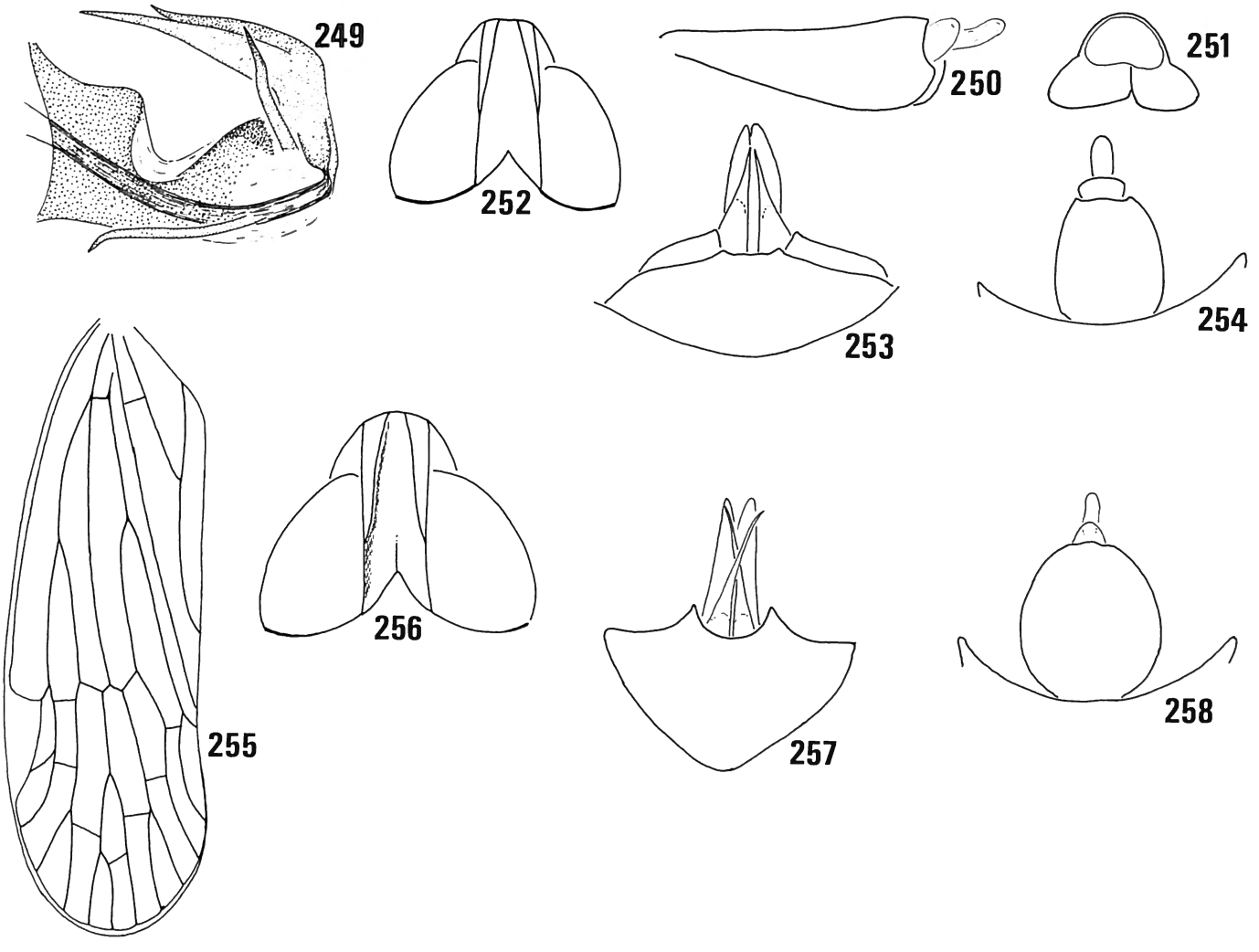
Material :
♂ lectotype, here designated, Ogasawara, 20.VII.1905, MATSUMURA, HU (examined). Paralectotypes : 4 ♂♂, same data as lectotype, HU (examined).

Oliarus hopponis MATSUMURA
(Figs 249-254)

Oliarus hopponis MATSUMURA 1914 : 427.
Oliarus hopponis; TSAUR, HSU & VAN STALLE, 1988 : 63, figs 16, A-C.

Description :
General colour black; head and prontoum black with yellowish margins and keels. Vertex 2.1 times as long as broad, subapical keel deeply excavated, fused with apex and thereby divided into two equal parts, forking from lateral margin at 0.5 distance from base. Mesonotum including mesonotal keels totally black. Tegmina 3 times as long as brown, slightly yellowish; veins yel« lowish to brown, covered with inconspicuous and concolorous granules; stigma, and apical and transverse veins fumated with brown; costal margin yellowish to brown, without granules, Sc+R forked slightly distad of Cu, r-m distad of first medial branch, apex with 11 cells. Legs yellowish, chaetotaxy hind tarsi 7/5. Length : 5.6- 6.2 mm; length tegmen : 4.5-5 mm.
Male genitalia : pygofer and genital styles like those of *O. velox.* Anal segment slightly differing in the structure of the apex in the specimen from Taitung (fig. xx), where the excavation is compressed, but distinctly excavated in other specimens, similar to *O. velox.* Aedeagus with four long spines, without a hook-shaped spine as is the case in *O. velox.*
Female genitalia : pregenital sternite with two small, triangular submedian lobes. Ovipositor with three pairs os valvulae, second pair thin and as long as first pair, third pair not fused together. Anal segment oblong, 1.2 times as long as broad.

Diagnosis :
O. hopponis is closely related to *O. velox* and *O. boninensis.* In the female genitalia it is easily distinguished by the presence of long valvulae while those of *O. velox*



Figs 249-254 : Oliarus hopponis *Matsumura* - *249 : aedeagus, lectotype, ventral view; 250-251 : anal segment, left lateral and caudal view; 252 : head; 253-254 : female genitalia, ventral and dorsal view.*

Figs 255-258 : Oliarus cucullatus *Noualhier* - *255 : left tegmen; 256 : head, lectotype; 257-258 : female genitalia, lectotype, ventral and dorsal view.*

and *O. boninensis* are reduced. Furthermore *O. hopponis* is distinguished from *O. velox* in the black colour (generally brown in *O. velox*) and in the absence of a hook-shaped spine on the aedeagus. *O. hopponis* differs from *O. boninensis* in the absence on the aedeagus of the bifurcate process on the ventral side and in the absence of a large lobe on the left side of the periandrium. *O. hopponis* might be related to *O. cucullatus* but the male genitalia from the latter are unknown. They resemble each other very much in non- genitalic characters. In the female genitalia, the submedian processes of the pregenital sternite are larger in *O. cucullatus* than in *O. hopponis*.

Distribution :
Taiwan.

Material :
♀ holotype, "Formosa, Matsumura, Hoppo, 7.VIII.1906", HU (exammined). Additional : 1 ♂, Taiwan, Taitung Co. Chipen, 31.III.1985, W. J. Wu, sweep grass, NCSU; 1 ♂, 1 ♀, Formosa, Hassenzan, 21.VI.1932, NCSU; 1 ♂, Hokki, 15.VI.1932, L. Gressit, NCSU.

Oliarus cucullatus Noualhier
(Figs 255-258)

Oliarus cucullatus Noualhier, 1896 : 255.
Occleus [sic] *cucullatus*; Melichar, 1902 : 88.
Oliarus cucullatus; Noualhier & Martin, 1904 : 180; pl. XI, figs 7, 8; Fennah, 1956 : 453, figs 3, G, H; Chou Io *et al.*, 1985 : 23, fig. 20.
Oecleus cucullatus; Emeljanov, 1971 : 621.

Face yellowish brown, median ocellus visible. Vertex 2.6 times as long as broad, surface strongly hollowed out, black, with dark, prominent lateral keels; subapical

keel branching from lateral margin at 0.4 distance from base. Pronotum fumated with brown, all keels and borders broadly bordered with yellow. Mesonotum black, keels slighlty tinged with yellow. Tegmina hyaline, 3.2 times as long as broad, costal margin without granules, Sc+R forking slighty distad of Cu, r-m distad of first medial branch, apex with 11 cells; veins, stigma and margin brown, apical margin and transverse veins fumated with brown. Legs yellow, chaetotaxy hind tarsi 7/5. Length : 7.2 mm; tegmina : 5.7 mm.
Male unknown.
Female genitalia : pregenital sternite with two submedian teeth separated by a circular median excavation. Ovipositor as long as anal segment, with three pairs of valvulae, first pair gently narrowing distally, as long as third pair. Anal segment oval, half as broad as pygofer.

Diagnosis :
It is difficult to place this species taxonomically by lack of male specimens.
According to me it is most closely related to *O. hopponis* as it agrees well in the general shape of non-genitalic structures and in the shape of the female genitalia. *O. cucullatus* is larger in size (see measurements) and the submedian processes on the pregenital sternite are equally larger.

Remark :
EMELJANOV (1971) suggests that *O. cucullatus* might belong to Oecleopsis. The shape of the female genitalia however, especially the length of the first pair of valvulae, shows that this is not the case.

Distribution :
Cambodja; FENNAH redescribes the species based on material collected in China, but his species is undoubtedly *O. sinicus,* as he suggests in the diagnosis of his "cucullatus". The reference of Chou et al. is probably based on the same record.

Material :
Lectotype ♀, here designated, "Cambodge, A. Pavie 1886", MNHN.

Oliarus exiguus MUIR
(Figs 259-266)

Oliarus exiguus MUIR, 1924 : 6, pl. 2, fig. 19.

Description :
Head, pronotum, tegulae and abdomen black to dark brown. Carinae on vertex and pronotum yellowish, those on mesonotum black or only faintly indicated with yellow. Vertex twice to 2.4 times as long as broad with slightly elevated lateral margins : subapical keel forking at 0.4 distance from base and lateral parts going straight to apex. Tegmina 2.9 times as long as broad, hyaline, veins yellowish brown with very small, concolorous granules; costal margin not granulate; Sc+R forking at same level as Cu, r-m distad of first medial branch, apex with 12 cells. Legs ochreous, chaetotaxy hind tarsi 6-7/5. Length : 6.5-7 mm.
Male genitalia : anal segment and genital styles symmetrical, pygofer slightly asymmetrical, lateral margins sinuate, more excavated on right side than on left side. Anal segment without a distinct apical lobe. Aedeagus with two large flat processes on ventral margin, a spine on right margin directed caudad, and three spines inserted on apex and curved inward.
Female genitalia : no material is available which is topotypic with the males listed above. According to the observations made on the other material the females have two submedian teeth on the caudal margin of the pregenital sternite.

Diagnosis :
Although the structure of the aedeagus recalls that of the *spinosus* group it differs from these species by the lack of a narrow costal cell and by the narrow vertex. It somewhat resembles *O. angsensis* from which it differs in the structure of the aedeagus, namely the presence of a spine on the right side of the periandrium in *O. exiguus,* and the absence in the same species of an excavation on the left side of the pygofer.

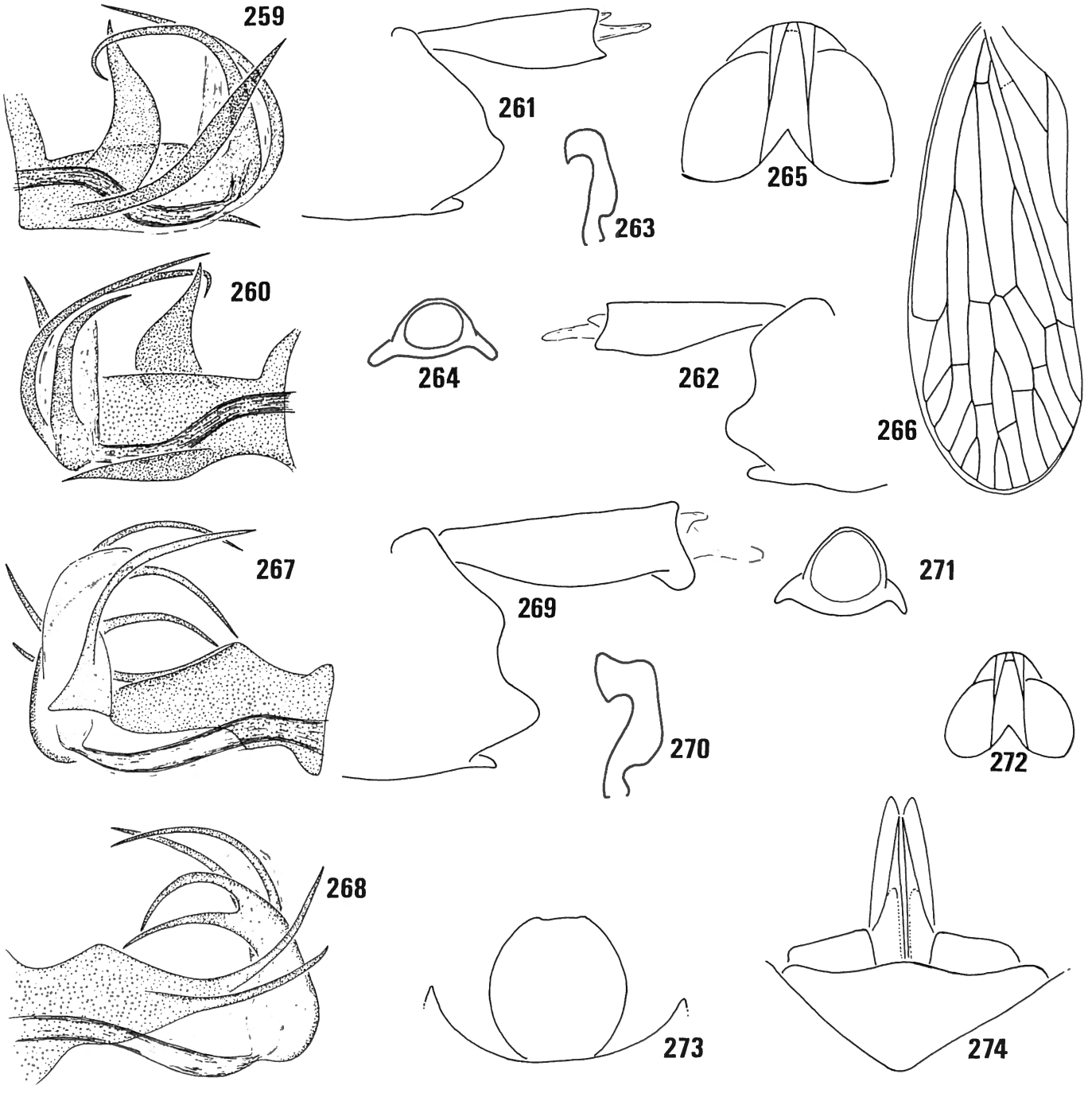
Remark :
The mention "type N° 1095" in the original description is considered as a holotype designation.

Distribution :
Malaya, Borneo.

Material :
Holotype ♂, Singapore, coll. Baker, BPBM. Paratype : 1 ♂, same loc., not examined, BPBM.
Additional : 1 ♂, 2 ♀, Malay Penin. West Coast, Pulan Angsa, 16.X.1926, BMNH; 1 ♂, Borneo, Sarawak, Sarikei Distr., Rejang Delta, 15-25.VII.1958; 4 ♀, Borneo, Sarawak, Bau Distr., Pangkalan, Tebang, 300-450 m, 7.IX.1958, Bidi, 90-240 m, 2.IX.1958, Lake Area, 30.VIII.1958, BPBM.

Oliarus angsensis sp. n.
(Figs 267-274)

Head, pronotum and tegulae yellow. Mesonotum dark brown to black, area between the two outer keels ochreous. Vertex 2.3 times as long as broad, subapical keel forking from lateral margin at 0.5 distance of base; Tegmina 2.9 times as long as broad, hyaline, veins yellow and brown, stigma yellowish brown, costal margin without granules, Sc+R forking at same level as Cu,



Figs 259-266 : Oliarus exiguus *Muir* - *259-260 : aedeagus, holotype, ventral and dorsal view; 261-262 : anal segment and pygofer, left and right lateral view; 263 : left genital style; 264 : anal segment, caudal view; 265 : head; 266 : left tegmen.*

Figs 267-274 : Oliarus angsensis *sp. n.* - *267-268 : aedeagus, holotype, dorsal and ventral view; 269 : anal segment and pygofer; 270 : left genital style; 271 : anal segment, caudal view; 272 : head; 273-274 : female genitalia : dorsal and ventral view.*

r-m distad of first medial branch, apex with 12 cells. Legs yellow, chaetotaxy hind legs 7/5. Length : 8.8-9 mm.

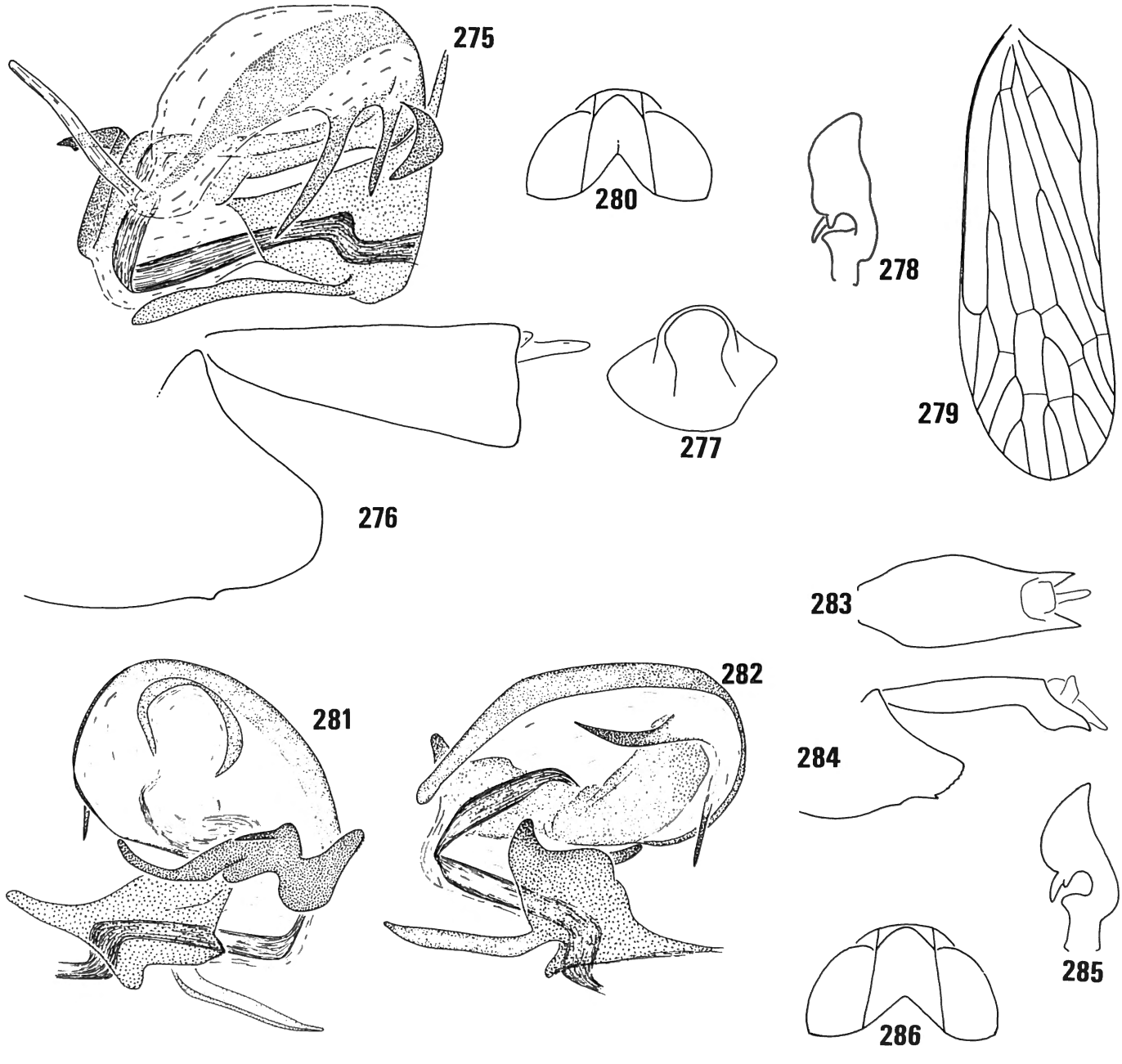
Male genitalia : anal segment, pygofer and genital styles symmetrical. Anal segment without a distinct apical lobe. Pygofer with an excavation on each lateral margin bordered by two blunt lobes. Genital styles as illustrated in fig. xx. Aedeagus with four spines running parallel to the flagellum, two of them fused at their base, and two spines inserted on the ventral margin of the periandrium and directed caudally, thereby surpassing the apex of the aedeagus.

Female genitalia : caudal border of pregenital sternite slightly protruding in middle. Ovipositor with first pair thickened over their basal half. Anal segment circular, half as broad as pygofer.

Diagnosis :
O. angsensis is closely related to *O. exiguus* from which it can be distinguished by the larger size : 8.8 mm instead of max. 7 mm in *O. exiguus*, in the pale colour of the head, and in the shape of the male genitalia; the pygofer has a distinct excavation on the lateral margins which is lacking in *O. exiguus*, and the aedeagus is different in the shape and the number of spines.

Distribution :
Malaya.

Material :
Holotype ♂, Malay Penin., W. coast Pulan Angsa, at light, 1926, BMNH. Paratypes : 1 ♂♂, 2 ♀♀, same data as holotype, BMNH. 1 ♂ same data as holotype, K.B.I.N.



Figs 275-280 : Oliarus kurseongensis *Distant* - *275 : aedeagus, right lateral view, specimen from Lebong; 276 : anal segment and pygofer; 277 : anal segment, caudal view; 278 : left genital style; 279 : left tegmen; 280 : head.*

Figs 281-286 : Oliarus tappanus *Matsumura* - *281-282 : aedeagus, left and right lateral view, lectotype; 283 : anal segment, dorsal view; 284 : anal segment and pygofer; 285 : left genital style; 286 : head.*

Oliarus kurseongensis DISTANT
(Figs 275-280)

Oliarus kurseongensis DISTANT, 1911 : 737.
Oliarus kurseongensis DISTANT; FENNAH, 1956a : 451, fig. 4, G-H.

Description :
General colour black, keels and margins of head and pronotum yellowish, keels on mesonotum black. Vertex as long as broad, subapical keel U-shaped but wider than long, forking at 0.7 distance of base, not fused with apex, median longitudinal keel rudimentary developed at base. Tegmina hyaline, 3.2 times as long as broad, veins ochreous, apical veins and stigma black; costal margin granulate, Sc+R forking distad of Cu, r-m forking basad of firs medial branch, apex with 10 cells. Legs yellowish brown, chaetotaxy hind tarsi 6/5. Length : 6.0 mm.
Male genitalia : anal segment, pygofer and genital styles symmetrical. Anal segment without apical lobe, pygofer on each side with a broadly rounded lobe, and without medioventral process. Genital styles as illustrated. Aedeagus with four spinose processes on right side of flagellum and two on left side; basal periandrium ventrally divided into two spoon-shaped processes.
Female unknown.

Remarks :
The specimens listed by FENNAH (1956) are another, closely related species from southern China.

Distribution :
India.

Material :
Lectotype ♂, here designated, E. Himalayas, Kurseong., BMNH (examined).
Additional : 1 ♂, Lebong, 6000-6600 ft, Darjiling distr., E. Himalayas, 13.VI.1914 "from ind. Mus.", "from Lord Carmichael's collection", BMNH;

Oliarus tappanus MATSUMURA
(Figs 281-286)

Oliarus tappanus MATSUMURA, 1914 : 424.
Oliarus tappanus; TSAUR, HSU & VAN STALLE, 1989 : 46, fig. 6A-H.

Description :
General colour black, carinae and margins, including carinae of mesonotum, yellowish. Vertex as long as broad, subapical keel arcuate, forking from lateral margin at 0.8 of base; no median longitudinal keel. Tegmina 3.1 times as long as broad, hyaline, veins yellowish, transverse veins fumated with brown; costal margin yellow, covered with concolorous granules, Sc+R forking slightly distad of Cu, r-m situated basad of first medial branch, apex with 10 cells. Abdomen brown, genital segments yellowsh. Legs infumated with brown, tarsi yellow, except for hind tarsi which are brown; chaetotaxy 7/5. Length : ♂ 5.4-5.9; ♀ 5.9-6.2 mm.
Male genitalia : symmetrical; pygofer with a rudimentary developed medioventral process. Aedeagus complex, as illustrated as in fig. xx.
Female genitalia : female paralectotype not dissected.

Diagnosis :
Related to *O. kurseongensis* in the structure of the vertex and general structure of the genitalia; it is easily distinguished from this species by details of the form of the aedeagus.

Distribution :
Taiwan.

Material :
Lectotype ♂ (examined), designated TSAUR, HSU & VAN STALLE, 1989, "Formosa, MATSUMURA, Tappan, 24.VI.1907", originally in same Sambucus as paralectotype, now placed on a separate needle, HU. Paralectotype : 1 ♀, same data as lectotype, HU.
Additional : 1 ♂, Taiwan, Tung-Pu, nr Poli, 8.XII.1963, leg. T. C. Maa, BPBM; several specimens collected in Taiwan, various localities, NCHU.

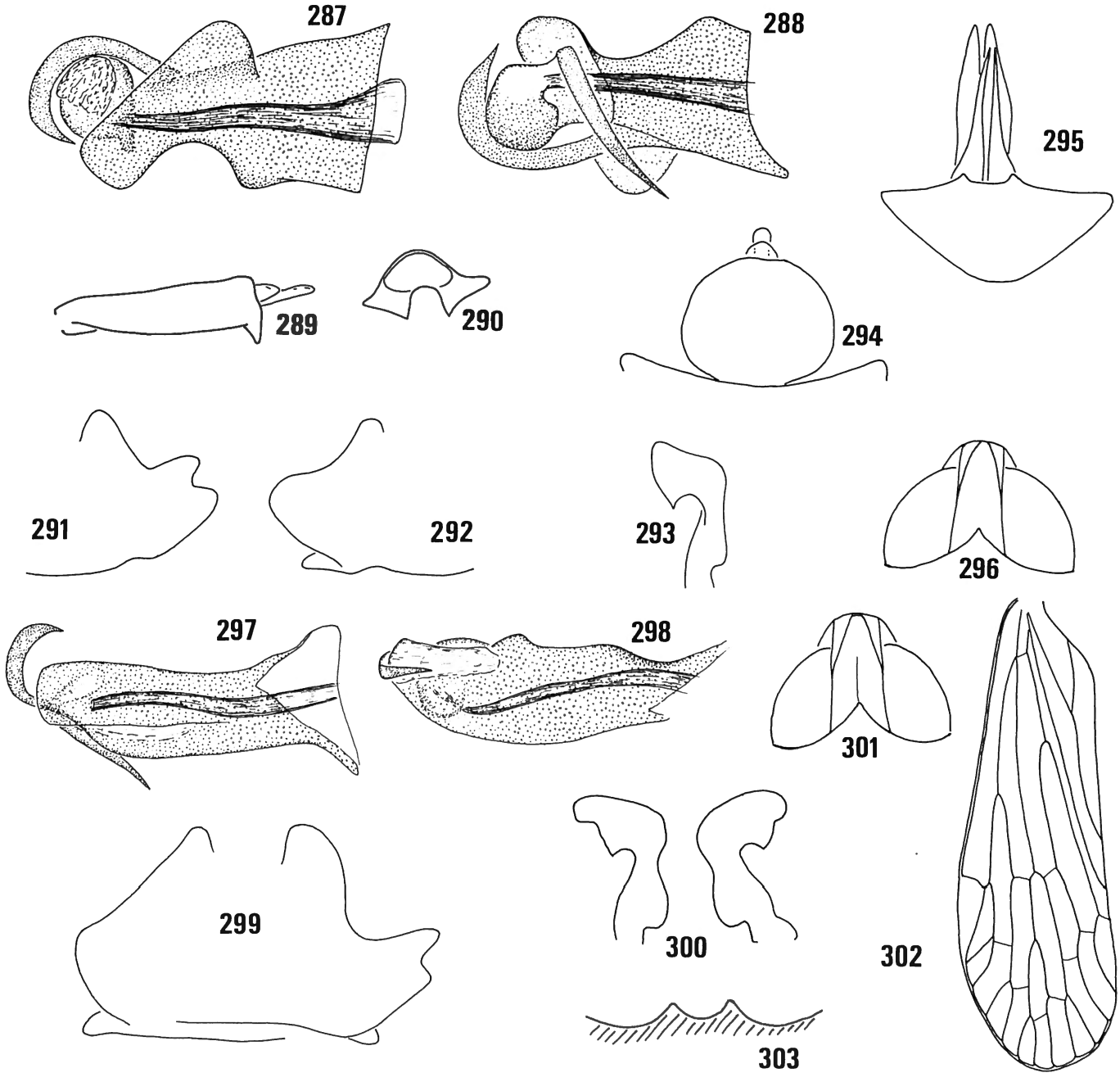
Oliarus anamalaii n. sp.
(Figs 287-296)

Description :
Colour black. Vertex black, keels tinged with yellow, 1.8 times as long as broad, with a slightly indicated median keel; subapical keel deeply excavated, U-shaped, middle touching apical border. Mesonotum black, with five concolorous keels. Tegmina 3.3 times as long as broad, Sc+R forked distad of Cu, r-m situated distad of first medial branch, apex with 11 cells; veins brown, with very small, concolorous granules; stigma brown, costal margin without granules. Legs embrowned, chaetotaxy hind tarsi 7/5. Length : 6.5-7 mm.
Male genitalia : anal segment with a small, deeply excavated apical lobe. Pygofer asymmetrical, right margin broadly rounded, left margin excavated at apex. Genital styles as illustrated. Aedeagus with two spinose processes, one inserted on right side and bent to left side along apex, and a second spine inserted apically on ventral margin and pointed to right side.
Female genitalia : pregenital sternite with two submedian teeth on caudal margin. Ovipositor with three valvulae, the first pair broad at base and gently narrowing to apex. Anal segment round in dorsal view, half as broad as pygofer.

Diagnosis :
Closely related to *O. stigma* from Sri Lanka, from which it differs in the other shape of the lobes on the sclerified periandrium.

Distribution :
India.

Material :
Holotype ♂, S. India, Cinchona, anamalai Hills (3500 ft), IV-V. 1957, P. S. Nathan, KBIN. Paratypes : 2 ♀, same data as holotype, KBIN; 1 ♂, S. India, Mysore, Nandridrug, T.V. Campbell, BMNH.



Figs 287-296 : Oliarus anamalaii *sp. n. - 287-288 : aedeagus, dorsal and ventral view, holotype; 289 : anal segment, lateral view; 290 : anal segment, caudal view; 291-292 : pygofer, left and right lateral view; 293 : left genital style; 294-295 : female genitalia; 296 : head.*

Figs 297-303 : Oliarus stigma *Motschulsky - 297-298 : aedeagus, ventral and right lateral view, lectotype; 299 : pygofer, left and right lateral view; 300 : genital styles; 301 : head; 302 : left tegmen; 303 : caudal border of pregenital sternite of female.*

Oliarus stigma (MOTSCHULSKY)
(Figs 297-303)

Cixius stigma MOTSCHULSKY, 1863 : 105.
Oliarus nuwarae DISTANT, 1911 : 737, syn. n.

Description :
Head black, keels of face and vertex yellowish. Vertex 1.3 times as long as broad, subapical keel U-shaped, touching apical border and forking from lateral margin at 0.5 distance from base; median keel obscure. Pronotum fumated with brown. Mesonotum black with five concolorous keels. Tegmina hyaline, 3.2 times as long as broad, hyaline, veins dark brown, somewhat paler basally, Sc+R forking distad of Cu, r-m situated distad of first medial branch, apex with 11 cells, costal margin without granules, stigma ochreous. Legs brown fumated, chaetotaxy hind tarsi 7/5. Length : 6-7 mm (specimens damaged).
Male genitalia : anal segment mutilated. Pygofer and genital styles asymmetrical; pygofer on right side with a rounded lobe, on left side with a more narrow lobe, incised apically. Left genital style on apex somewhat longer than right one. Aedeagus with two spines apically, one inserted on left side and curved to right side along apex, and a second one recurved to left side and pointed cephalically.
Female genitalia : (type not dissected) resembling those of *O. anamalaii*; anal segment oval in dorsal view, approximately half as broad as pygofer; ovipositor short, not longer than anal segment; pregenital sternite with two small submedian teeth.

Diagnosis :
O. stigma is closely related to *O. anamalaii* from which it can be easily distinguished by the other arrangement of the spines on the aedeagus.
At present there are five species known from Sri Lanka : *O. cingalensis* (female), *O. distanti* (female), *O. greeni* (male), *O. stigma* (male), and *O. tabrobanensis*. *O. cingalensis* and *O. tabrobanensis* have a very long ovipositor; moreover, *O. cingalensis* has a longitudinal brown band on the tegmina, not present in stigma. *O. greeni* (*Adzapala*) has a distinct colour pattern on the tegmina and in *O. distanti* the proportions and structure of the vertex are different. In *O. distanti* the subapical keel is straight while U-shaped in *O. stigma*.

Remarks :
Both syntypes of *O. stigma* are mutilated and the only available male was selected as lectotype. The aedeagus is probably intact but the reverse is not excluded. The lectotype ♀ of *O. nuwarae* completely agrees with the lectotype of *O. stigma* and the female genitalia are identical to those of the female paralectotype; accordingly *O. nuwarae* is considered here as a junior synonym of *O. stigma*.

The only labels on the syntypes of *O. stigma* are a handwritten label with the word "type" and two labels with a colour code. This code is explained in Kerzhner and Jansson (1985) : the male specimen selected as lectotype has a label "type", a dark-red square which refers to "Mt Patannas" and a yellow circle which refers to "Ceylon". The other specimen listed here as paralectotype bears a light red square (= Nuwara Eliya) and a yellow circle (= Ceylon). In MOTSCHULSKY (1863) the species is listed from "Nura-Ellia (= Nuwara-Eliya) and Patannas", the last mentioned name referring to dry areas near Nuwara-Eliya.

Distribution :
Sri Lanka.

Material examined :
Lectotype ♂ *Oliarus stigma*, here designated, "type", ZMMU. Paralectotype *O. stigma* : 1 ♀, same data; lectotype ♀ *O. nuwarae*, here designated, "Ceylon, Nuwara Eliya, III-1911", BMNH.

Oliarus simlae DISTANT
(Figs 304-310)

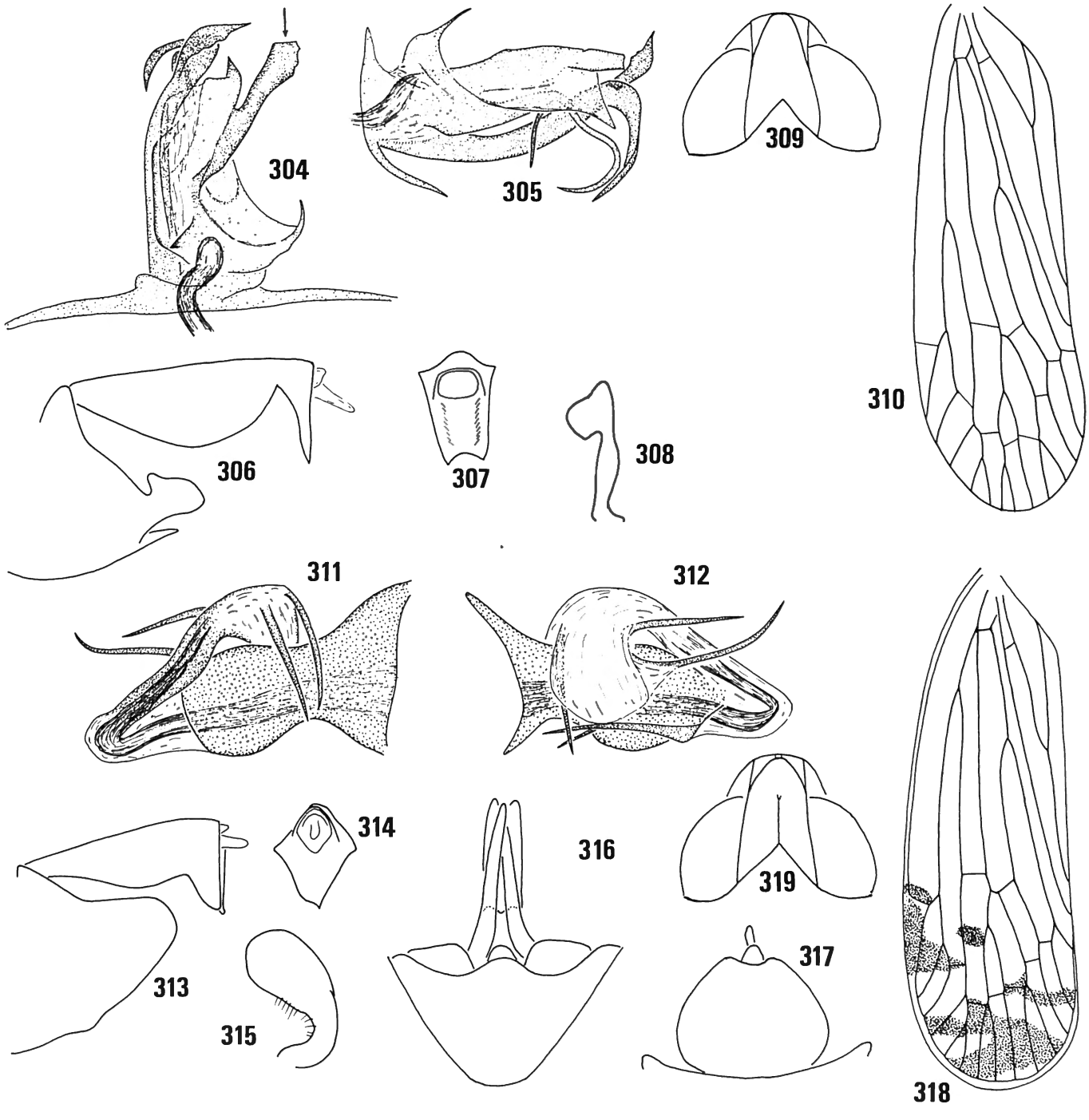
Oliarus simlae DISTANT, 1911 : 737.

Frons black, clypeus contrasting with frons, yellowish brown, keels yellow. Labium yellowish brown, last segment black. Vertex black with yellow keels, as long as broad, subapical keels forking from lateral margin at 0.6 distance of base, U-shaped. Pronotum fumated with black. Mesonotum black with yellowish keels. Tegmina hyaline, veins yellow, smooth, costal margin without granules. Apical veins and stigma brown, r-m forking basad of first medial branch, apex with 11 cells, Sc+R forking distad of Cu. Legs yellow, femora brown fumated, chaetotaxy hind tarsi 7/5. Length : 7 mm.
Male genitalia : anal segment, pygofer and genital styles symmetrical. Aedeagus as illustrated in fig. xx and xx, probably one spine damaged in the holotype as indicated by the arrow in fig. xx.

Diagnosis :
O. simlae is distinguished from any other species by the characteristic process on the pygofer and by the structure of the aedeagus; no closely related species have been observed.

Distribution :
India.

Material :
Lectotype ♂, here designated, Simla, BMNH (examined).



Figs 304-310 : Oliarus simlae *Distant - 304-305 : aedeagus, lectotype, dorsal and left lateral view; the arrow indicates the spine which might be broken off; 306 : anal segment and pygofer; 307 : anal segment, caudal view; 308 : left genital style; 309 : head; 310 : left tegmen.*

Figs 311-319 : Oliarus malayensis *sp. n. - 311-312 : aedeagus, holotype, right and left lateral view; 313 : anal segment and pygofer; 314 : anal segment, caudal view; 315 : left genital style; 316-317 : female genitalia; 318 : left tegmen; 319 : head.*

Oliarus malayensis sp. n.
(Figs 311-319)

Frons and postclypeus pale brown, anteclypeus dark brown. Vertex brown, 1.2 times as long as broad, subapical keel arcuate, forking from lateral margin at 0.7 dis« tance of base and fused with apex, median longitudinal keel present. Pronotum brown, mesonotum including keels black. Tegmina hyaline, 3.2 times as long as broad, veins brown with pale setae, costal margin with concolorous granules, Sc+R forking basad of Cu, r-m basad of first medial branch, apex with 12 cells; stigma brown and irregular brown spots present in the apical part. Legs

brown, chaetotaxy hind tarsi 7/5. Length : 7.6 mm.
Male genitalia : anal segment with an apical process; pygofer with a large blunt lobe on each side and a very small medioventral process. Genital styles as illustrated in fig. xx, comparatively short and thereby leaving the genital chamber open. Aedeagus with in total six slender spines on the flagellum, and one spine on the apex of the sclerified periandrium on left side.
Female genitalia : pregenital sternite produced in middle into a convex lobe. Valvulae of ovipositor with second pair reduced to one third of the length of the ovipositor and fused together. Anal segment ellipsoid, broader than half length of pygofer.

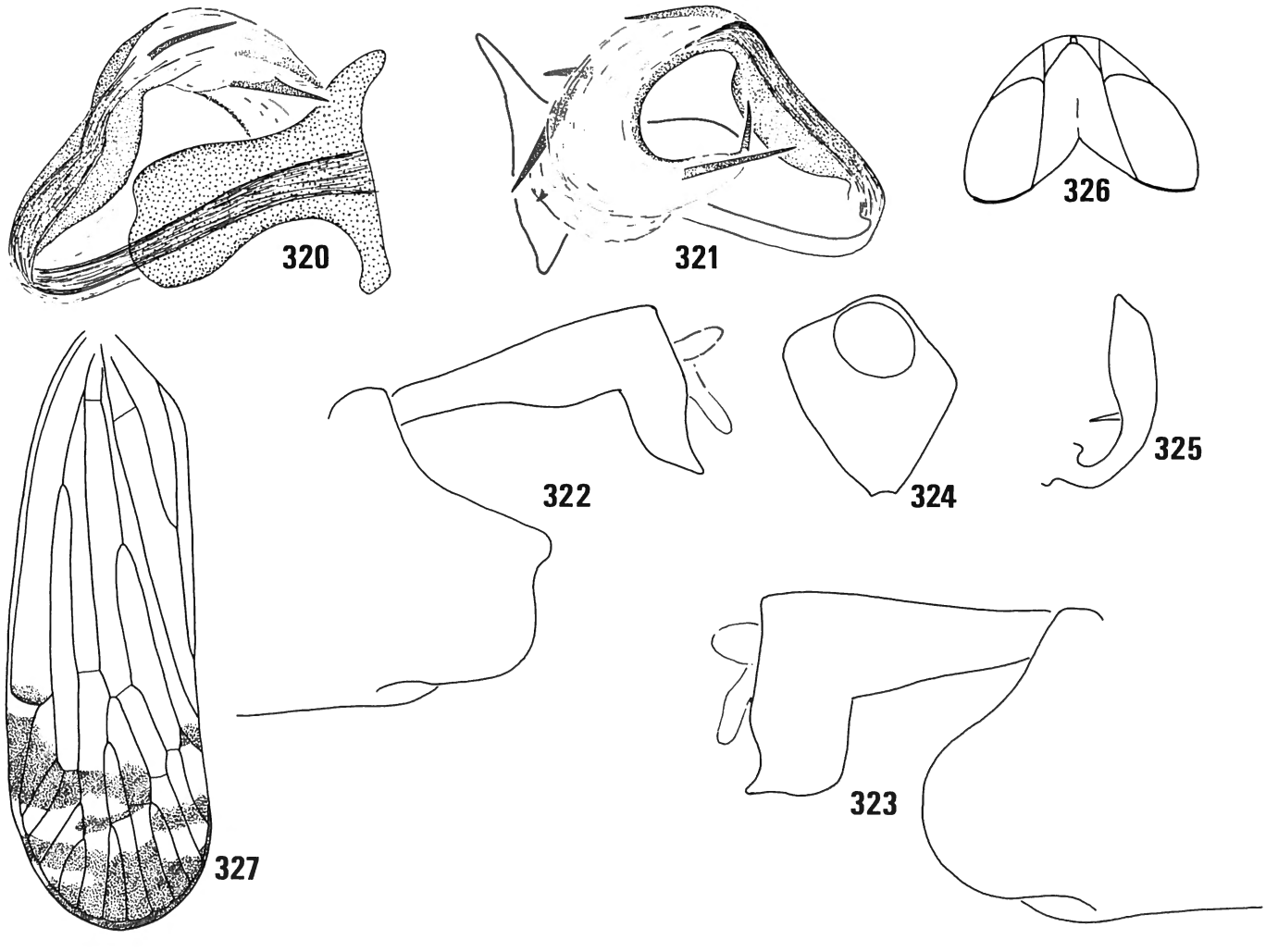
Diagnosis :
O. malayensis is characterized by the length, number and implantation of the spines on the aedeagus.

Distribution :
Malaysia.

Material :
Holotype ♂, Malay Penins., Pahang, F.M.S. Frasers Hill, 4000 ft, 19.IV.1938, BMNH. Paratypes : 1 ♂, 1 ♀, same loc., 13.VII.1936, 31.V.1936, 19.IV.1938, BMNH. 1 ♂ same loc., K.B.I.N.

Oliarus tamangensis sp. n.
(Figs 320-327)

Externally identical to *O. malayensis*; length 7.0 mm.
Male genitalia : anal segment slightly asymmetrical, with a large apical lobe. Pygofer asymmetrical, right margin curved in a semi-circle, left margin with a shallow excavation on top. Genital styles with an additional spine on apex. Aedeagus without spines on periandrium, flagellum in total with 5 slender spines and one small tooth.
Female unknown.



Figs 320-327 : Oliarus tamangensis *sp. n. - 320-321 : aedeagus, holotype, right and left lateral view; 322-323 : anal segment and pygofer; 324 : anal segment, caudal view; 325 : left genital style; 326 : head; 327 : left tegmen.*

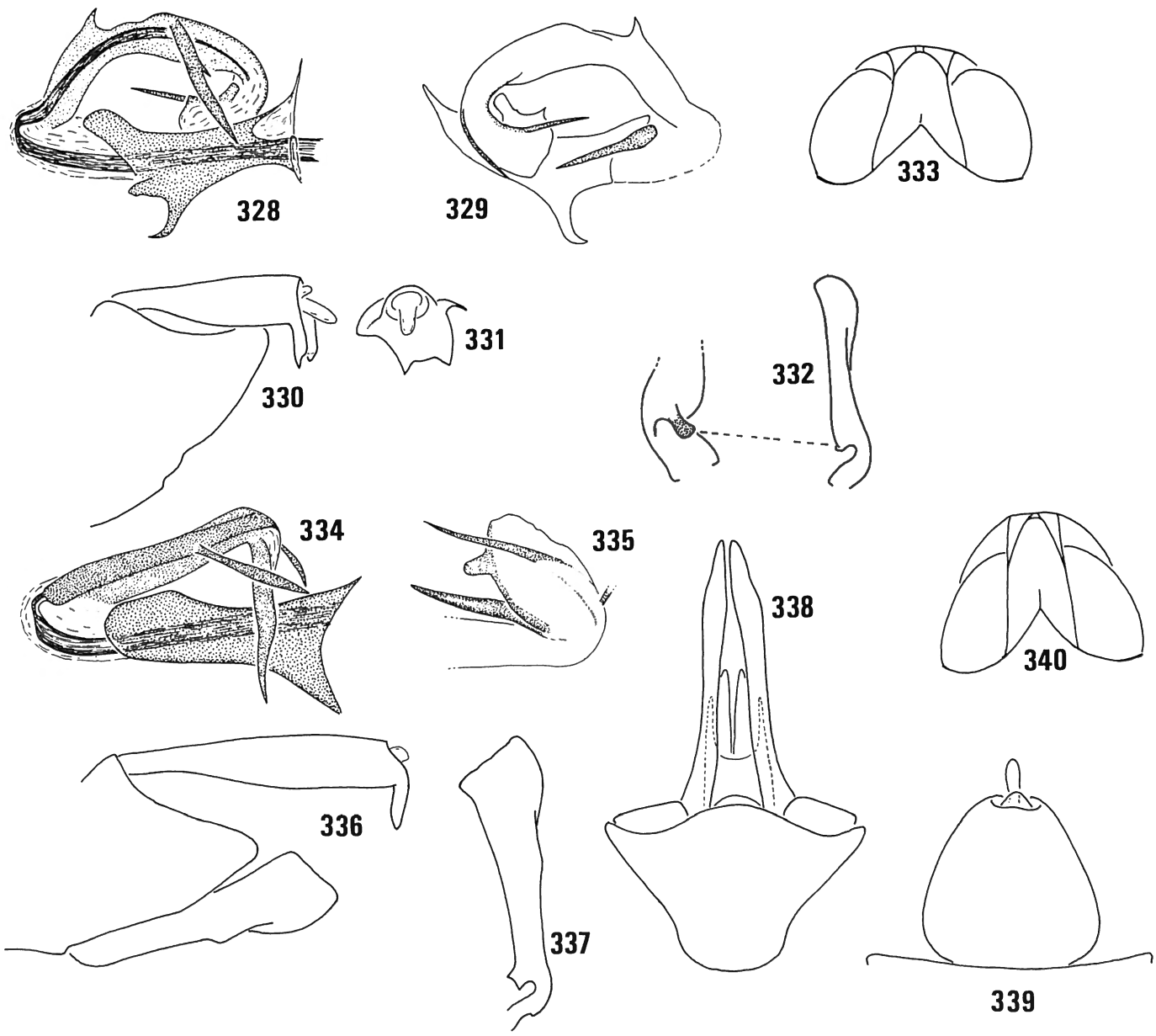
Diagnosis :
Although *O. tamangensis* is externally identical to *O. malayensis*, both species are easily distinguished from each other by the shape of the lateral margins of the pygofer which have a more circular outline in *O. tamangensis*, and in the presence of a spine on the apex of the genital styles in *O. tamangensis*.

Distribution :
Malaysia.

Material :
Holotype ♂, Pahang F.M.S., Lubok Tamang, at light, 3500 ft, 7.VI.1923, H.M. Pendlebury, BMNH.

Oliarus pahangensis sp. n.
(Figs 328-333)

Face brown with two paler spots near frontoclypeal suture. Vertex black, borders broadly yellow, 1.1 times



Figs 328-333 : Oliarus pahangensis *sp. n. - 328-329 : aedeagus, holotype, right and left lateral view; 330 : anal segment and pygofer; 331 : anal segment, caudal view; 332 : left genital style, with a view of the inner process on the base; 333 : head.*

Figs 334-340 : Oliarus lawitensis *sp. n. - 334 : aedeagus, holotype, right lateral view; 335 : apex of aedeagus, left lateral view; 336 : anal segment, pygofer and genital style; 337 : left genital style; 338-339 : female genitalia; 340 : head.*

as long as broad, median longitudinal keel rudimentary developed, subapical keel arcuate, forking at 0.8 distance of base and connected with anterior border by two short longitudinal keels.
Pronotum brown, mesonotum black with five concolorous keels. Tegmina three times as long as broad, veins brown, commisural margin brown alternating with yellow, costal margin with concolorous, slightly protruding granules; stigma brown, Sc+R forking basad of Cu, r-m distad of first medial branch, apex with 12 cells. Legs yellowish brown, femora fumated with brown, chaetotaxy hind tarsi 7/5. Length : 7.2 mm.
Male genitalia : anal segment slightly asymmetrical, with an apical process. Pygofer on lateral margins with a large triangular process. Genital styles long and narrow, with a basal process. Aedeagus with a spinose process on ventral margin of periandrium and a second one on left side directed cephalad, three spines on flagellum, and a tooth closer to its base.
Female unknown.

Diagnosis :
This species can be recognised from others by the long and narrow genital styles in combination with the large triangular processes on the lateral margin of the pygofer, and the number and shape of spines on the aedeagus.

Distribution :
Malaysia.

Material :
Holotype ♂, Pahang F.M.S., Cameron Highlands, G. Barumban 6040 ft, 8.V.1939, BMNH.

Oliarus lawitensis sp. n.
(Figs 334-340)

Face including keels fuscous. Vertex 1.5 times as long as broad, black, subapical keel U-shaped, U almost as deep as broad, forking from lateral margin at 0.6 distance of base and connected with anterior border by two small longitudinal veins. Pronotum fuscous, mesonotum including keels black. Tegmina 3.1 times as long as broad, veins brown, apical and transverse veins darker and irregular brown spots in the apical part. Stigma brown, costal margin strongly bent near base, with slightly protruding concolorous granules; Sc+R forking basad of Cu, r-m basad of first medial branch, apex with 12 cells. Legs yellowish brown, femora darker, chaetotaxy hind tarsi 7/5. Length : 7.9 mm.
Male genitalia : anal segment, pygofer and genital styles symmetrical. Anal segment with a small apical lobe. Lateral margins of pygofer triangular. Genital styles long, with a short process on base. Aedeagus with five spines on flagellum.
Female genitalia : pregenital sternite convex in middle. Valvulae with first pair longest, second pair fused together, and third pair slightly longer than second pair. Anal segment ellipsoid, broader than half width of pygofer.

Diagnosis :
This new species resembles *O. pahangensis* in the form of the anal segment, pygofer and genital styles. The most striking differences between these two species are found in the form of the aedeagus. The periandrium bears a spine on the ventral margin in *O. pahangensis,* while no spines are present at the same place in *O. lawitensis.*

Distribution :
Malaysia.

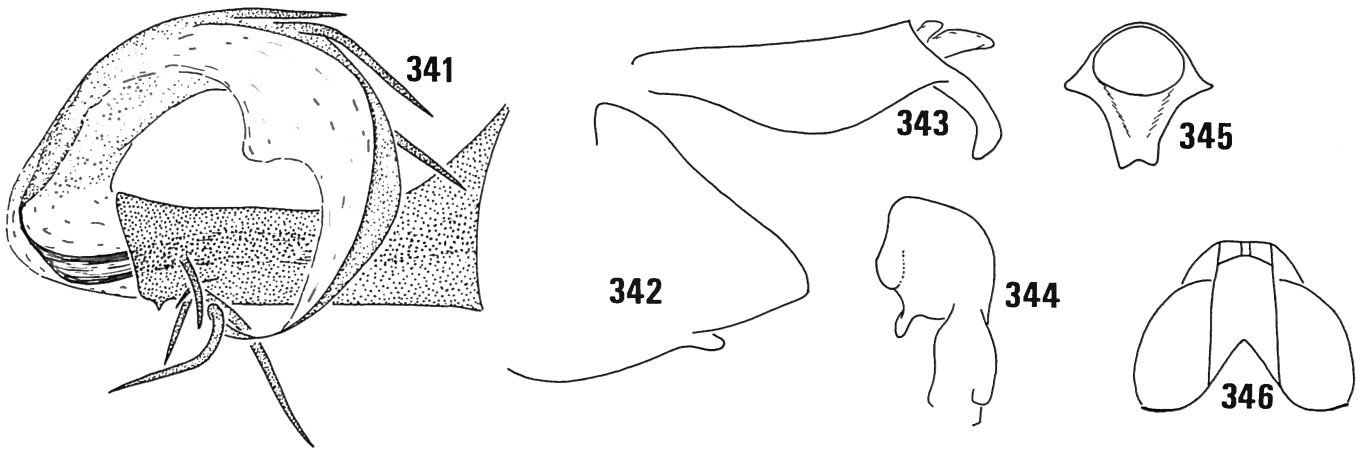
Material :
Holotype ♂, W. Malaysia, Trengganu, III.1974, Gunung Lawit, 4200 ft, summit Ridge, 14.III.1974, 102°36'E 5°25'N, BMNH. Paratypes : 2 ♀♀, same data, BMNH. 1 ♂ same data, K.B.I.N.

Oliarus sabahensis sp. n.
(Figs 341-346)

Face brown, margins and keels paler. Vertex black, 1.5 times as long as broad, subapical keel only slightly arcuate, forking from lateral margin at 0.8 of base and connected with anterior border by two short longitudinal keels. Pronotum brown, mesonotum including keels black. Tegmina hyaline with some brown spots in apical part, three times as long as broad, veins brown, costal margin with small concolorous granules, Sc+R forking slightly basad of Cu, r-m basad of first medial branch, apex with 12 cells. Legs yellow, femora brown, chaetotaxy hind tarsi 7/5. Length : 6.2 mm.
Male genitalia : anal segment, pygofer and genital styles symmetrical. Anal segment with an apical process. Pygofer on each side with a triangular lobe. Aedeagus with flagellum curved in a semi-circle and with a number of spines as illustrated. In the paratype from Brunei the curved spine figured in the holotype is straight and bears a small tooth at its base.

Diagnosis :
O. sabahensis resembles *O. pahangensis* and *O. lawitensis* in the form the anal segment and pygofer. It can easily be distinguished from both species by the totally different shape of the genital styles, the form of the subapical keel on the vertex which is less arcuate and the form of teh aedeagus.

Distribution :
Borneo.



Figs 341-346 : Oliarus sabahensis *sp. n. - 341 : aedeagus, right lateral view; 342 : pygofer; 343 : anal segment; 344 : left genital style; 345 : anal segment, caudal view; 346 : head.*

Material :
Holotype ♂, Sabah : Tawai Plat. 1300 ft 8 m. S. Telupid, 8.IX.1977, BMNH. Paratype : 1 ♂, Brunei : Labi, Bukit Teraja, 30 km SE. of Seria, 21-28.VIII.1979, BMNH.

Oliarus madrasensis sp. n.
(Figs 347-354)

Face brown, keels and a spot on both sides of frontoclypeal suture yellowish, vertex brown with yellow borders, as broad as long, subapical keel only arcuate, forking from lateral margin at 0.7 of base and connected to apical border by two small longitudinal keels. Pronotum yellow, mesonotum including keels brown. Tegmina hyaline, 2.7 times as long as broad, veins yellow and covered with pale setae, costal margin with protruding concolorous granules, Sc+R forking basad of Cu, r-m distad of first medial branch, apex with 10 cells. Legs yellow, chaetotaxy hind tarsi 7/6-5. Length tegmina : 4.3-4.6 mm.
Male genitalia : anal segment, pygofer and genital styles symmetrical. Anal segment with an apical process. Pygofer on each side with a triangular lobe. Genital styles with a finger-shaped process at apex. Aedeagus with flagellum curved in a circle, with three spines apically and subapically, and four more spines near its base; periandrium with a bifurcate process on its ventral margin and a third process just basad of the latter and perpendicular to it.
Female unknown.

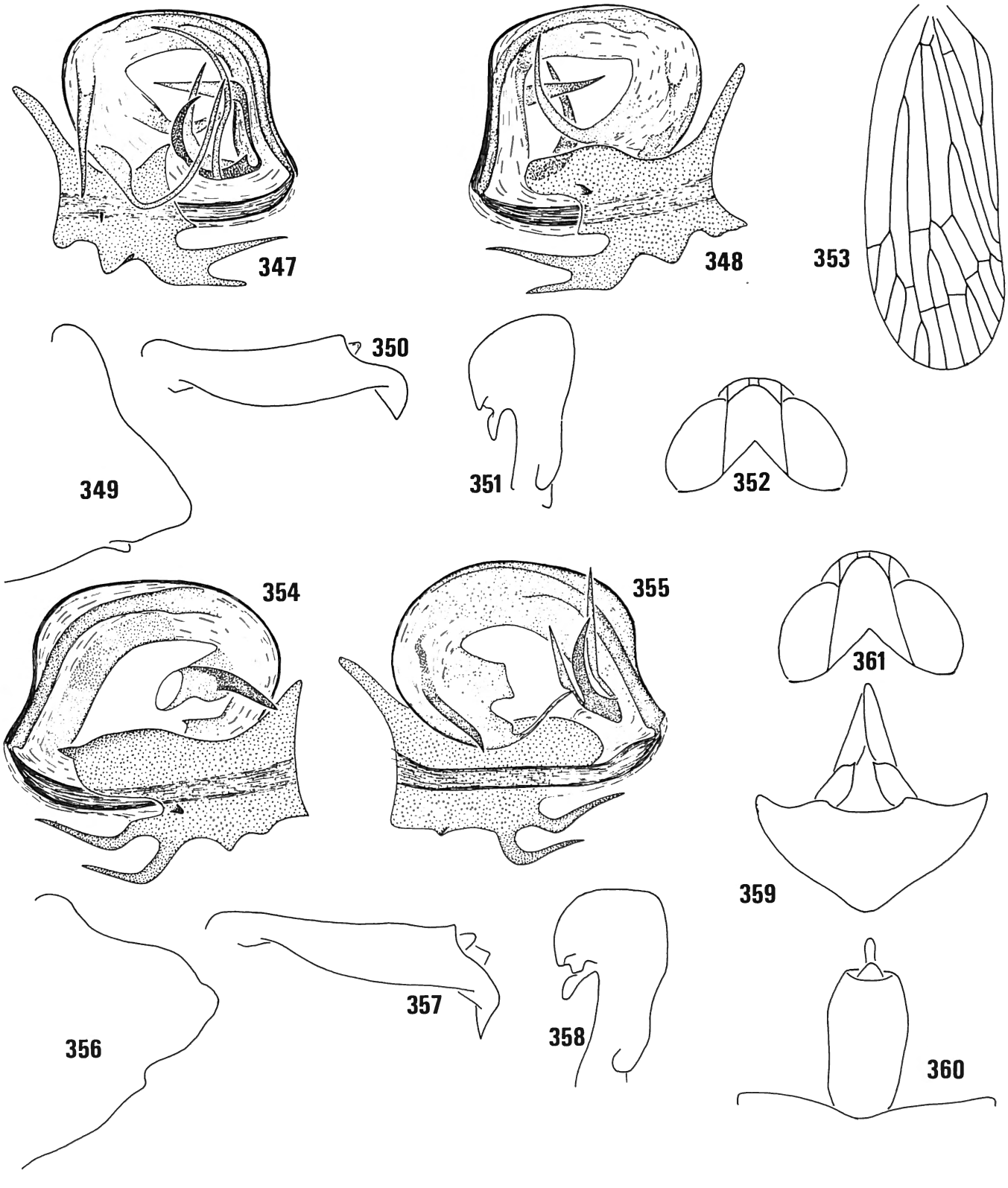
Diagnosis :
The genital styles of *O. madrasensis* recall those of *O. sabahensis*. From this species it is easily distinguished by the presence of a bifurcate process on the periandrium, by the much broader vertex, and by the tegmina which are 2.7 times as long as broad in *O. madrasensis* and 3.6 times as long as broad in *O. madrasensis*. The structure of the aedeagus recalls that of *O. nilgiriensis*. From this species it differs also in the broader aspect of the vertex and tegmina, and in the different number and shape of the spines on the aedeagus. Both species also differ in the chaetotaxy of the hind tarsi, namely 7/6-5 in *O. madrasensis* and 7/7-9 in *O. nilgiriensis*, although the infraspecific variation in *O. madrasensis* might be greater.

Distribution :
India.

Material :
Holotype ♂, S. India, Madras, Kadaikanal, T.V. Campbell, BMNH. Paratypes : 2 ♂♂, same loc., BMNH. 1 ♂ same loc., K.B.I.N.

Oliarus nilgiriensis sp. n.
(Figs 354-361)

Face brown, keels and margins paler. Vertex black with margins broadly yellow, 1.1 times as long as broad, subapical keel arcuate, forking at 0.8 distance from base, and connected to anterior border by two small longitudinal keels; median keel rudimentary developed at base. Pronotum brown fumated. Mesonotum dark brown, keels slightly tinged with yellow. Tegmina hyaline, 3.2 times as long as broad, veins yellow, apical and transverse veins and stigma brown, costal margin yellowish brown, with protruding granules, Sc+R forking basad of Cu, r-m distad of first medial branch, apex with 11 cells; the tegmina of the females usually have more brown spots at the forks of the veins. Legs yellow with brown femora, chaetotaxy hind tarsi 7-9/7. Length : ♂ : 6.4-7.0, ♀ : 7.9 mm.
Male genitalia : anal segment, pygofer and genital styles



Figs 347-353 : Oliarus madrasensis *sp. n.* - *347-348 : aedeagus, holotype, left and right lateral view; 349 : pygofer, lateral view; 350 : anal segment, lateral view; 351 : left genital style; 352 : head; 353 : left tegmen.*

Figs 354-361 : Oliarus nilgiriensis *sp. n.* - *354-355 : aedeagus, holotype, right and left lateral view; 356 : pygofer, lateral view; 357 : anal segment, lateral view; 358 : left genital style; 359-360 : female genitalia; 361 : head.*

symmetrical. Anal segment with a tapering apical process. Pygofer with on both side a large blunt lobe. Genital styles with a finger-shaped process at apex. Aedeagus with two stout and one very slender spine on and near apex and three spines at its base, and a bifurcate process at ventral margin of periandrium.
Female genitalia : first and second valvulae very short, third pair of valvulae more than twice length of the first pair. Anal segment oblong, rectangular, less broad than the width of the pygofer.

Diagnosis :
This new species resembles *O. madrasensis* in the general structure of the aedeagus. From this species it can be distinguished externally by the more narrow tegmina and by differences in the chaetotaxy of the hind tarsi, namely 7/6-5 in *O. madrasensis* and 7/7-9 in *O. nilgiriensis*, although the infraspecific variation in *O. madrasensis* might be greater. On the aedeagus the number of spines on the flagellum is smaller and their shape if different.

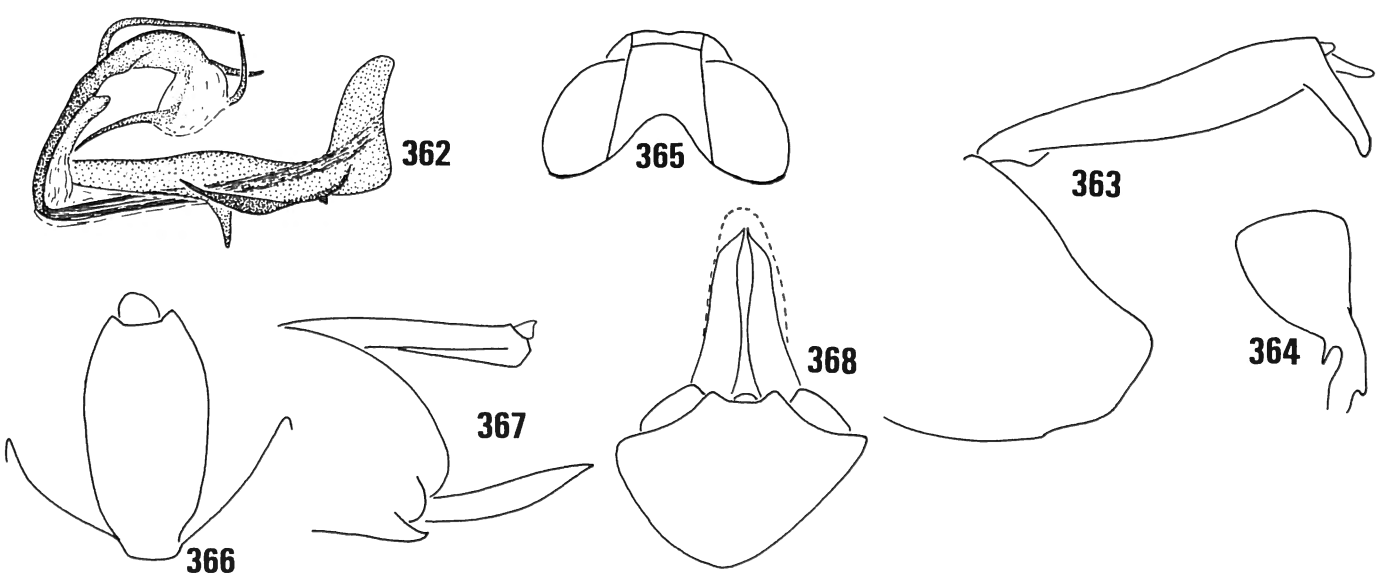
Distribution :
India.

Material :
Holotype ♂, S. India, Singara, Nilgiri Hills (3400 ft), IV.1954 (P.S. Nathan), KBIN. Paratypes : 86 ♂♀, S. India, Cinchona Anamalai Hills (3500 ft), IV/V.1957, KBIN; 2 ♂♂, 3 ♀♀, Anamalai Hills, Cinchona 3500 ft, V.1962, ML; 3 ♂♂, 4 ♀♀, India, Anamalai Hills, Cinchona, 3500 ft, IV.1969, COB; 4 ♂♂, 2 ♀♀, Anamalai Hills, Madras st., Kadamparai, 3500 ft, V.1963, COB; 49 specimens, India, Madras State, Anamalai Hills, Cinchona, 1956, BPBM.

Oliarus thekkadiensis sp. n.
(Figs 362-368)

Face brown with keels and margins paler. Vertex black, as long as broad, subapical keel almost straight, forking from lateral margin at 0.9 distance from base, not connected to anterior border; no median longitudinal keel. Pronotum black with yellowish keels and borders. Mesonotum brown with concolorous keels. Tegmina 3.4 times as long as broad, spotted with irregular brown marks, in females more than in males; veins yellowish brown, in females covered with setae, apical veins and transverse veins brown, costal margin densely granulated, Sc+R forking basad of Cu, r-m distad of first medial branch, apex with 12 cells. Legs yellowish brown, chaetotaxy hind tarsi 7-8/7. Length : ♂ : 6.3-6.9 mm; ♀ : 7.2-7.8 mm.
Male genitalia : anal segment, pygofer and genital styles symmetrical. Anal segment with a process on apex. Later margins of pygofer with a triangular outline. Genital styles with a spine-shaped process at apex. Aedeagus with four spines on flagellum and two processes on right basal margin of the periandrium. In a paratype the spine of the flagellum implanted most closely to the apex of the aedeagus is much longer and curved.
Female genitalia : caudal margin of pregenital sternite produced in middle, submedian triangular processes less developed in another female. Ovipositor with first pair slightly larger than second pair, both pairs tapering; third pair blunt at apex and surpassing first and second valvulae. Anal segment oblong, rectangular, less broad than half width of pygofer.

Diagnosis :
O. thekkadiensis resembles *O. indiensis* and *O. greeni*



Figs 362-368 : Oliarus thekkadiensis *sp. n. - 362 : aedeagus, holotype, right lateral view; 363 : anal segment and pygofer; 364 : left genital style; 365 : head; 366-367-368 : female genitalia.*

by the general structure of the male genitalia. It is easily distinguished from both species by the chaetotaxy of the hind tarsi which is at least 7/7 in *O. thekkadiensis* and 7/5-6 in the two other species.

Distribution :
South India.

Material :
Holotype ♂, South India, Thekkadi, Periyar Dam, Travancore, 6-10.V.1937, BMNH. Paratypes : 3 ♀♀, same loc., BMNH; 1 ♂, 1 ♀, India, 41 km E. Kodaikanal, Falls View, IX.29.1985, C.W. & L. B. O'Brien, COB, KBIN. 2 ♀♀ same loc. as holotype, K.B.I.N.; 1 ♂ India, 41 Km E. Kodaikanal, Falls view, IX.29.1985, C.Wet L.B.O. Brien, K.B.I.N.

Oliarus indiensis sp. n.
(Figs 369-376)

Face and vertex black with yellow keels. Vertex as long as broad, subapical keel forking at 0.9 of base, slightly arcuate and connected with anterior border by two small longitudinal keels; median keel lacking. Pronotum black with yellow keels and borders. Mesonotum black with two yellow fasciae between outer keels. Tegmina three times as long as broad, veins yellow and covered with setae which are more numerous in the females, apical veins and stigma brown. Sc+R forking basad of Cu, r-m distad of first medial branch, apex with 12 cells, costal margin densely covered with protruding granules. Legs yellow with brown femora, chaetotaxy hind tarsi 7/5. Length : appr. 5.4 mm (tegmina of all wings spread open).
Male genitalia : anal segment, pygofer and genital styles symmetrical. Anal segment with a blunt lobe at apex. Pygofer with lateral margins angulate and dorsal part slightly excavated. Genital styles as illustrated. Aedeagus as illustrated in fig. xx and xx, periandrium with a spine on right side and two on left side, and a small tooth apically on right side. Flagellum with five spinose processs all situated close to apex.
Female genitalia : pregenital sternite with caudal border produced in middle. Ovipositor with three pair of valvulae, the first pair as long as the third pair, and the second pair much smaller but not fused together. Anal segment oblong, rectangular, less broad than width of vertex.

Diagnosis :
O. indiensis resembles *O. thekkadiensis* and *O. greeni* in the general shape of the head, tegmina and male and female genitalia. It differs from *O. thekkadiensis* in the different chaetotaxy of the hind tarsi which is 7-8/8 in *O. thekkadiensis* and 7/5 in *O. indiensis*. It differs from *O. greeni* mainly in the structure of the aedeagus, with less spines in *O. greeni*.

Distribution :
India.

Material :
Holotype ♂, S. India, Nilgiri Hills, 7200 ft, Lovedale, T. V. Campbell, BMNH. Paratypes : 2 ♀♀, same loc., 5000-7200 ft, BMNH; 1 ♂, 2 ♀♀, S. India, Madras, Coonoor, T. V. Campbell, BMNH. 1 ♂, 1 ♀ same loc. as holotype, K.B.I.N.

Oliarus greeni Distant
(Figs 377-380)

Oliarus greeni Distant, 1911 : 735.

Face and vertex black with yellow keels and borders. Vertex as long as broad, subapical keel slightly arcuate, almost straight, and connected to anterior border by two small longitudinal keels. Pronotum black with yellow keels and margins, mesonotum entirely black. Tegmina hyaline 2.9 times as long as broad, veins yellow, apical veins and stigma brown. Sc+R forking basad of Cu, r-m distad of first medial branch, apex with 12 cells, costal margin with concolorous, slightly protruding granules. Legs yellow with brown femora, chaetotaxy hind tarsi 7/5-6. Length : 6-7 mm.
Male genitalia : anal segment, pygofer and genital styles like those of *O. indiensis*. Aedeagus two spines and a tooth on periandrium; flagellum with a plate-shaped spinose process, a slender spine and two teeth.
Female genitalia not examined.

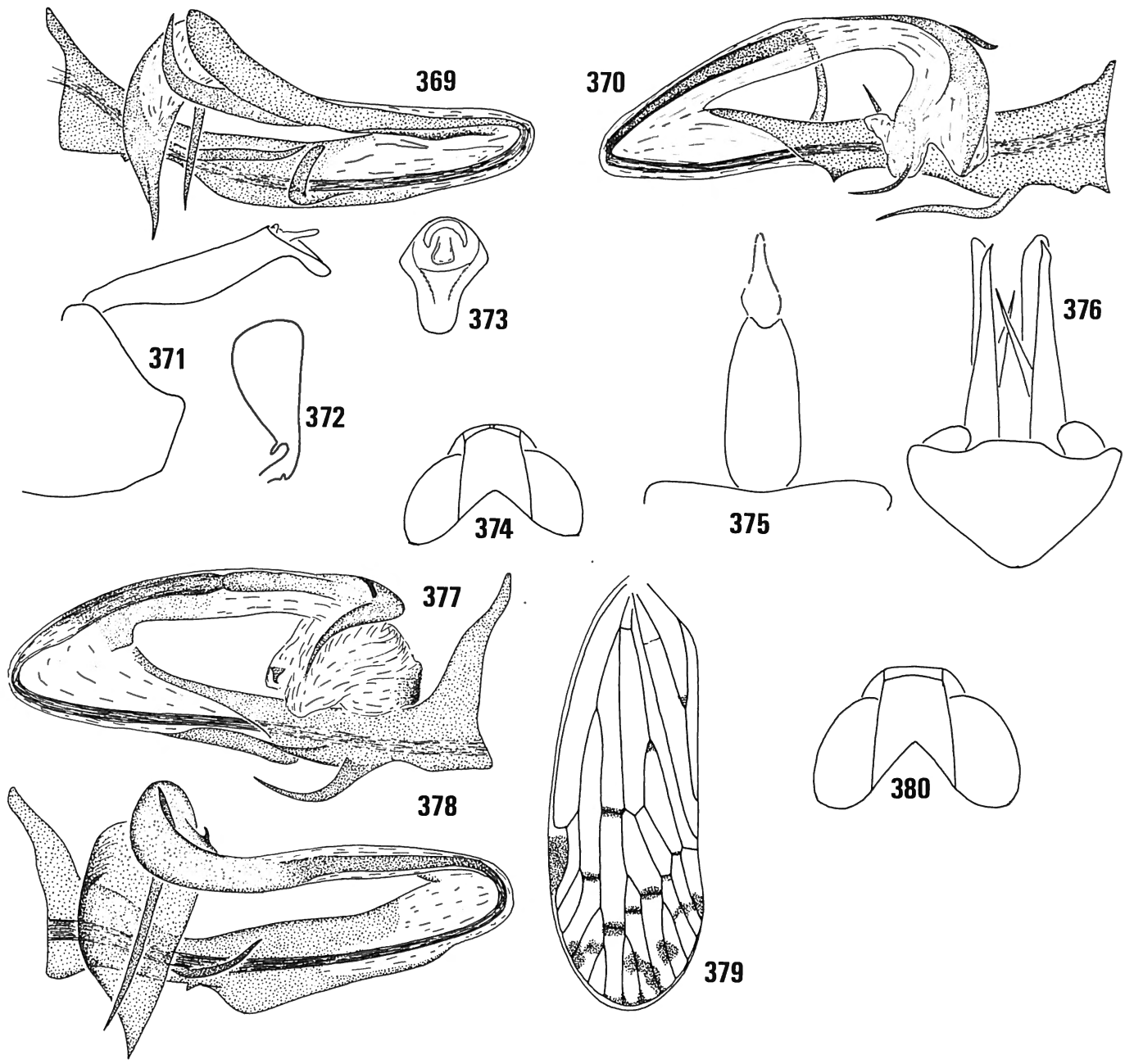
Diagnosis :
O. greeni is closely related to *O. thekkadiensis* and *O. indiensis*. From *O. thekkadiensis* it is easily distinguished in the chaetotaxy of the hind tarsi which is 7-8/7 in *O. thekkadiensis* and 7/5-6 in *O. greeni*. From *O. indiensis* it is mainly distinguished on the structure of the aedeagus.

Distribution :
Sri Lanka.

Material :
Lectotype ♂, here designated, Eppawela, IX.1905, BMNH (examined). Paralectotype ♀, Kandy, IX.1907, BMNH.
Additional material : 1 ♂, Sri Lanka, Uddawattekele, 23.II.1974 (A. E. Stubbs), BMNH.

Oliarus undabundus Van Stalle
(Figs 381-389)

Oliarus undabundus Van Stalle, 1990 : 178, figs 27-35.



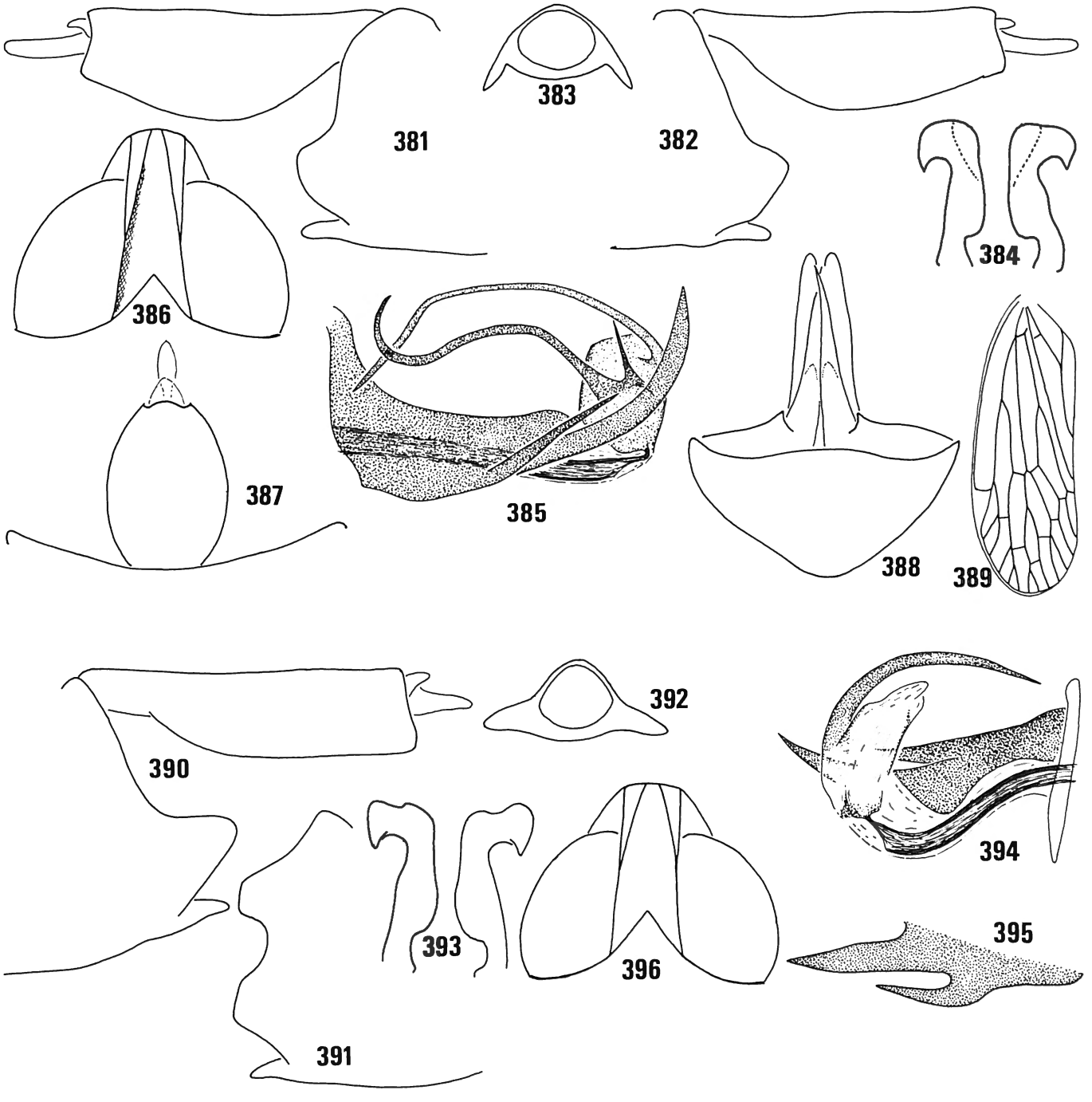
Figs 369-376 : Oliarus indiensis *sp. n. - 369-370 : aedeagus, holotype, left lateral and right lateral view; 371 : anal segment and pygofer; 372 : left genital style; 373 : anal segment, caudal view; 374 : head; 375-376 : female genitalia.*

Figs 377-380 : Oliarus greeni DISTANT *- 377-378 : aedeagus, specimen Uddawattekele, right and left lateral view; 379 : left tegmen; 380 : head.*

Description :

Frons fumated with black between keels, entirely yellow in one specimen, and bearing two roundish white maculae laterally on frontoclypeal suture; keels yellow; postclypeus yellow with two black streaks near frontoclypeal suture next to each macula. Vertex 2.2 times as broad as long, deeply excavated with prominent lateral margins, black with yellow keels, transverse keel U-shaped and branching from lateral margin on 0.4 from base and divided into two keels which join in middle of anterior border. Pronotum yellow, mesonotum varying from almost entirely black to pale brown, often with two paler longitudinal fasciae between outer keels. Tegulae yellow. Tegmina hyaline, 2.9 times as long as broad, costal margin without granules, bent in proximal half, Sc+R forking at same level as Cu and transverse veins and apical margin fumated with brown, r-m distad of first medial branch, apex with 12 cells; one female specimen has the tegmina entirely castaneous brown, except for the base which is hyaline and uncoloured and anterior margin of stigma which is yellow. Abdomen brown. Legs yellow, chaetotaxy hind tarsi 7/5. Length : ♂ : 8.1-8.8 mm; ♀ : 8.9-10.5 mm.

Male genitalia : anal segment without apical lobe. Pygo-



Figs 381-389 : Oliarus undabundus *Van Stalle - 381-382 : anal segment and pygofer, right and left lateral view; 383 : anal segment, caudal view; 384 : genital styles; 385 : aedeagus, ventral view, holotype; 386 : head; 387-388 : female genitalia, dorsal and ventral view; 389 : left tegmen.*

Figs 390-396 : Oliarus busoensis *Van Stalle - 390 : anal segment and pygofer, left lateral view; 391 : pygofer; 392 : anal segment, caudal view; 393 : genital styles; 394 : aedeagus, dorsal view, holotype; 395 : ventral spinose process of aedeagus, lateral view; 396 : head.*

fer slightly asymmetrical, right dorsolateral margin rounded, left one straight. Genital styles as illustrated. Aedeagus with two long curled spines, one short straight spine on ventral side of flagellum and two spines inserted on ventral margin of sclerotised periandrium and directed caudad.
Female genitalia : anal segment oblong, three times less wide than pygofer. Ovipositor as long as anal segment; valvifers with a short tooth-shaped process on inner margin. pregenital sternite with caudal border slightly sinuate.

Diagnosis :
Externally this species resembles *O. busoensis* from which it can be distinguised by the lack of an excavation on the right side of the pygofer. The structure of the aedeagus recalls that of *O. morobensis*; it differs in the structure of the vertex which is forking closer to the base in *O. undabundus,* in the chaetotaxy of the hind tarsi which is 7/5 in *O. undabundus* and 8/8 or 8/7 in *O. morobensis,* and in the absence of spines on the genital styles.

Material :
Holotype ♂, "Neth. Ind. - American New Guin. Expedit.", Bernhard Camp 50 m, 4.VII.1938, J. Olthof, ML. Paratypes : 4 ♀♀, same data as holotype, ML. 1 ♂, 1 ♀, same data as holotype, K.B.I.N.

Oliarus busoensis VAN STALLE
(Figs 390-396)

Oliarus busoensis VAN STALLE, 1990 : 176, figs 20-26.

Description :
Colour of face varying from almost black to yellowish brown, with two large pale maculae on frontoclypeal suture; lateral keels yellow. Labium yellowish, embrowned apically. Vertex twice as long as broad, black and broadly bordered with yellow, transverse keel U-shaped, branching from lateral margin at 0.5 distance of base and divided into two parts which join in middle of anterior border. Pronotum and tegulae yellow, pronotum suffused with brown laterally. Mesonotum black with concolorous keels, with two paler fasciae between outer keels. Tegmina hyaline, 2.9 times as long as braod, Sc+R forking basad of Cu or at same level, r-m distad of first medial branch, apex with 12 cells, costal margin not granulated; veins and stigma black, apex of tegmina and transverse apical veins brown fumated; apical border of stigma yellow. Legs yellow, femora embrowned, chaetotaxy hind tarsi 7/5. Length : 8.7-9.9 mm.
Male genitalia : anal segment without apical process. Pygofer asymmetrical, left margin with a triangular lobe, right margin with two processes separated by an excavation. Aedeagus with one spine parallel to flagellum and one bifurcate process on ventral margin.
Female unknown.

Diagnosis :
O. busoensis can be distinguished from any other species by the excavated right margin of the pygofer and the characteristic shape of the aedeagus.

Distribution :
New Guinea.

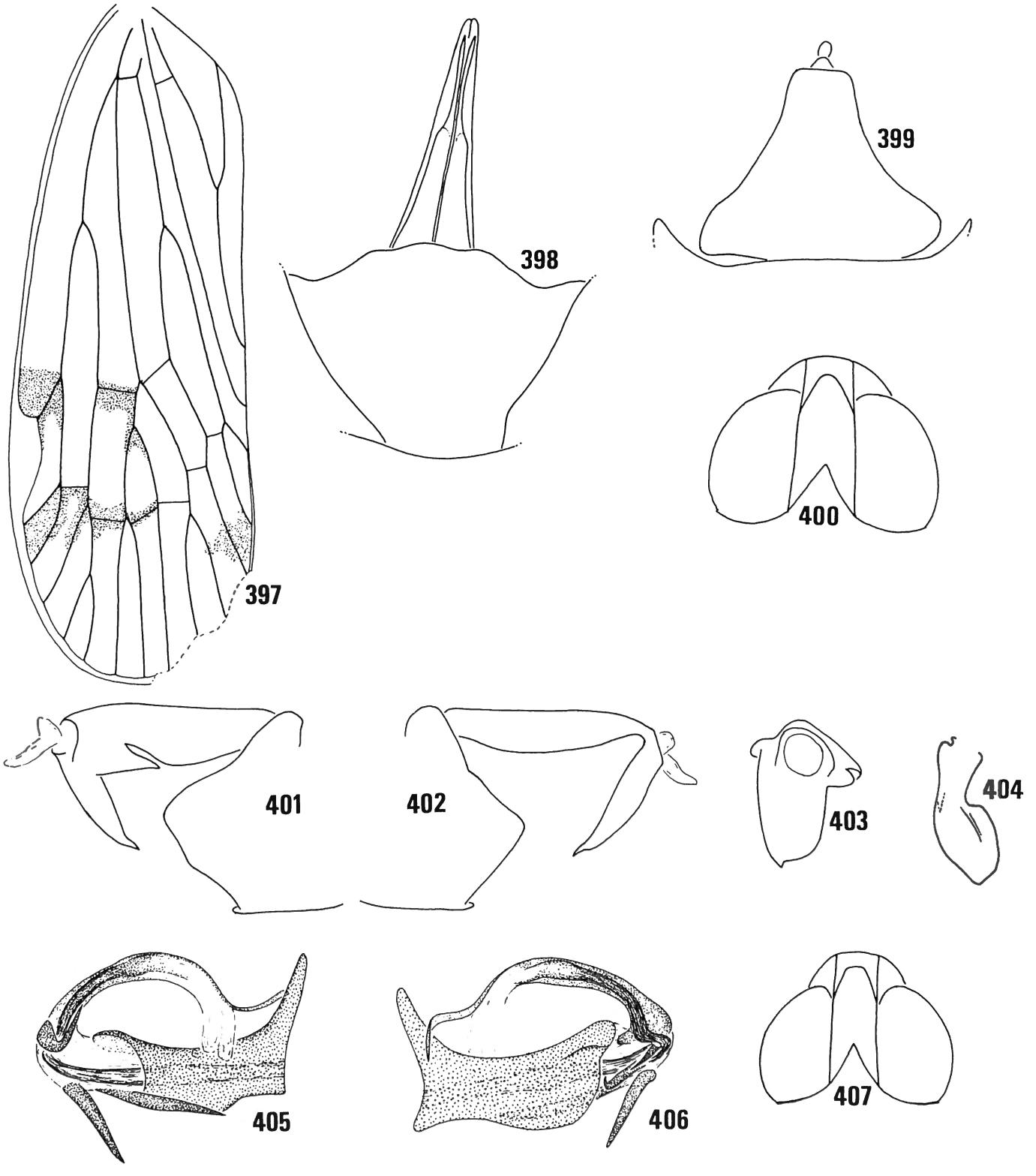
Material :
Holotype ♂, PNG, Morobe Prov., Buso, IX-XI.1979, J. Martin, BMNH.
Paratypes : 1 ♂, New Guinea, 1927, Oranjegebergte, A. Kalthofen, ITZ; 1 ♂, PNG, Upper Fly River, Aimbak-Omo Area, 19.X.1972, BMNH.

Oliarus intertectus (WALKER)
(Figs 397-400)

Brixia intertecta WALKER, 1868 : 114.
Oliarus intertectus; DISTANT, 1907 : 281; VAN STALLE, 1990 : 181, figs 60-63.

Face uniform pale ochreous, keels prominent, very sharp, almost foliaceous. Labium very long, almost reaching to distal end of hind femora. Vertex narrow, 1.8 times as long as broad, subapical keel U-shaped, forking at 0.7 distance of base; keels prominent, surface of vertex deeply excavated. Pronotum yellow, anterior lateral border brown fumated. Mesonotum uniformously brown with concolorous keels, both submedian keels very weakly developed; Tegmina 2.8 times as long as broad, veins, stigma and costal margin brown and brown spots just anterior of stigma and on transverse veins; costal margin and veins with very small concolorous granules, Sc+R forking at same level as Cu, r-m distad of first medial branch, apex with 12 cells. Legs yellow, hind femur with lateral spines, chaetotaxy hind tarsi 6/6. Length : 9.5 mm.
Male unknown.
Female genitalia : pregenital sternite slightly asymmetrical on base, caudal border of pregenital sternite undulate. Ovipositor slightly longer than anal segment, first valvulae thickened basally over half their length. Anal segment diamond-shaped, as broad as pygofer and broadest near base.

Remark :
The type is described as a male although the specimen listed here is a female. It bears the original label with WALKER's handwriting, and it has been observed several times that WALKER did not determine the right sex of the specimen he described. As there is no holotype designation we have selected the (unique) specimen as a lectotype.



Figs 397-400 : Oliarus intertectus *(Walker) - 397 : left tegmen; 398-399 : female genitalia, ventral and dorsal aspect, lectotype; 400 : head.*

Figs 401-407 : Oliarus inficitus *(Walker) - 401-402 : anal segment and pygofer, right and left lateral view; 403 : anal segment, caudal view; 404 : left genital style; 405- 406 : aedeagus, right and left lateral view; 407 : head.*

Distribution :
New Guinea.

Material :
Lectotype ♀, designated by Van Stalle (1989), "N. Gui.", "Wallace", BMNH (examined).

Oliarus inficitus (WALKER)
(Figs 401-407)

Cixius inficitus WALKER, 1868 : 103.
Oliarus inficitus; VAN STALLE, 1990 : 180, figs 53-59.

Colour yellowish brown; face with a very sharp median keel which is almost foliaceous; vertex twice as long as broad with prominent keels; transverse keel U-shaped, branching from lateral margin at 0.6 of base. Pronotum yellow. Mesonotum with three keels, the submedian ones only slightly developed. Tegmina hyaline, 2.7 times as long as broad, Sc+R forking at same level as Cu, r-m distad of first medial branch, apex with 12 cells; costal margin with very small concolorous granules. Hind legs lacking. Length : 7.5 mm.
Male genitalia : anal segment asymmetrical, with a spine-shaped process on right side. Pygofer with triangular lateral margins. Genital styles with a small process on inner side. Aedeagus with five spines on apex and a long process on flagellum.
Female unknown.

Diagnosis :
This species is characterized by the shape of the male genitalia, namely the large apical process on the anal segment with a short spine-shaped process on it right side and the shape and implantation of spines on the aedeagus.

Distribution :
Only known from the Island of Mysol.

Material :
Lectotype ♂, designated by VAN STALLE (1989), Mysol, Wallace, BMNH (examined).

Oliarus brunnifrons MUIR
(Figs 408-410)

Oliarus brunnifrons MUIR, 1924 : 520.

Face yellowish brown, very uniform in colour, lateral and median keels prominent and sharp. Vertex 1.5 times as long as broad, lateral keels prominent, subapical transverse keel angulate, not connected with anterior border and forking from lateral margin at 0.8 distance of base; median keel only developed at base. Pronotum yellowish, with sharp lateral keels. Mesonotum brown with five distinct longitudinal keels. Tegmina hyaline, three times as long as broad, costal margin gently bent near base, dark brown, with small granules on inner side from base to stigma; Sc+R forked appreciably before Cu fork, r-m basad of first medial branch, apex with 12 cells; veins yellowish brown and some brown spots in apical part of tegmina. Legs yellowish brown, chaetotaxy hind tarsi 6/5. Length : 8.9 mm.
Male unknown.
Female genitalia : pregenital sternite slightly undulate with a median depression and to submedian lobes. Ovipositor slightly shorter than anal segment in lateral view. Anal segment as broad as pygofer, rounded-oval.

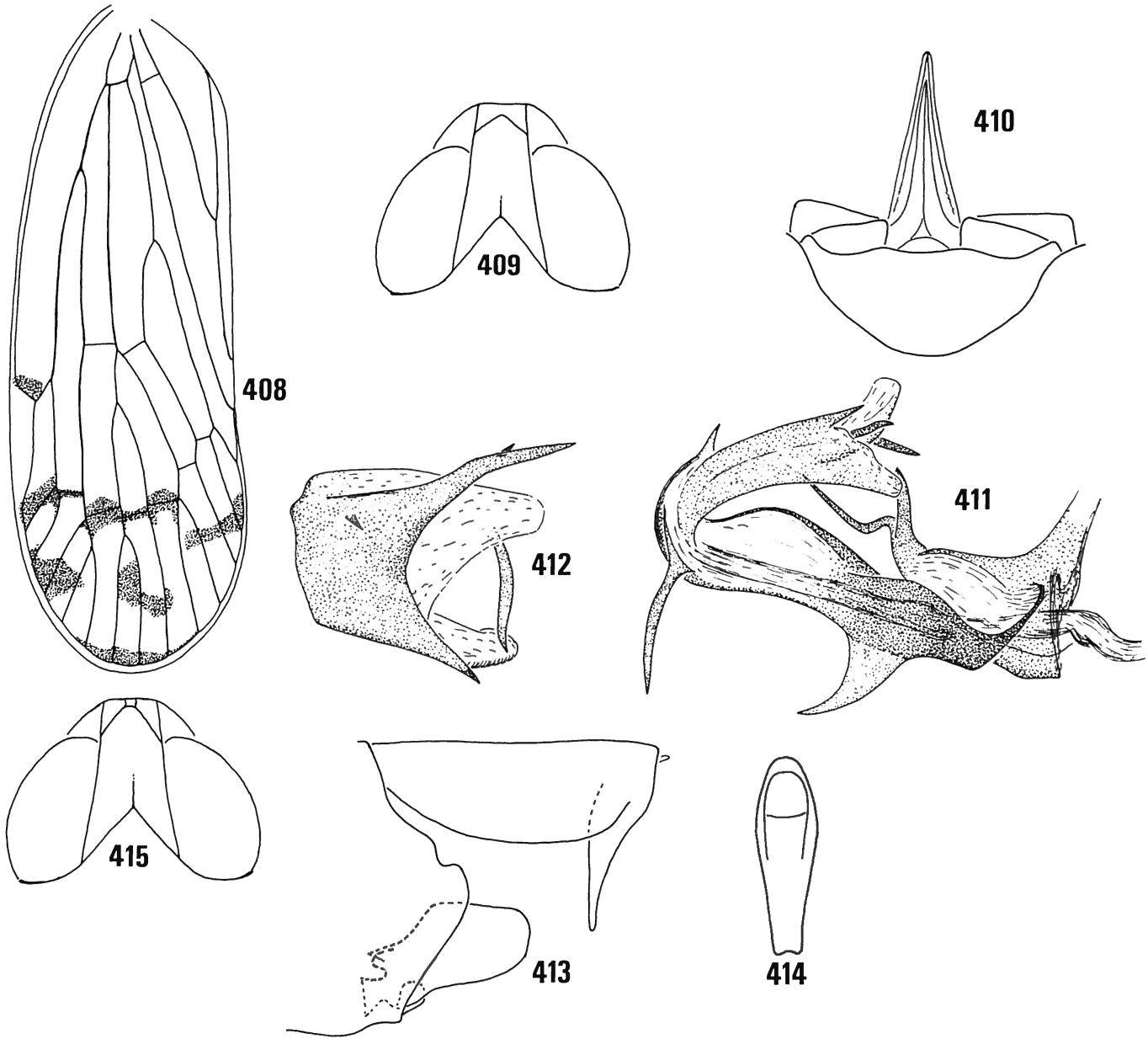
Diagnosis :
It is difficult to situate this species taxonomically by the lack of male characters. It might be related to *O. bidiensis, O. longicauda, O. geniculatus, O. longulus* and *O. prolongulus* but it differs from these species by the fact that in the tegmina r-m is situated basad of the first medial branch. With *O. bidiensis* it shares the narrow vertex and the fact that Sc+R is forking basad of Cu. The vertex is much broader in the three other species and Sc+R is forking at approximately the same level as Cu.

Material :
Holotype ♀, Singapore, Baker, BPBM.

Oliarus bidiensis sp. n.
(Figs 411-415)

Face yellowish brown, very uniform in colour, lateral and median keels sharp and prominent. Vertex 1.4 times as broad as long, lateral keels prominent, subapical transverse keel angulate, wider than deep, forking at 0.7 distance of base; median keel only developed in basal part. Pronotom yellowish brown, with sharp lateral keels. Mesonotum dark brown with five sharp, concolorous keels. Tegmina hyaline, 2.9 times as long as broad, costal margin gently bent near base, dark brown and covered with small concolorous granules between base and stigma; Sc+R forked appreciably before Cu fork, r-m distad of first medial branch, apex with 12 cells. Veins yellowish brown to dark brown and apex fumated with brown. Legs yellowish, chaetotaxy hind tarsi 6/5. Length : 8-8.6 mm.
Male genitalia : anal segment symmetrical, with a distinct, long apical process. Pygofer nearly symmetrical, left lateral margin slightly more excavated. Genital styles symmetrical, with two small processes at their base. Aedeagus with two basal processes, one directed ventrad and another on dorsal margin and forked into a short and a long spine. A third and short fourth process on the base of the flagellum and three more spines on the apex of the flagellum. In both paratypes from Kuching the right basal spine on the periandrium and the transverse spine on the flagellum (dorsal view) are shorter than the homologous spines illustrated in the holotype.
Female unknown.

Diagnosis :
Externally very much resembling *O. brunnifrons,* but slightly differing in the structure of the subapical trans-



Figs 408-410 : Oliarus brunnifrons Muir - *408 : left tegmen, holotype; 409 : head, holotype; 410 : female genitalia, ventral view, holotype.*

Figs 411-415 : Oliarus bidiensis *sp. n. - 411 : aedeagus, holotype; 412 : flagellum, dorsal view; 413 : anal segment, pygofer and genital style; 414 : anal segment, caudal view; 415 : head.*

verse keel of the vertex, which is sharply angulate in *O. brunnifrons* and more rounded in this species; on the tegmina r-m is situated slightly distad of the first medial branch and not basad as in *O. brunnifrons*. However, until the male of *O. brunnifrons* is described the relationship between both species remains uncertain. From *O. geniculatus, O. longicauda, O. longulus* and *O. prolongulus* it differs in the fact that Sc+R is forking basad of Cu in *O. bidiensis* and at the same level as Cu in the other species.

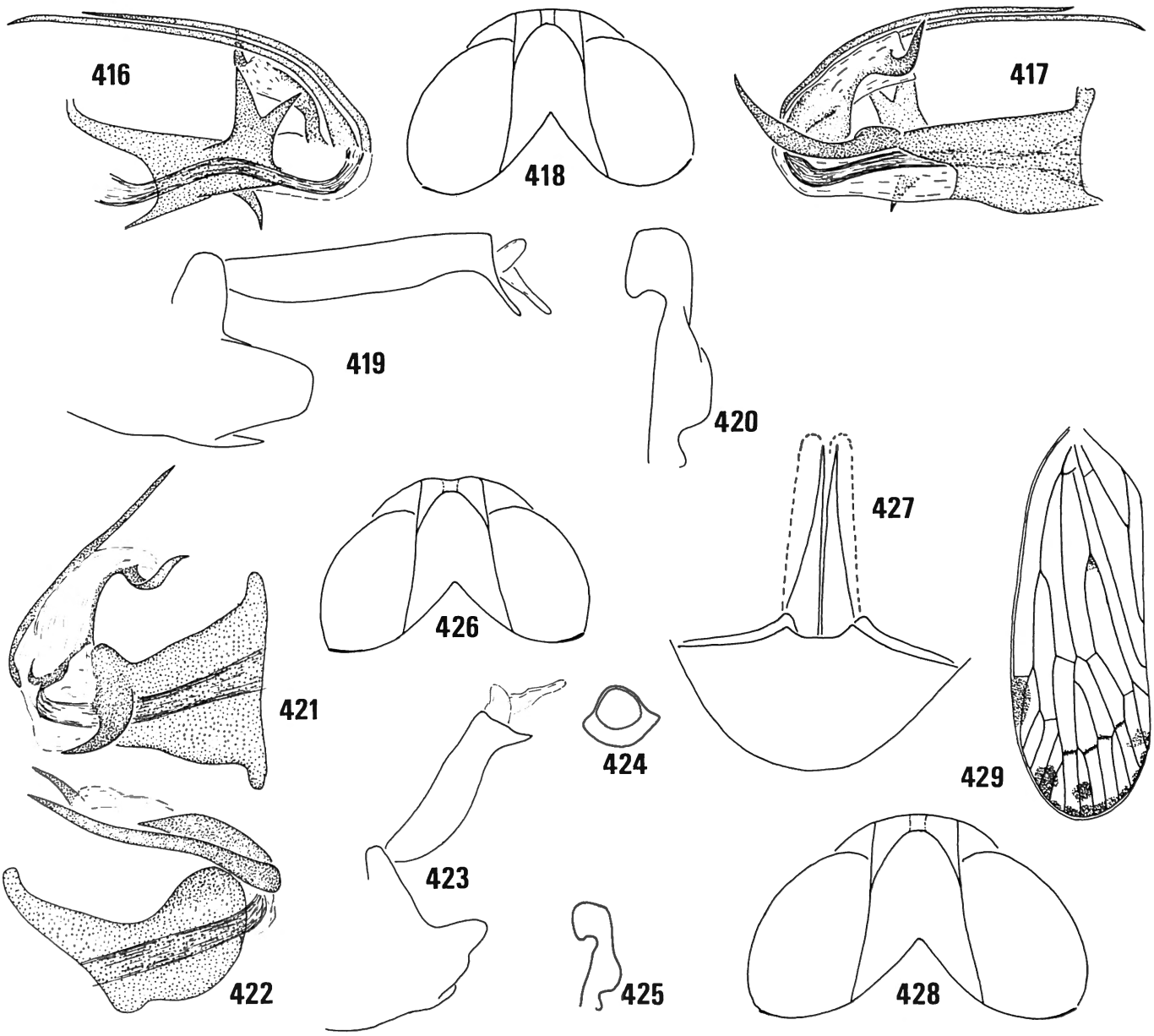
Distribution :
Borneo.

Material :
Holotype ♂, Borneo, Sarawak, Bau District, Bidi, 90-240 m., 3.IX.1858, BPBM.
Paratypes : 1 ♂, N.W. Borneo, Kuching, 12.XII.1899, K.B.I.N.; 1 ♂, "Kuching", BMNH.

Oliarus longicauda Muir
(Figs 416-420)

Oliarus longicauda Muir, 1924 : 516, Pl. 1 figs 7a-b.

Face ochraceous, keels concolorous, two spots on frontoclypeal suture paler. Vertex 1.3 times as long as broad,



Figs 416-420 : Oliarus longicauda *Muir* - *416 : aedeagus, ventral view, holotype; 417 : aedeagus, dorsal view, holotype; 418 : head; 419 : anal segment and pygofer; 420 : left genital style.*

Figs 421-426 : Oliarus hyalinipennis *Muir* - *421-422 : aedeagus, dorsal and left lateral view, holotype; 423 : anal segment and pygofer; 424 : anal segment, caudal view; 425 : left genital style; 426 : head.*

Figs 427-429 : Oliarus geniculatus *Stål* - *427 : female genitalia, ventral view, lectotype; 428 : head, lectotype; 429 : left tegmen, lectotype.*

black with yellow keels, subapical keel arcuate, forking from lateral margin at 0.7 distance from base. Pronotum ochraceous. Mesonotum black with concolorous black keels. Tegmina three times as long as broad, hyaline with dark brown veins, apical veins and stigma black and apex of tegmina bordered with dark brown from tip of clavus to stigma; costal margin without granules, Sc+R forked slightly distad of Cu, r-m distad of first medial branch, apex with 12 cells. Legs pale ochraceous with brown femora, chaetotaxy hind tarsi 6/5. Length : 9 mm.

Male genitalia : anal segment very long in comparison to pygofer, with an apical process directed ventrad. Pygofer symmetrical, with a large blunt lobe on lateral margins. Genital styles with a rounded to quadrate apex. Aedeagus with two long spines inserted on apex and running cephalad parallel to flagellum, a further short spine on apex of flagellum, one short spine on left margin of aedeagus and finally a bifurcate process on left side directed dorsad.

Diagnosis :
Related to *O. bidiensis, O. geniculatus, O. hyalinipennis* and *O. longulus*. *O. longicauda* differs from all these species in the more narrow vertex and in the fact that Sc+R is forking basad of Cu. The group is characterized in the male by a long anal segment, the large lobes on the lateral margin of the pygofer and the structure of the aedeagus; in the females it is characterized by the presence of two submedian tooth-shaped processes on the caudal border of the pregenital sternite. *O. longicauda* and *O. longulus* and *O. hyalinipennis* are easily distinguished by the structure of the aedeagus, namely the absence of a bifurcate process in *O. longicauda,* and *O. hyalinipennis,* and the larger teeth on the pregenital sternite in *O. longulus*. *O. prolongulus,* only known from the female holotype might be related to this group but has only minute submedian processes on the pregenital sternite and is therefore easily distinguished from the two preceding species.

Remark :
The reference "type N° 1081" in the original description is interpreted here as a holotype designation.

Distribution :
The Philippine Islands, Mindanao.

Material :
Holotype ♂, Mindanao, Surigao, Baker, BPBM (examined).
Paratype : 1 ♀, same locality, BPBM (not examined).

Oliarus hyalinipennis Muir
(Figs 421-426)

Oliarus hyalinipennis Muir, 1924 : 12.

Description :
Frons brown, postclypeus ochreous, and two very pale spots present laterally near frontoclypeal suture; median keel well developed; median ocellus present. Vertex dark brown, 1.2 times as long as broad, without median keel; subapical keel arcuate, forking from lateral margin at 0.7 distance of base. Pronotum pale ochreous, pectoral plates embrowned. Mesonotum black with sharp concolorous keels. Tegmina 2.9 times as long as broad, completely hyaline, only apical border fumated with brown; costal margin without granules, brown; veins and stigma brown, the latter with anterior margin yellowish, Sc+R forking at same level as Cu, r-m distad of first medial branch, apex with 12 cells. Legs brown, knees and tips of tibiae yellowish; chaetotaxy hind tarsi 6/5. Length : 8.5 mm.
Male genitalia : anal segment, pygofer and genital styles symmetrical. Aedeagus on left side with two long spines inserted apically on base of flagellum, a third curved spine apically on dorsally on sclerified periandrium and a short spine apically on flagellum.
Female unknown.

Diagnosis :
O. hyalinipennis is distinguished from *O. longicauda* and *O. longulus* by the fact on the aedeagus the dorsal spine on the apex of the periandrium is pointing to the right side and not surpassing the apex of the aedeagus as is the case in the other two species. In the absence of females it is difficult to distinguish it from *O. prolongulus* and *O. geniculatus.*

Distribution :
Philippine Isl.

Material :
Holotype ♂, Philippine Isl., Mindanao, Kolambugan, BPBM (examined).

Oliarus geniculatus Stål
(Figs 427-429)

Oliarus geniculatus Stål, 1870 : 746.

Face dark brown, frontoclypeal suture bordered with yellow, keels yellowish brown and a triangular spot on each side above frontoclypeal suture and limited dorsally along a line drawn from median to lateral ocellus black. Vertex brown, 1.2 times as long as broad, subapical keel forking from lateral margin at 0.7 distance from base and connected with apical border by two short longitudinal keels. Pronotum yellow, fumated with brown, mesonotum pale brown. Tegmina three times as long as broad, most veins dark brown, apical veins, stigma and some spots on apex brown, Sc+R forking slightly distad of Cu, r-m distad of first medial branch, apex with 12 cells, costal margin brown, not granulate. Legs yellowish brown with brown femora, chaetotaxy hind tarsi 6/5. Length : 10.5 mm, tegmen : 8.4 mm.
Male unknown.
Female genitalia : caudal border of pregenital sternite with two smalle submedian teeth. Ovipositor half as long as anal segment in lateral view, with three pairs of valvulae; first pair thin. Anal segment as broad as pygofer but curled in the lectotype by dissecation (genitalia not dissected).

Diagnosis :
By its large size, venation of the tegmina and structure of the head this species is probably related to *O. longulus* (Mindanao), *O. hyalinipennis, O. prolongulus* (Basilan), *O. longicauda* (Mindanao), *O. bidiensis* (Borneo) and maybe *O. brunnifrons* (Singapore). From *O. bidiensis* and *O. brunnifrons* it can easily be distinguished by the fact that Sc+R is forking appreciably basad of Cu in

these two species. It comes very close to *O. longicauda* and *O. hyalinipennis* but we have not been able to examine females of this species, and until further material becomes available I consider these taxa as separate species. From *O. prolongulus* it can be distinguished by the fact that the pregenital sternite in this species has no distinct submedian teeth but only small elevations. From *O. longulus* it can be distinguished by the same character, but the teeth in the female of *O. longulus* are much larger.

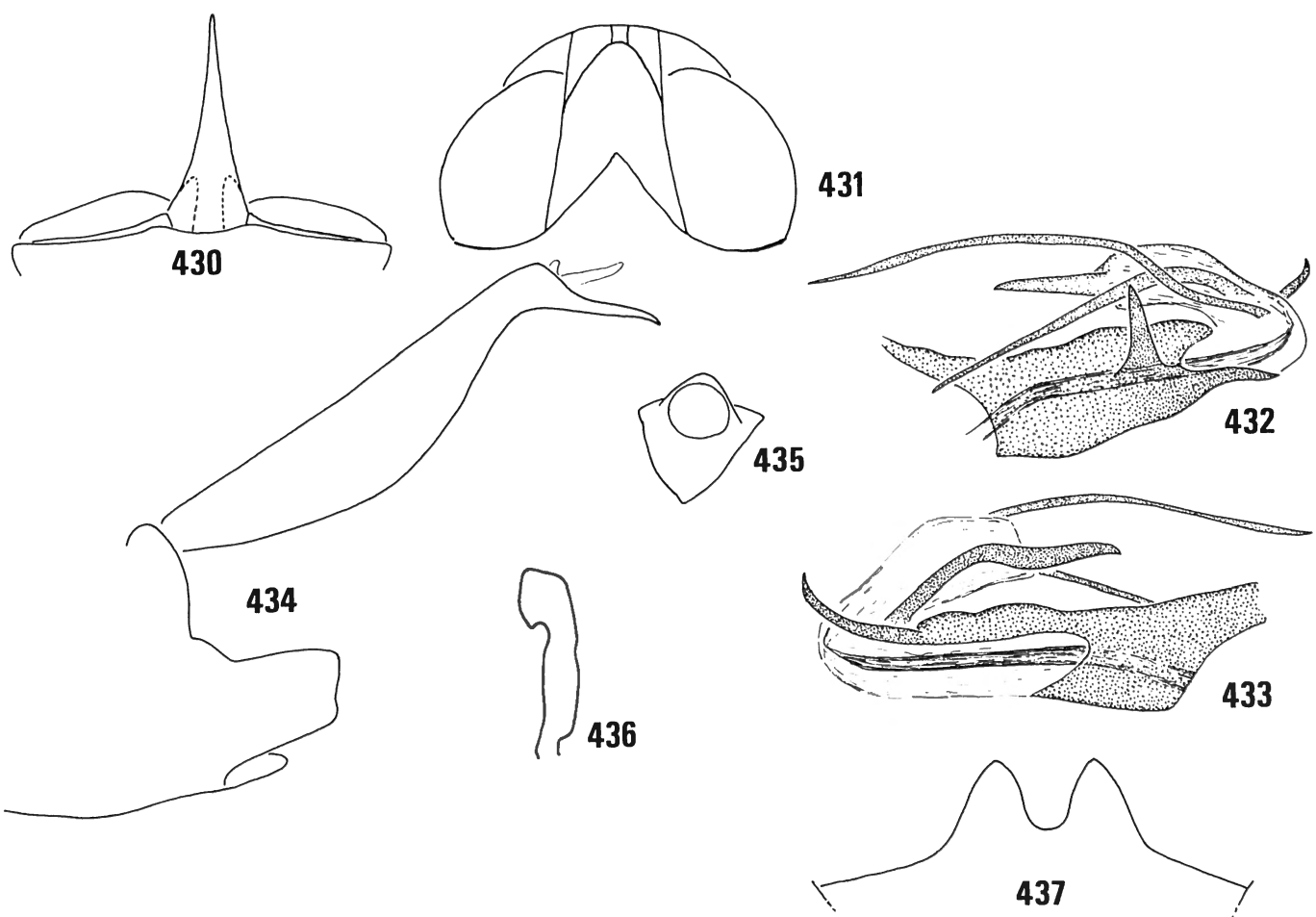
Distribution :
Philippine Islands

Material :
Lectotype ♀, here designated, "Ins. Philipp.", "semper", NR (examined).

Oliarus prolongulus MUIR, 1924
(Figs 430-431)

Oliarus prolongulus MUIR, 1924 : 516.

Face two-coloured, frons fuscous, postclypeus yellowish with two indistinct brown lateral spots; frontoclypeal suture pale yellowish. Anteclypeus brown; labium brown and darkened distally. Vertex 1.1 times as long as broad, black with yellow keels; subapical keel arcuate and connected with anterior border by two indistinct longitudinal keels, forking from lateral border at 0.7 distance from base. Pronotum yellow, slightly fumated with brown laterally. Mesonotum black with five distinct keels which are tinged with yellow. Tegulae yellow, slightly brown fumated. Tegmina 3.1 times as long as broad, Sc+R forked at level of Cu, r-m distad of first



Figs 430-431 : Oliarus prolongulus *MUIR - 430 : female genitalia, ventral view, holotype; 431 : head.*
Figs 432-437 : Oliarus longulus *MUIR - 432-433 : aedeagus, left and right lateral view, holotype; 434 : anal segment and pygofer 435 : anal segment, caudal view; 436 : left genital style; 437 : caudal border of pregenital sternite of female.*

medial branch, apex with 13 cells; costal margin dark brown and without granules, Sc and apical veins brown and pale yellow, claval fork pale yellow, and most veins dark brown and covered with very small concolorous granules; transverse veins and apical cells partly fumated with brown. Legs yellow, femora and last tarsomere of all legs brown fumated; chaetotaxy hind tarsi 6/5. Length : 9.7 mm.
Male unknown.
Female genitalia : (not dissected) pregenital sternite with two very small submedian lobes separated by a shallow median excavation. Ovipositor as long as anal segment, first valvulae as long as third, thickened basally. Anal segment nearly as broad as pygofer, wider than long, diamond-shaped to rounded.

Diagnosis :
This species is related to *O. longicauda, O. hyalinipennis, O. geniculatus* and *O. longulus* by the large size, the structure of the vertex with an arcuate subapical keel and the venation of the tegmina. It is easily distinguished from *O. longulus* by the absence of large processes on the pregenital sternite of the female in *O. longulus*. From *O. longicauda* it differs in the broader proportions of the vertex, and from *O. geniculatus* it differs by the absence of teeth on the caudal border of the pregenital sternite and the length of the ovipositor which is as long as the anal segment in *O. prolongulus* and half as long as the anal segment in *O. geniculatus*. It comes very close to *O. hyalinipennis* but in the absence of further material of both sexes both taxa are tentatively treated as separate species.

Distribution :
Philippine Islands, Basilan.

Material :
Holotype ♀, Island of Basilan, Baker (Philippine Islands), BPBM.

Oliarus longulus Muir
(Figs 432-437)

Oliarus longulus Muir, 1924 : 515, Pl. 1, figs 6a-c.

Description :
Face brown, postclypeus somewhat lighter than frons, frontoclypeal suture marked with yellow. Vertex fuscous, slightly longer than broad, transverse keel connected to anterior border by two small longitudinal keels; no median longitudinal keel at base. Pronotum and tegulae yellowish. Mesonotum black with five concolorous keels. Tegmina hyaline, three times as long as broad, Sc+R forked slightly distad of Cu-fork, r-m distad of first medial branch, apex with 12 cells, veins brown, stigma fuscous, apical margin bordered with brown between stigma and tip of clavus; female with a brown spot on base of clavus and a second transverse band going from clavus over Cu-fork to Sc+R. Fore and middle legs brown, tips of femur and tibia yellowish, hind legs yellowish with brown femora, chaetotaxy hind tarsi on both legs 6/5. Length : 9 mm.
Male genitalia : anal segment, pygofer and genital styles symmetrical or nearly so. Anal segment very long. Pygofer on each side with a rectangular lobe. Aedeagus with four long spines near apex, one directed caudally and three recurved cephalically; an additional large process on left side with two spinose processes.
Female genitalia : anal segment very large, as broad as pygofer and as long as ovipositor. Pregenital sternite with two distinct submedian processes.

Diagnosis :
The male of *O. longulus* is distinguished from other species by the very long anal segment, the rectangular lobes on the pygofer and the structure of the aedeagus. The female can easily be distinguished by the very large submedian teeth on the caudal border of the pregenital sternite.

Remark :
The reference "Type n° 1079" in the original description is interpreted as a holotype designation.

Material :
Holotype ♂, Philippine Islands, Mindanao, Butuan, Baker, BPBM (examined).
Paratypes : 3 ♀♀, same locality, 1 ♀ examined, BPBM.
Additional : in the collections of the BPBM I have found three more females resembling this species which is characterized by the large processes on the female pregenital sternite. The females are captured at the following localities : P.I. : Misamis or. Mt. Empagatao, 1100-1600 m, 22.IV.1961; Misamis or., Mt. Kibungol, 20 km SE of Gingoog, 700-800 m, 9-18.IV.1960; Mindanao, Agusan, Los Arcos, 19-23.XI.1959. A fourth and fifth specimen has intermediate processes between those of *O. longulus* and *O. prolongulus* : Misamis or., Mt. Empagatao, 1050-1200 m, 19-30.IV.1961.

Oliarus binghami Distant
(Figs 625-628)

Oliarus binghami Distant, 1911 : 738.

Head entirely pale yellow, face with two white spots near frontoclypeal suture. Vertex flat, broader than long, 0.8 times as long as broad, subapical keel arcuate, forking from lateral margin at 0.7 distance from base, the two small longitudinal keels which connect the subapical keel with the apex represented only by two indistinct elevations; no median longitudinal keel in basal com-

partment. Pronotum yellow. Mesonotum brown with five concolorous keels. Tegmina 2.9 times as long as broad, with brown fasciae as illustrated, costal margin granulate, with 12 apical cells, Sc+R forking basad of Cu, r-m situated at same level as first medial branch. Legs yellow, chaetotaxy hind tarsi 7/5. Length tegmina : 7.4 mm.
Female genitalia : not dissected; anal segment broader than half width of pygofer, with convex lateral margins. Pregenital sternite with an excavation in middle bordered on each side by a triangular process. Ovipositor with three pairs of valvulae, first pair broad at base and filiform on apex, second pair filiform and third pair broad from base to apex.

Diagnosis :
The venation of the tegmina with Sc+R forking basad of Cu and the long apical cells as well as the proportions and structure of the vertex suggest that *O. binghami* is closely related to *O. fusconebulosus* as far as we can see without examination of the male genitalia. It differs from these species in the colour pattern on the tegmina and the presence of an incision on the caudal margin of the pregenital sternite.

Distribution :
Rangoon.

Material :
Lectotype ♀, here designated, Rangoon, 26.V.1898, Bingham coll., BMNH.

Oliarus fusconebulosus DISTANT
(Figs 629-630)

Oliarus fusconebulosus DISTANT, 1906 : 258.

Head entirely pale yellow. Vertex flat, broader than long, 0.7 times as long as broad, subapical keel arcuate and connected with anterior border by two indistinct longitudinal elevations; subapical keel forking at 0.7 distance from base. Pronotum yellow, mesonotum brown with five concolorous keels. Tegmina 2.9 times as broad as long, with brown spots as illustrated, Sc+R forking basad of Cu, r-m distad of first medial branch, apex with 12 cells, costal margin granulate. Legs yellowish, chaetotaxy hind tarsi 7/5. Length tegmina : 6.6 mm.
Male unknown.
Female genitalia : not dissected; genitalia of type distorted but probably structured as those of *O. binghami,* but caudal border of pregenital sternite less excavated in middle.

Diagnosis :
Probably closely related to *O. binghami. O. fusconebulosus* is distinguished from this species by the by the different colour pattern on the tegmina, and the presence of a median keel on the vertex.

Distribution :
Burma.

Material :
Lectotype ♀, here designated, "Momeit, Doherty", BMNH.

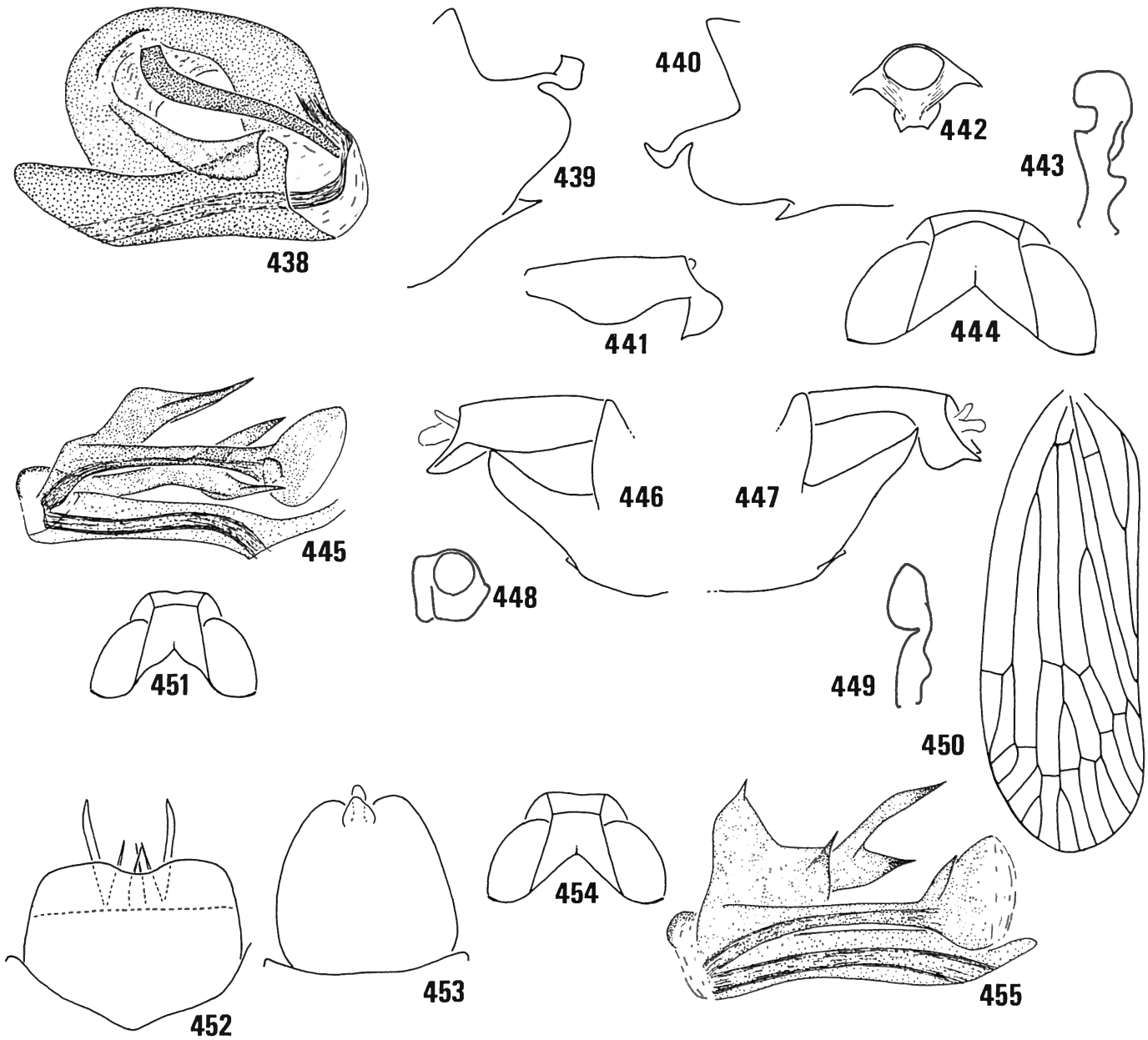
Oliarus pundaloyensis sp. n.
(Figs 438-444)

Description :
Colour brown, pronotum and legs paler, postclypeus with a pale spot on each side, keels sharp but not foliaceous. Vertex 1.4 times as broad as long, with a short median keel at base; subapical transverse keel slightly convex, forking at 0.9 distance form base and not connected to anterior border; subapical and lateral keels not prominent and therefor surface of vertex not excavated. Tegmina 2.7 times as long as broad, major part of veins dark brown, some pale brown parts in anterior half and some indistinct brown spots at apex; Sc+R forking basad of Cu, r-m slightly basad of first medial branch, 12 apical cells. Chaetotaxy hind tarsi 7/5. Length tegmen : 7.0 mm (specimen damaged).
Male genitalia : anal segment almost symmetrical. Pygofer on lateral margins with a semicircular lobe on each side having a short process, spoon-shaped on left side and finger-shaped on right side. Aedeagus with two spinose processes visible in left lateral view, one inserted on apex of aedeagus and another inserted near apex of flagellum and denticulated; the first one might be broken off.
Female unknown.

Diagnosis :
This species belong to the same group as *O. binghami, O. fusconebulosus* and *O. modicus.* Unfortunately females of this species are unknown and males of the other species are equally unknown. Therefore comparison with these species is difficult. From *binghami* and *fusconebulosus* it differs in having less brown spots on the tegmina. From *O. modicus,* to which it might be most closely related, it differs in the greater size and the proportions of the vertex.

Distribution :
Sri Lanka (= Pundaloya ?)

Material :
Holotype ♂, "Pundaloya", Atkinson, BMNH.



Figs 438-444 : Oliarus pundaloyensis *sp. n. - 438 : aedeagus, left lateral view, holotype; 439-440 : pygofer, left and right lateral view; 441 : anal segment, lateral view; 442 : anal segment, caudal view; 443 : left genital style; 444 : head.*

Figs 445-451 : Oliarus mogogonipae *sp. n. - 445 : aedeagus, right lateral view, holotype; 446-447 : anal segment and pygofer, right and left lateral view; 448 : anal segment, caudal view; 449 : left genital style; 450 : left tegmen; 451 : head.*

Figs 452-455 : Oliarus sulawesiensis *sp. n. - 452 : female genitalia, ventral view; the dotted line indicates the level of the pygofer; 453 : female genitalia, dorsal view; 454 : head; 455 : aedeagus, right lateral view, holotype.*

Oliarus mogogonipae sp. n.
(Figs 445-451)

Description :
General colour of a uniform brown; keels of head somewhat darker. Face with very prominent, almost foliaceous lateral and median keels. Vertex 1.1 times as broad as long, without a median longitudinal keel, subapical keel straight forking at 0.9 distance from base. Mesonotum with five sharp keels. Tegmina 2.9 times as long as wide, veins smooth, veins and stigma pale brown, apical veins dark brown, costal margin without granules, Sc+R forking basad of Cu, r-m forking distad of first medial branch, 12 apical cells. Chaetotaxy hind tarsi 6/5. Length : 6.0 mm.
Male genitalia : anal segment and pygofer slightly asym-

metrical; pygofer with on each side a large finger-shaped process. Genital styles small in proportion to the pygofer, symmetrical. Aedeagus with a spoon-shaped flagellum and two large processes, one simple and one bifurcate.
Female unknown.

Diagnosis :
Closely related to *O. sulawesiensis* from which it can be distinguished only by the form of the aedeagus, more especially the absence of a spine apically on the flagellum and the shape of the other two processes on the aedeagus.

Distribution :
North Sulawesi.

Material :
Holotype ♂, Indonesia, Sulawesi Utara, Gunung Mogogonipa, summit, 1008 m, no date, Project Wallace 1985, BMNH.

Oliarus sulawesiensis sp. n.
(Figs 452-455)

Description :
Externally very much resembling *O. mogogonipae*. Head and pronotum yellow, keels darker and foliaceously elevated. Vertex 1.1 time as broad as long, subapical keel straight, not connected with anterior border and forking at 0.8 distance of base. Mesonotum somewhat dark, with five sharp concolorous keels Tegmina three times as long as broad, Sc+R forking basad of Cu, r-m situated distad of first medial branch, 12 apical cells. Chaetotaxy of hind tarsi 6/5.
Male genitalia : similar to those of *O. mogogonipae*. This species can only be distinguished by the shape of the aedeagus, namely the presence of an additional spine apically on the flagellum and the shape of the shortest spinose process which is bifurcate in *O. sulawesiensis*.
Female genitalia : pregenital sternite with a shallow excavation in middle. First and second valvulae relatively short, nearly surpassing pregenital sternite. Third valvulae longer, nearly as long as anal segment in lateral view. Anal segment as broad as pygofer.

Diagnosis :
In external characters, and anal segment, pygofer and genital styles closely resembling *O. mogogonipae*. It can be easily distinguished from this species by the shape of the aedeagus which has two bifurcate processes instead of one in *O. mogogonipae* and an additional spine near the apex of the flagellum.

Distribution :
North Sulawesi.

Material :
Holotype ♂, Indonesia, Sulawesi Utara, Dumoga-Bone N. P., at light, V.1985, BMNH.
Paratypes : 2 ♂♂, 2 ♀♀, same loc., II,IV-V.1985, BMNH. 1 ♂, 1 ♀, same loc., II, IV, V.1985, K.B.I.N.

Oliarus simplex (WALKER)
(Figs 456-462)

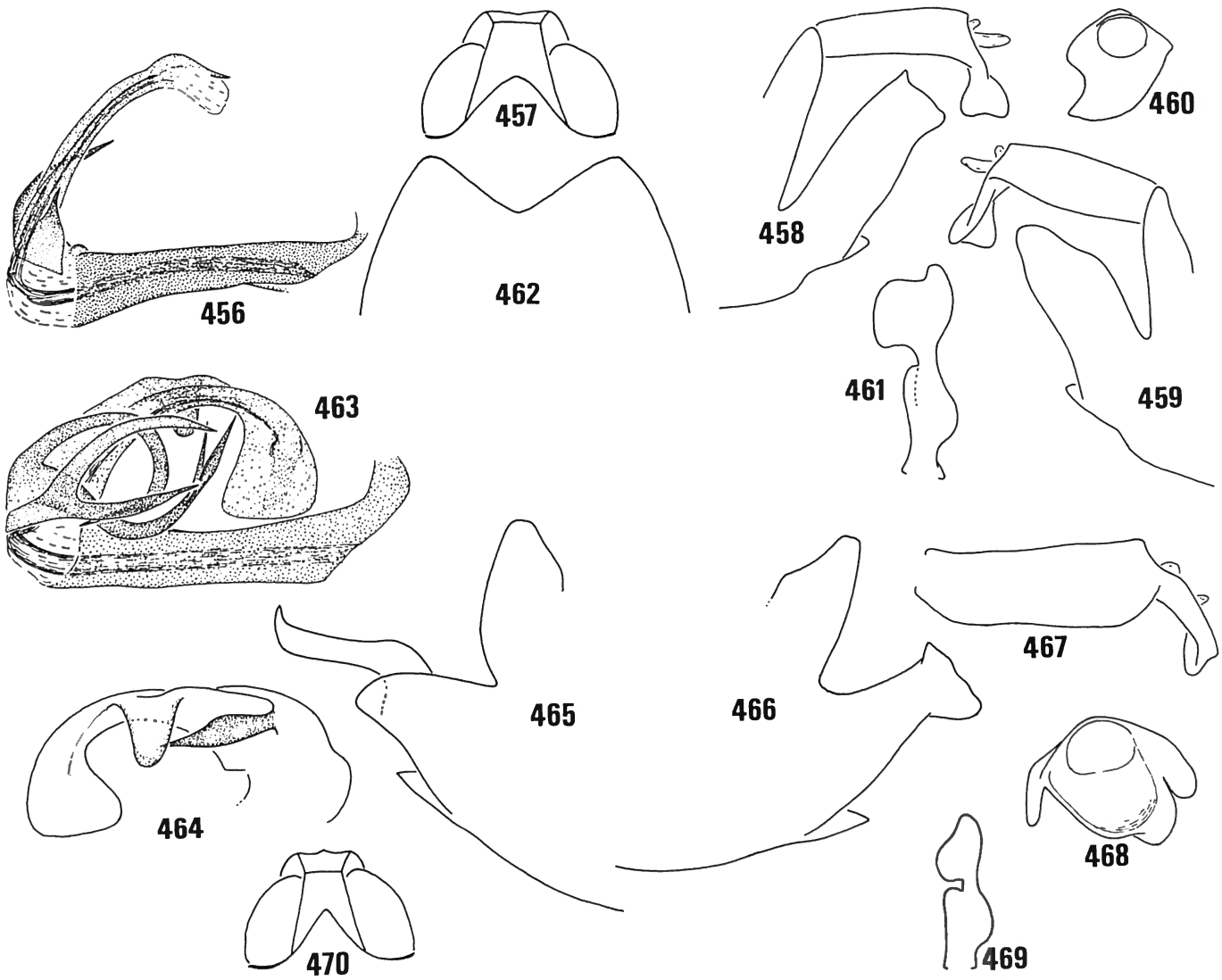
Cixius simplex WALKER, 1857 : 147.
Oliarus simplex; DISTANT, 1907 : 281.

Description :
Colour of a uniform brown. Face with almost foliaceous keels. Vertex as long as broad, subapical keel almost straight, not connected with anterior border. Mesonotum brown, with 5 distinct and concolorous keels. Tegmina 2.8 times as long as broad, veins ochreous anterior of stigma, brown in apical part, smooth; costal margin with only few granules, regularly spread between base and stigma, Sc+R forking basad of Cu, r-m situated distad of first medial branch and in total 12 apical cells. Legs ochreous, hind tibiae with very small lateral spines, chaetotaxy hind tarsi 7/5. Length : 8.0 mm.
Male genitalia : anal segment and pygofer asymmetrical. Pygofer with a long and distinct lobe on each side; genital styles small, slightly asymmetrical, left one with a small lobe at apex, as illustrated, right one without this lobe. Aedeagus with two spinose processes apically, at base of flagellum, and one spine at apex of flagellum.
Female : pregenital sternite surpassing level of pygofer, with a broad and shallow V-shaped incision. Ovipositor and anal segment similar to those of *O. sulawesiensis*.

Diagnosis :
This species superficially resembles *O. inermis* and *O. agusani* in the simple shape of the aedeagus; it can be distinguished from these species in the presence of two spines at the base of the flagellum instead of one, and by the characteristic shape of the lobes on the pygofer.

Distribution :
Borneo.

Material :
Lectotype ♀, here designated, "Wallace", "SAR", BMNH (examined).
Paralectotypes : 1 ♀ : "Borneo", BMNH; 1 ♀, "Wallace", "SAR", BMNH (examined).
Additional : 2 ♂♂, Sabah : Tawai Plat., 1300 ft, 8 mi. S. Telupid, 8.IX.1977, M. E. Bacchus, BMNH; 1 ♀, Sarawak, 1st division, Santubong, 1'43N 110'19E, 27.X-3.XI.1976, P. S. Cranston, "on mountain slope, 2800 ft", BMNH.



Figs 456-462 : Oliarus simplex *(Walker)* - *456 : aedeagus, right lateral view, specimen Telupid; 457 : head; 458-459 : anal segment and pygofer, left and right lateral view; 460 : anal segment, caudal view; 461 : left genital style; 462 : caudal border of pregenital sternite.*

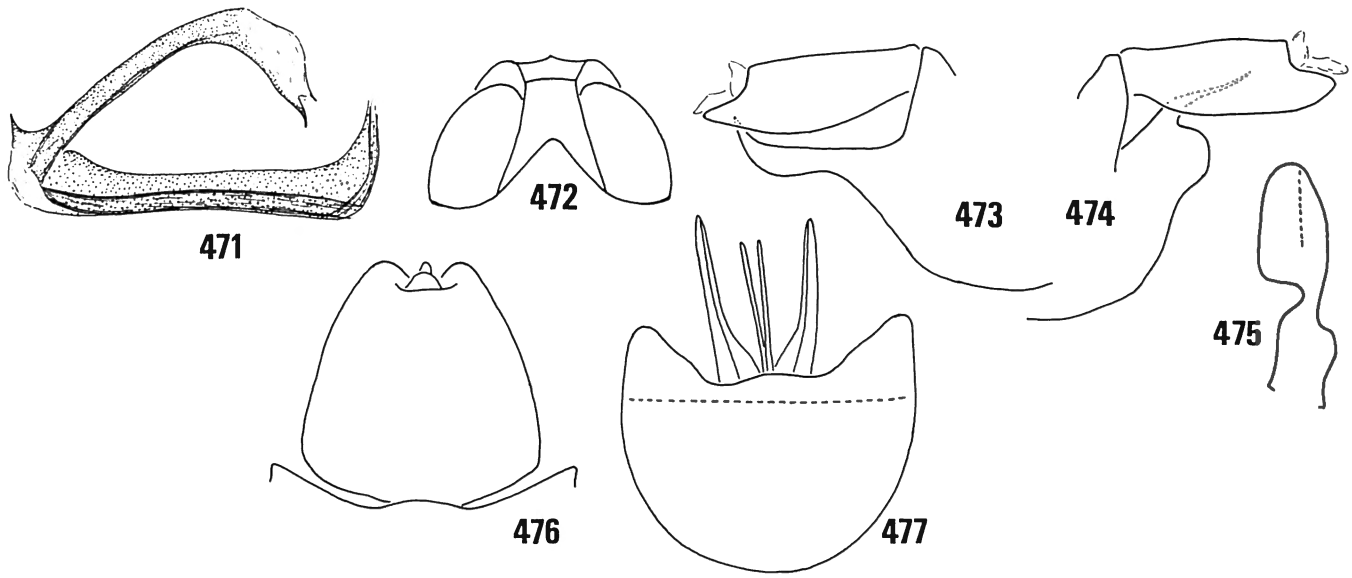
Figs 463-470 : Oliarus muluensis *sp. n. - 463 : aedeagus, right lateral view, holotype; 464 : flagellum, left lateral view; 465-466 : pygofer, right and left lateral margin; 467 : anal segment, lateral view; 468 : anal segment, caudal view; 469 : left genital style; 470 : head.*

Oliarus muluensis sp. n.
(Figs 463-470)

Description :
Head, pronotum, tegulae, veins of tegmina, and legs brown, strongly contrasting in colour with the black mesonotum. Abdomen black. Face with a paler spot on each side of frontoclypeal suture. Vertex 1.1 times as long as broad, with a straight subapical keel. Tegmina hyaline, 3.3 times as long as broad, with fuscous veins and stigma, Sc+R forking basad of Cu, r-m situated basad or distad of first medial branch. Hind tibiae with very small, indistinct lateral spines; chaetotaxy hind tarsi 7/5. Length : 6.5 mm.

Male genitalia : anal segment, pygofer and genital styles asymmetrical, as illustrated; left genital style slightly longer than right one. Aedeagus with three spinose processes on right side, two of which are bifurcated; one more spine and one plate-shaped process on left side of flagellum.
Female unknown.

Diagnosis :
This species can be distinguished by the characteristic shape of the processes on the pygofer and by the form of the aedeagus. No closely related species have been observed.



Figs 471-477 : Oliarus inermis *sp. n. - 471 : aedeagus, right lateral view, holotype; 472 : head; 473-474 : anal segment and pygofer, right and left lateral view; 475 : left genital style; 476-477 : female genitalia; the dotted line indicates the level of the hind margin of the pygofer.*

Distribution :
Borneo.

Material :
Holotype ♂, Borneo, Sarawak, Gunung Mulu N. P., "site 13, camp 2", Mulu 500 m, II.1978, J. D. Holloway, BMNH.

Oliarus inermis sp. n.
(Figs 471-477)

Description :
Head, pronotum, tegulae and legs pale brown, mesonotum and abdomen dark brown. Vertex 1.1 times as long as broad, with a slightly convex subapical keel. Tegmina 3.1 times as long as broad, without brown spots; veins and stigma brown, veins darker in the apical part, Sc+R forking basad of Cu, r-m situated distad of first medial branch, 12 apical cells in total; costal margin bent anteriorly, wihout granules. Hind tibiae with very small lateral spines; chaetotaxy hind tarsi 7/5. Length : 7.2-8.6 mm.
Male genitalia : anal segment, pygofer and genital styles as illustrated. Aedeagus with a short spine on the base of the flagellum and two short spines on apex of flagellum.
Female genitalia : pregenital sternite surpassing pygofer, with lateral margins produced caudad. Anal segment trapezoid, almost as broad as pygofer.

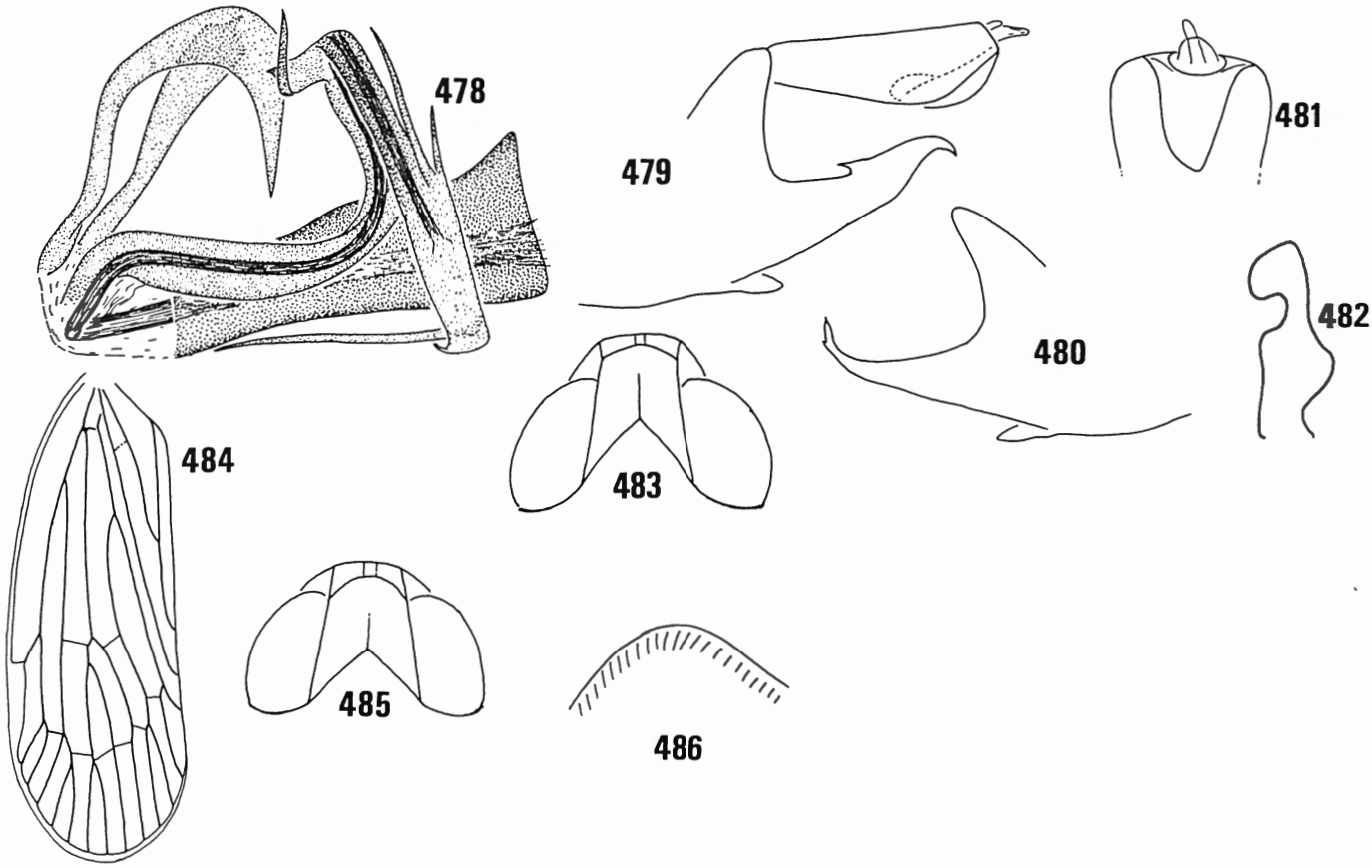
Diagnosis :
O. inermis can be distinguished from other species by the lack of large spines on the aedeagus and by the characteristic shape of the processes on the pygofer; no closely related species have been observed.

Distribution :
North Sulawesi.

Material :
Holotype ♂, Indonesia, Sulawesi Utara, Dumoga-Bone N. P., V.1985, J. Martin, BMNH.
Paratypes : 1 ♀♀, same data as holotype, BMNH; 3 ♂♂, same data, II.1985, BMNH; 1 ♀, same data, IV.1985, BMNH. 1 ♀, same dta as holotype, K.B.I.N., 1 ♂, same data, II.1985; K.B.I.N.

Oliarus penrissensis sp. n.
(Figs 478-483)

Description :
General colour ochreous to brown, mesonotum somewhat darker than head and pronotum. Vertex as long as broad, subapical keel slightly convex, connected with anterior border by two very indistinct longitudinal keels. Tegmina three times as long as broad, veins brown, apical veins and stigma fuscous; costal margin regularly covered with small concolorous granules, Sc+R forking basad of Cu, 13 apical cells, r-m on one side situated before and on the other after the first medial branch. Hind tibiae with very small lateral spines, chaetotaxy hind tarsi 7/5. Length : 8.0 mm.
Male genitalia : anal segment and pygofer slightly asymmetrical. Anal segment with a blunt apical lobe. Pygofer with two long and tapering processes, left one with a short tooth on dorsal margin. Aedeagus with three long tapering processes inserted on base of flagellum; one process very long and complex, circular, recurved ventrally along right side and bearing several spines; one of these recurved medially and thus not visible on fig. xx.
Female unknown.



Figs 478-483 : Oliarus penrissensis *sp. n.* - *478 : aedeagus, right lateral view, holotype; 479 : anal segment and pygofer, left lateral view; 480 : pygofer, right lateral view; 481 : apex of anal segment; 482 : left genital style; 483 : head.*

Figs 484-486 : Oliarus modicus *(Walker)* - *484 : left tegmen; 485 : head; 486 : caudal border of pregenital sternite of female lectotype.*

Diagnosis :
This species can be recognised by the complex structure of the aedeagus, the presence of a relatively large apical process on the anal segment and the structure of the processes on the pygofer. No closely related species have been observed.

Distribution :
Borneo.

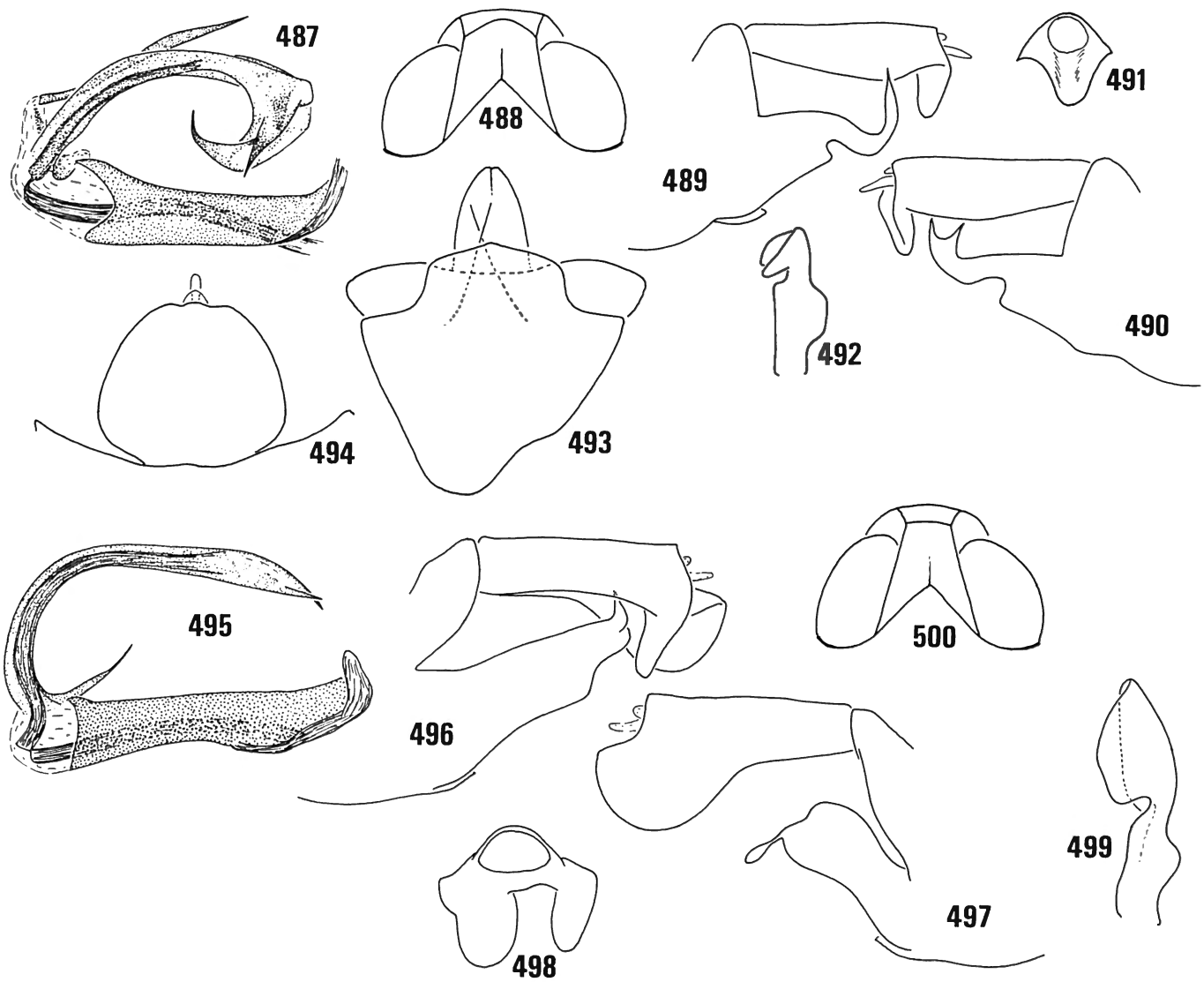
Material :
Holotype ♂, Borneo, Sarawak, Mt Penrissen, 4000 ft, Dr E. Mjoberg, Mt Poi Exp., BMNH.
Paratype : 1 ♂, same data as holotype, BMNH.

Oliarus modicus (Walker)
(Figs 484-486)

Cixius modicus Walker, 1857 : 148.
Oliarus modicus; Distant, 1907 : 281.

Head yellow. Vertex 0.9 times as long as broad, subapical keel arcuate and forking at 0.7 distance from base, connected to anterior border by two indistinct keels; median keel developed at base. Keels on face sharp. Pronotum and mesonotum yellowish. Tegmina hyaline, transverse veins slightly fumated with brown, 2.9 times as long as broad, veins smooth, with concolorous granules, costal margin with protruding, concolorous granules, Sc+R forking basad of Cu, r-m situated distad of first medial branch, apex with 12 cells. Legs yellowish, chaetotaxy hind tarsi 7/5. Length tegmen : 6.1 mm.
Male unknown.
Female genitalia : not dissected; anal segment diamond-shaped, as broad as pygofer. Caudal border of pregenital sternite convex.

Diagnosis :
This species differs from *O. binghami* and *O. fusconebulosus* in the almost colourless tegmina while a distinct colour pattern is present in these two species. It differs from *O. pundaloyensis, O. mogogonipae, O. sulawesiensis, O. simplex, O. muluensis, O. agusani* and *O. inermis* in the presence of an arcuate subapical keel on the vertex while almost straight in the species mentioned above. It differs from *O. microstylus* in the different shape of the female genitalia. It resembles very well *O. penrissen-*



Figs 487-494 : Oliarus microstylus *sp. n. - 487 : aedeagus, right lateral view, holotype; 488 : head; 489-490 : anal segment and pygofer; 491 : anal segment, caudal view; 492 : left genital style; 493-494 : female genitalia, the dotted line indicates the hind margin of the pygofer and the outline of the valvulae of the pygofer.*

Figs 495-500 : Oliarus agusani *sp. n. - 495 : aedeagus, right lateral view; 496-497 : anal segment and pygofer; 498 : anal segment, caudal view; 499 : left genital style; 500 : head.*

sis in general structure and size although this species is much darker. These colour differences might be of infraspecific variation but unfortunately we have no further female material of *O. penrissensis* to compare both taxa more in detail.

Distribution :
Borneo.

Material :
Lectotype ♀, here designated, "Wallace", BMNH.

Oliarus microstylus sp. n.
(Figs 487-494)

Description :
Colour of a uniform brown. Vertex somewhat broader, 0.8 times as long as broad, with subapical keel slightly convex and forking from lateral border at O.8 distance of base; median keel developed at base. Tegmina 2.9 times as long as broad, veins brown and smooth by the presence of small, concolorous granules. Costal margin granulate, Sc+R forking basad of Cu, r-m situated distad

of first medial branch (just basad in one specimen), and 12 cells apically. Chaetotaxy hind tarsi 7/5, sometimes 6/5. Length : ♂ : 8.0-8.9; ♀ : 9.9-10.1 mm.
Male genitalia : anal segment and pygofer slightly asymmetrical. Pygofer with an upcurved process on left side, same process on right side bifurcate at apex. Genital styles small compared to pygofer. Aedeagus with a long spine inserted apically and running parallel to flagellum, and two terminal processes on flagellum.
Female genitalia : pregenital sternite with a large median projection. third pair of valvulae fused together, second pair very thin, hair-shaped and base inserted on same level as third valvulae, first pair hair-shaped but longer than second pair and inserted deeper than the two others. Anal segment oval, less broad than pygofer.

Diagnosis :
Distinguished from other species by the characteristic shape of the lobes on the pygofer and the shape of the spines on the aedeagus.

Distribution :
Borneo.

Material :
Holotype ♂, Sarawak, Gunung Mulu Nat. Park, 1978, J. D. Holloway, BMNH.
Paratypes : 7 ♂♂, 1 ♀♀, same data as holotype, BMNH. 2 ♂, 1 ♀, same data as holotype, K.B.I.N.

Oliarus agusani sp. n.
(Figs 495-500)

Description :
General colour of a uniform pale brown. Vertex 1.8 times as long as broad, subapical keel slightly convex, almost straight, forking from lateral margin close to apex, at 0.9 distance of base. Tegmina 2.9 times as long as broad, veins brown and fuscous apically, smooth by the presence of small, concolorous granules; costal margin and stigma paler; costal margin with a few granules near base, Sc+R forking basad of Cu, r-m situated distad of first medial branch, apex with 12 cells. Hind tibiae with very small lateral spines, chaetotaxy hind tarsi 7/5. Length : 9.2-10.3 mm.
Male genitalia : anal segment on right side with a large, rounded lobe, on left side abruptly produced into a narrow process, both processes separated by a deep excavation. Pygofer on each side with a long lobe as illustrated. Aedeagus simple, two small spines apically on flagellum and a longer spine implanted on apex of aedeagus, on inner side of flagellum.
Female genitalia unknown; the two listed females are identical with the holotype, but as they are captured at another locality, I wish to await further material to describe the female genitalia.

Diagnosis :
This species resembles *O. inermis* in the shape of the aedeagus. *O. agusani* can be distinguished from this species by the different place of implantation of the spine near the base of the flagellum, and by the different shape of the anal segment and pygofer.

Distribution :
The Philippine Islands.

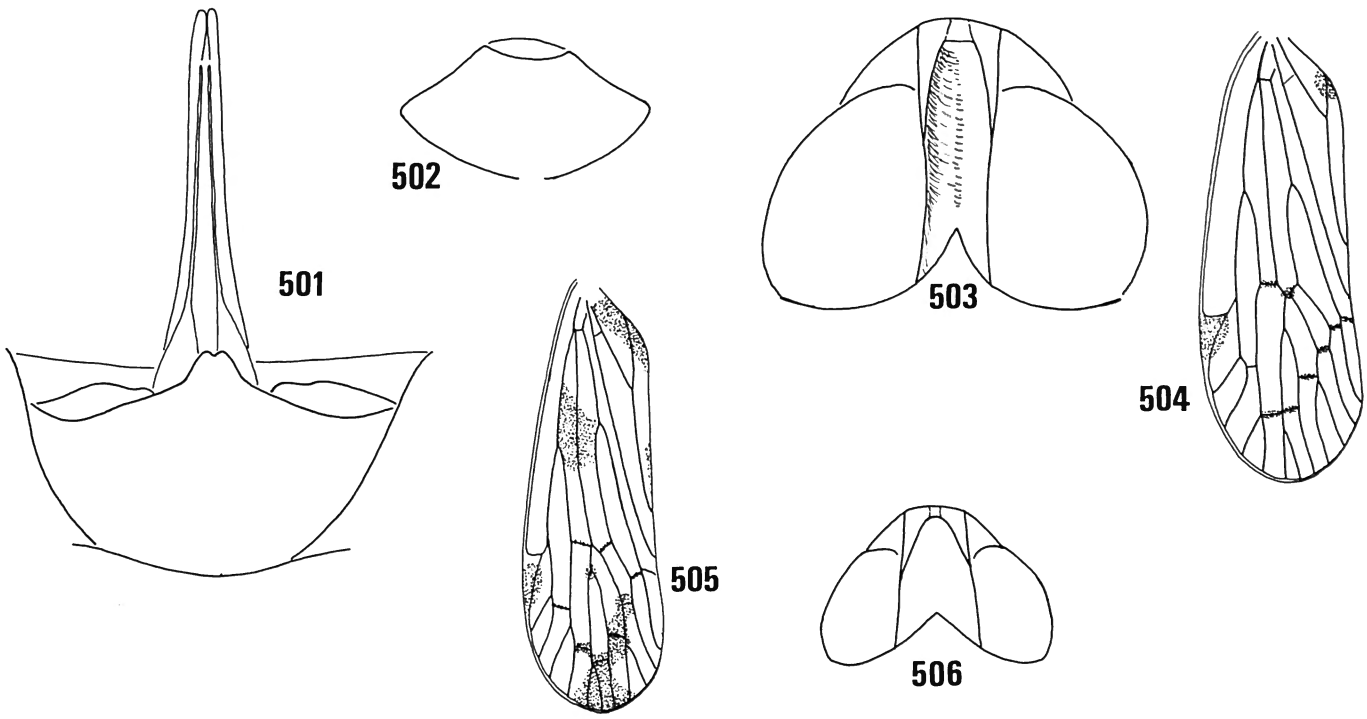
Material :
Holotype ♂, Philippine Isl., Mindanao, Agusan, Arcas, 19-23.XI.1959, BPBM.
Possibly conspecific : 2 ♀♀, Misamis or., Mt Empagatao, 1050-2000 m, 19-30.IV.1961, BPBM.

Oliarus albomaculatus Muir
(Figs 501-504)

Oliarus albomaculata [sic] Muir, 1924 : 524.

Face yellow, with two oval, whitish maculae, under and above each macula a small brown spot; apex of labium brown. Vertex black with yellow keels, 3.4 times as long as broad, lateral keels high, subapical deeply U-shaped; forking at 0.6 distance from base. Genae with a black spot between antennae and lateral ocellus; antennae dark brown. Pronotum yellow, mesonotum brown exterior of keels, yellow in the space delimited by the five keels. Tegmina hyaline, three times as long as broad, costal margin brown, not granulated; Sc+R forked at same level as Cu, r-m situated basad of first medial branch, apex with 11 cells. Stigma, a spot on clavus near commisural margin and transverse veins brown. Legs yellow, chaetotaxy hind tarsi 8/7. Length : 10.4 mm.
Male unknown.
Female genitalia : (not dissected) pregenital sternite with a median process having a shallow incision at apex. Ovipositor twice as long as anal segment, first valvulae thickened basally. Anal segment diamond-shaped 0.6 times width of pygofer.

Diagnosis :
As this species is only known from female material it is difficult to characterize it among the *Oliarus* species of the oriental region. According to Muir (1924) this species is related to *O. borneensis* "so far as the females are concerned". It differs from this species in many aspects such as colour of the face, body size and chaetotaxy of the hind tarsi. in *O. borneensis* the chaetotaxy is 7/5 while 8/7 in *O. albomaculatus* and especially for the differences in the last mentioned character I would be surprised if both species are closely related. It comes much closer to a species group with *O. horishanus, O. nigronervatus* and *O. ryukyucola* and also *O. cingalen-*



Figs 501-504 : Oliarus albomaculatus *Muir* - *501 : female genitalia, holotype, ventral view; 502 : anal segment of female; 503 : head; 504 : left tegmen.*

Figs 505-506 : Oliarus indicus *Distant* - *505 : left tegmen, lectotype; 506 : head.*

sis, O. caudatus, O. indicus and *O. tabrobanensis*. It resembles this group in the structure of the vertex with the U-shaped subapical keel, the structure of the tegmina with Sc+R forking at the same level as Cu, and the structure of the female genitalia with the broad diamond-shaped anal segment and the long ovipositor.

Remark :
The reference "type N° 1093" in the original description is considered as a holotype designation.

Material :
Holotype ♀, Philippine Isl., Los Baños, IX.1915, F. Muir, BPBM (examined). Paratypes : 4 ♀♀, Mount Maquiling, BPBM, (not examined).

Oliarus indicus Distant
(Figs 505-506)

Oliarus indica [sic] Distant, 1911 : 735.

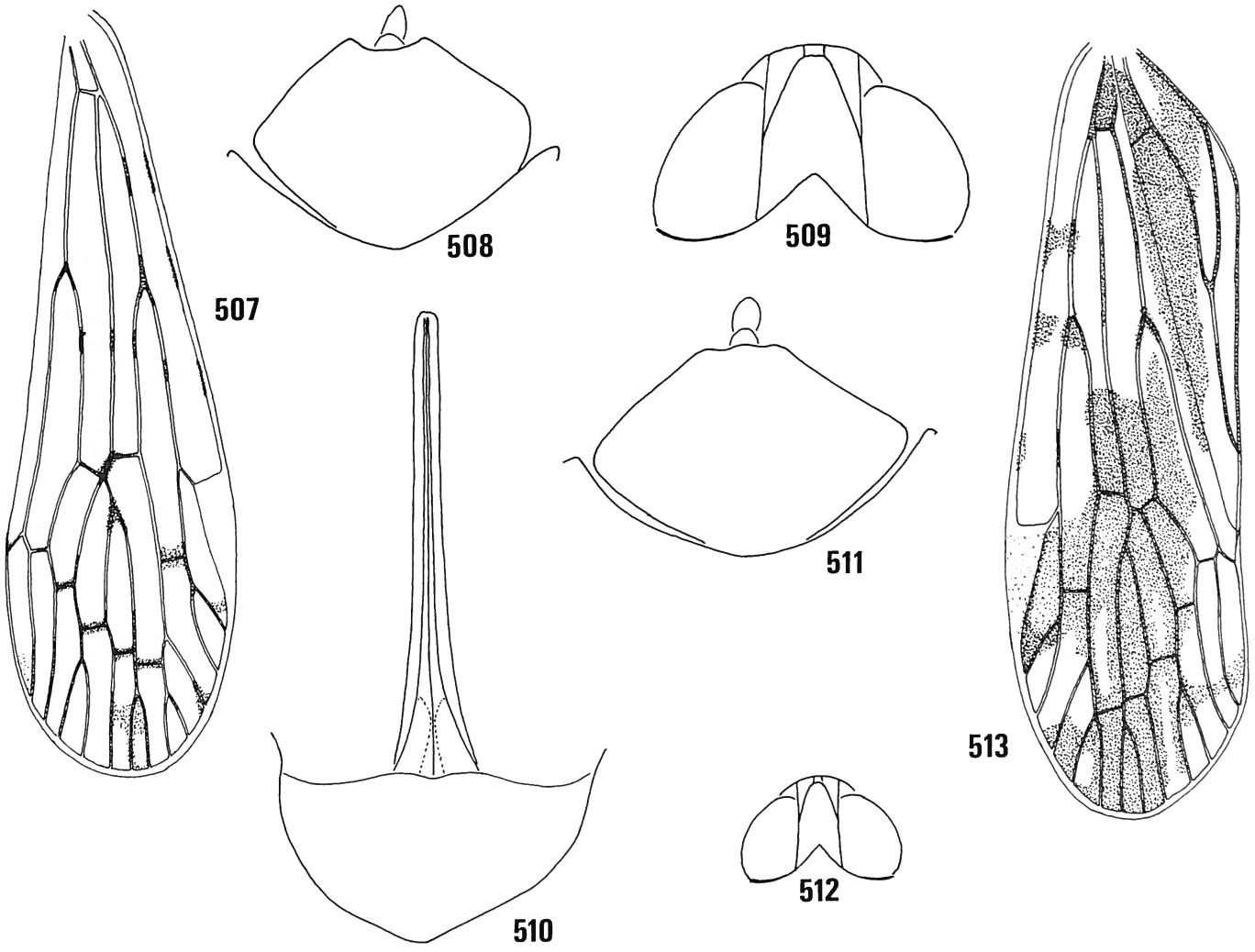
Head, pronotum and mesonotum black with yellow keels and borders. Face with frontoclypeal suture marked with yellow. Vertex 1.4 times as long as broad, subapical keel U-shaped, forking from lateral border at 0.6 distance from base and connected with anterior border by two small keels. Tegmina 3.3 times as long as broad, costal margin with small concolorous granules, Sc+R forking distad of Cu, r-m forking slightly distad of first medial branch, apex with 11 cells. The lectotype is damaged and a part of the abdomen and hind tarsi are lacking. As it resembles *O. caudatus* and *O. albomaculata* the chaetotaxy of the hind tarsi might be 7/7. Length tegmina : 8 mm.
It is difficult to place this species by the lack of female and male characters. Its large size, the structure of the vertex and the venation of the tegmina suggest that *O. indicus* might be related with *O. caudatus, O. cingalensis* and possibly *O. horishanus* and *O. nigronervatus*. On the other hand it might be related to the species group with *O. longicauda, O. geniculatus, O. prolongulus* and *O. longulus*. Further material is needed to solve the problem of its identity.

Distribution :
India.

Material :
Lectotype ♀, here designated, "Ind.", BMNH (examined).

Oliarus caudatus (Walker)
(Figs 507-509)

Cixius caudatus Walker, 1858 : 43.
Oliarus caudatus; Distant, 1906 : 258, fig. 14.



Figs 507-509 : Oliarus caudatus *Distant - 507 : right tegmen, lectotype (clavus missing); 508 : anal segment, female, with outline of dorsal margin of pygofer; 509 : head.*

Figs 510-513 : Oliarus cingalensis *(Distant) - 510 : female genitalia, lectotype, ventral view; 511 : anal segment, female, with outline of pygofer; 512 : head; 513 : left tegmen, lectotype.*

Face brown, keels somewhat paler, lateral parts of frontoclypeal suture each with a small yellowish spot. Vertex 1.2 times as long as broad, black with yellowish keels, subapical keel forking at 0.5 distance of base, U-shaped and joined with the apical border by two short keels. Pronotum brown laterally, yellow dorsally. Mesonotum black lateral of keels, space between keels and keels themselves yellow. Abdomen brown. Tegmina 3.3 times as long as broad, Sc+R forking at same level as Cu, costal margin and veins granulated, costal margin straight; a few small brown spots and part of veins brown fumated, as illustrated in fig. xx; r-m situated basad of first medial branch, apex with 12 cells. Legs yellowish, chaetotaxy hind tarsi 7/7. Length : 9.5 mm. Male unknown.

Female genitalia : very similar to those of *O. cingalensis*. Caudal border of pregenital sternite straight. Ovipositor twice as long as anal segment, first pair of valvulae thickened basally. Anal segment diamond-shaped, as broad as pygofer.

Diagnosis :

This species is related to *O. albomaculatus, O. indicus, O. cingalensis, O. caudatus,* and possibly *O. tabrobanensis*. It is distinguished from these species by the uncoloured tegmina and by the straight caudal margin of the pregenital sternite.

Distribution :

North Hindostan, as mentioned by Walker in the original description. This is not mentioned on the label of the lectotype.

Material :

Lectotype ♀, here designated, "Ind" [North Hindostan ?], BMNH (examined).

Oliarus cingalensis (DISTANT)
(Figs 510-513)

Mnemosyne cingalensis DISTANT, 1911 : 738.
Oliarus cingalensis; VAN STALLE, 1988 : 46.

Description :
Face brown, keels somewhat paler, lateral parts of frontoclypeal suture each with a small yellowish spot. Vertex 1.6 times as long as broad, black with yellowish keels, subapical keel forking at 0.6 distance of base, U-shaped and joined with the apical border by two small keels. Pronotum brown laterally. Mesonotum black with five brown keels, portion between the outer keels brown and thereby forming two brown longitudinal bands. Abdomen brown. Tegmina partly fumated with brown, 3.4 times as long as broad, Sc+R forking at same level as Cu, costal margin straight, granulated, r-m forking basad of first medial branch, apex with 12 cells; veins brown to black with large granules. Legs yellowish, chaetotaxy hind tarsi 7/7. Length (wings spread open in lectotype) : body : 7.0 mm, tegmen : 7.9 mm.
Male unknown.
Female genitalia : caudal border of pregenital sternite with a shallow excavation in middle. Ovipositor twice length of anal segment, first pair of valvulae thickened basally. Anal segment as broad as pygofer, diamond-shaped.

Diagnosis :
The structure of the vertex in combination with the long ovipositor and the nervation of the tegmina suggest that *O. cingalensis* is related to *O. horishanus* (Taiwan), *O. nigronervatus* (China), *O. pleikuensis* (Viet nam), and *O. ryukyucola* (Ryukyu I.). None of these species presents such a colour pattern on the tegmina. Examination of further material of Sri Lanka is needed to redescribe this species and to establish its relationship to the species listed above. It is also closely related to *O. albimaculata, O. caudatus, O. indicus* and possibly also *O. tabrobanensis,* only known from females. It can be recognised from these species by the presence of an oblong brown fascia on the tegmina, which is lacking in the other species.

Distribution :
Sri Lanka.

Material :
Lectotype ♀, here designated, Trincomalee, Ceylon, XI.1906, BMNH (examined).

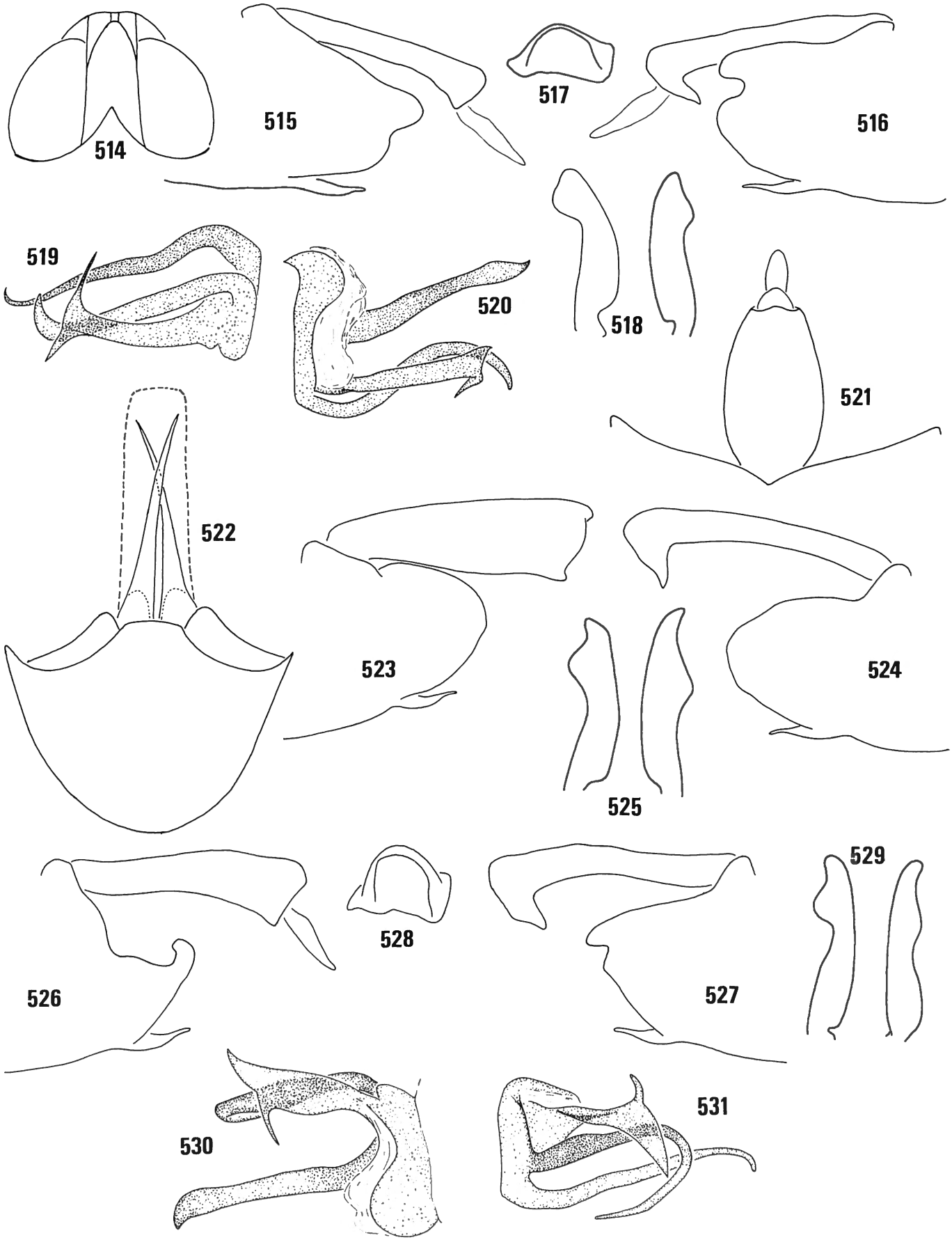
Oliarus horishanus MATSUMURA
(Figs 514-525)

Oliarus horishanus MATSUMURA 1914 : 418.
Oliarus horishanus; TSAUR, HSU & VAN STALLE, 1988 : 57, fig. 12.

Description :
Face two-coloured, frons brown, postclypeus pale ochreous; keels pale; a whitish, roundish macula on each side of frontoclypeal suture, in pale specimens connected to each other. Vertex black with yellowish keels, 1.8 times as long as broad, subapical keel connected to anterior border by two longitudinal keels and forking from lateral border at 0.6 distance from base; no median keels. Pronotum ochreous, fumated with brown. Mesonotum dark brown in one specimens, ochreous in another, with five sharp concolorous keels. Tegmina 3.3 times as long as broad, hyaline with brown veins, sometimes a brown spot at apex of tegmina; Sc+R forked at same level as Cu, costal margin with a few granules between base and stigma; r-m forking basad of first medial branch, apex with 12 apical cells. Legs yellowish, chaetotaxy hind tarsi 7/7. Length : ♂ : 9.5; ♀ : 10.5 mm.
Male genitalia : genitalia variable and slightly asymmetrical. Lectotype : anal segment long, with a small apical process on right side. Pygofer incised on right margin. Genital styles with right apex somewhat longer than apex of left style. Aedeagus with three spinose processes inserted on base, the median process flat and forked at apex. In the male from "Hassenzan" the pygofer is rouded on left and right side, and not incised on right side; the genital styles are asymmetrical and the apex is longer than in the lectotype. In the aedeagus the right spinose process is larger than in the lectotype and both other spines show minor differences in shape. In the male from "Suisha" the anal segment and pygofer are shaped like those of the lectotype; the genital styles are less asymmetrical than in the preceding specimen, and in the aedeagus the apical part of the spine inserted on left side is more curved ventrally than is the case in the lectotype.
Female genitalia : caudal border of pregenital sternite produced in middle and excavated laterally (concave),

Figs 514-525 : Oliarus horishanus *MATSUMURA - 514 : head; 515-516 : anal segment and pygofer, left and right lateral view, lectotype; 517 : anal segment, caudal view; 518 : genital styles, lectotype; 519-520 : aedeagus, lectotype, dorsal and ventral view; 521-522 : female genitalia, dorsal and ventral view; 523-524 : anal segment and pygofer, left and right lateral view, specimen "Formosa, Hassenzan"; 525 : genital styles, same specimen.* ▷

Figs 526-531 : Oliarus nigronervatus *FENNAH - 526-527 : anal segment and pygofer, left and right lateral view, specimen Kwantung; 528 : anal segment, caudal view; 529 : genital styles; 530-531 : aedeagus, dorsal and ventral view, same specimen.*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cephalic border rounded. First pair of valvulae thickend basally. Anal segment oblong, 1.6 times as long as broad in widest part.

Diagnosis :
O. horishanus is closely related to *O. nigronervatus* FENNAH. With the material presently available it is impossible to decide whether both forms are synonyms or separate species. The examined specimens differ from *O. nigronervatus* only in details of the structure of the male genitalia : the left side of the pygofer is rounded while excavated on dorsal part in *O. nigronervatus,* and the left spine on the aedeagus is less curved than is the case in *O. nigronervatus.*

Distribution :
Taiwan.

Material :
Lectotype ♂, designated by TSAUR et al. 1988, Formosa, MATSUMURA, Gyochi, 21.III.1904, HU (examined).
Paralectotypes : 1 ♂ (last segments of abdomen missing), 1 ♀, Formosa, MATSUMURA, Arisan, 25.VI.1909, HU (examined); 1 ♂, Formosa, MATSUMURA, Rinkiho, 23.IV.1907; 1 ♀, Formosa, MATSUMURA, Horisha, 30.IV.1907, HU (examined).
Additional : 1 ♂, Taiwan, Hassenzan, 26.VI.1934, NCSU; 1 ♂, Taiwan, Suisha, 1.VI.1934, NCSU; 1 ♂, 2 ♀♀, Taiwan, Hokki, 14,17.V.1934, NCSU.

Oliarus nigronervatus FENNAH
(Figs 526-531)

Oliarus nigronervatus FENNAH, 1956a : 451; fig. 3, A-F.

Description :
In absence of the holotype the description is based on the additional species listed below which are supposed to be conspecific : head, pronotum and mesonotum dark brown; frons with two pale maculae on frontoclypeal suture. Vertex 1.5 times as long as broad, subapical keel U-shaped, forking from lateral margin at 0.6 distance from base. Tegmina hyaline, 3.1 times as long as broad, veins dark brown with small concolorous granules; costal margin covered with small granules, Sc+R forking at same level as Cu, r-m situated basad of first medial branch, apex with 12 cells. Length : 9.2-10.7 mm.
Male genitalia : closely resembling those of *O. horishanus* from which it differs in the shape of the left margin of the pygofer, which is excavated on dorsal margin in *O. nigronervatus* FENNAH, and in details of the structure of the aedeagus, namely the shape of the left spinose process, which is recurved in the direction of the cephalic border over about half its length.
Female genitalia : like those of *O. horishanus,* but caudal border of pregenital sternite less produced in middle and lateral borders not concave.

Distribution :
Southern China.

Material :
Holotype ♂, China, Suisapa, Lichuan District, W. Hupeh, 19.VIII.1948, Gressitt (not examined), IZP.
Additional : 3 ♂♂, S. China, Kwantung, Kau-lin San, 700-900 m, Lien-p'ing Distr., 17,22,24.IV.1940, J. L. Gressit and F. K. To, NCSU; 1 ♂, 1 ♀, China, SE Kiangai, Hong San, 26.VI.1936, Gressit, NCSU; 1 ♂, Taiwan, Antsu, 20.IV.1932, L. Gressit, NCSU.

Oliarus yangi TSAUR
(Figs 532-537)

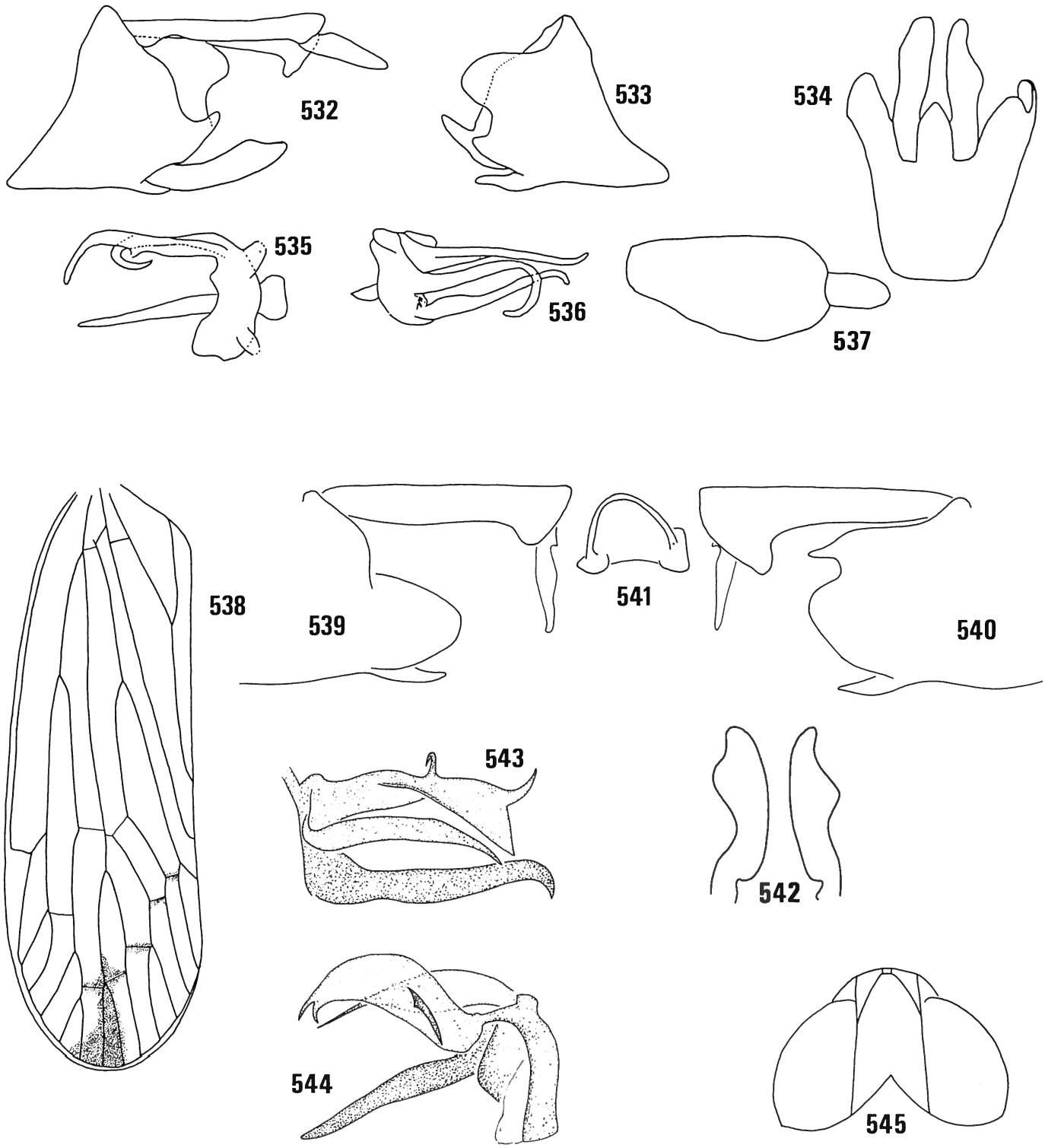
Oliarus yangi TSAUR, 1989 : 171, figs 1, A-F.

Description (after TSAUR, 1989) : general colour black dorsally, yellowish brown ventrally. Face two-coloured, frons brownish black, postclypeus brown with paler keels, and frons with a pale macula on each side near frontoclypeal suture. Vertex 1.7 times as long as broad, without a median carina, subapical keel U-shaped. Tegmina hyaline, 3.2 times as long as broad, Sc+R forking at same level as Cu, costal margin with a few granules between base and stigma, apex with 12 cells. Chaetotaxy hind tarsi 7/7. Length tegmina : 7.6 mm.
Male genitalia : anal segment, pygofer and genital styles asymmetrical. Anal segment long, with a small apical process on right side. Pygofer with a large rounded lobe on right side which is excavated and on left side dorsal part excavated and margin terminating into a finger-shaped apex. Right genital style more excavated on apex than left one. Aedeagus with three long processes as illustrated in fig. xx.

Diagnosis :
Closely related to *O. horishanus* and *O. nigronervatus* from which it can be distinguished by the bifurcate process on the aedeagus from these two species. The shape of the pygofer might also help to distinguish these species although this might show infraspecific variation : in the lectotype of *O. horishanus* the right lobe has a shallow incision dividing the right lateral margin in two lobes; the dorsal portion is much larger in *O. yangi* than in *O. horishanus.* In *O. yangi* the left lobe in excavated in the dorsal part, while the same part is not excavated in *O. horishanus.*

Distribution :
Taiwan.

Material :
Holotype ♂, Taiwan, Chihnankung, Taipei City, 1.VI.1987, S. C. Chen, NTU (not examined).



Figs 532-537 : Oliarus yangi *Tsaur - 532 : anal segment, pygofer and genital styles, left lateral view; 533 : pygofer, right lateral view; 534 : pygofer and genital styles, ventral view; 535 : anal segment, dorsal view; 536-537 : aedeagus, dorsal and ventral view.*

Figs 538-545 : Oliarus ryukyucola *sp. n. - 538 : left tegmen; 539-540 : anal segment and pygofer, left and right lateral view; 541 : anal segment, caudal view; 542 : genital styles; 543-544 : aedeagus, holotype, left lateral and dorsal view; 545 : head.*

Oliarus ryukyucola n. sp.
(Figs 538-545)

Description :
Frons brown, postclypeus slightly paler. Vertex black with yellow keels, 1.5 times as long as broad, subapical keel U-shaped, forking from lateral margin at 0.7 distance of base and connected with apex by two small longitudinal keels. Pronotum and mesonotum black, keels on mesonotum slightly paler. Tegmina 3.1 times as long as broad veins dark brown with small concolorous granules, costal margin not granulate, Sc+R forking at same level as Cu, r-m situated basad of first medial branch, apex with 12 apical cells, a oblong brown spot on commisural margin near tip of clavus and a brown spot on apex. Legs yellowish brown with brown femora, chaetotaxy hind tarsi 7/7. Length : 8.5-9.7 mm.
Male genitalia : asymmetrical; pygofer on left side with a rounded lobe, on right side with a large semicircular lobe which is deeply incised on apex. Right genital style somewhat longer than left one. Aedeagus with three spinose processes as illustrated in fig. xx. shaped like those of *O. horishanus* and *O. nigronervatus,* but the two left spinose processes shaped differently.
Female genitalia : like those of *O. nigronervatus.*

Diagnosis :
This new species differs from *O. horishanus, O. nigronervatus* and *O. yangi* in the structure of both left spines on the aedeagus : the median process bears an additional spine near its base, and the most sinistral process is broader and more flattened than in the other species.

Distibution :
Ryukyu I.

Material :
Holotype ♂, S. Ryukyu I., Ishigaki I. : Banna 70 m, 23.V.1964, light trap, J. L. Gressit, BPBM.
Paratypes : 1 ♀, same data as holotype, 21-22.V.1964; 1 ♂, 1 ♀, in copula, S. Ryukyu I., Ishigaki I., Omotodake, 100-250 m, 22.V.1964, Malaise trap, J. L. Gressit, BPBM.

Oliarus singularis MUIR
(Figs 546-548)

Oliarus singularis MUIR, 1924 : 521; pl. 2, fig. 14.

Frons and postclypeus yellow, frons with two submedian brown marks in the basal half. Anteclypeus and labium embrowned. Vertex entirely yellow, 1.6 times as long as broad, lateral margins elevated; median keel present in basal half. Pronotum entirely yellow, mesonotum black, slighlty paler between keels, these five sharp and distinct. Tegmina damaged (apical part missing). costal margin straight, not granulated; Sc+R forked slightly distad of Cu, r-m distad of first medial branch; veins yellow with concolorous granules. Legs yellow, chaetotaxy hind tarsi 7/5. Length to apex of damaged tegmina : 5.5 mm.
Male genitalia unknown.
Female genitalia : pregenital sternite with two submedian keels separated by a circular excavation. Anal segment oval in dorsal view, 0.6 times as broad as pygofer. First pair of valvulae strongly broadening ventrally.

Diagnosis :
By the absence of males I am unable for the moment to place this species correctly, although it might be related to *O. exiguus.*

Remark :
The reference "Type N° 1088" in the original description is considered as a holotype designation.

Distribution :
Java.

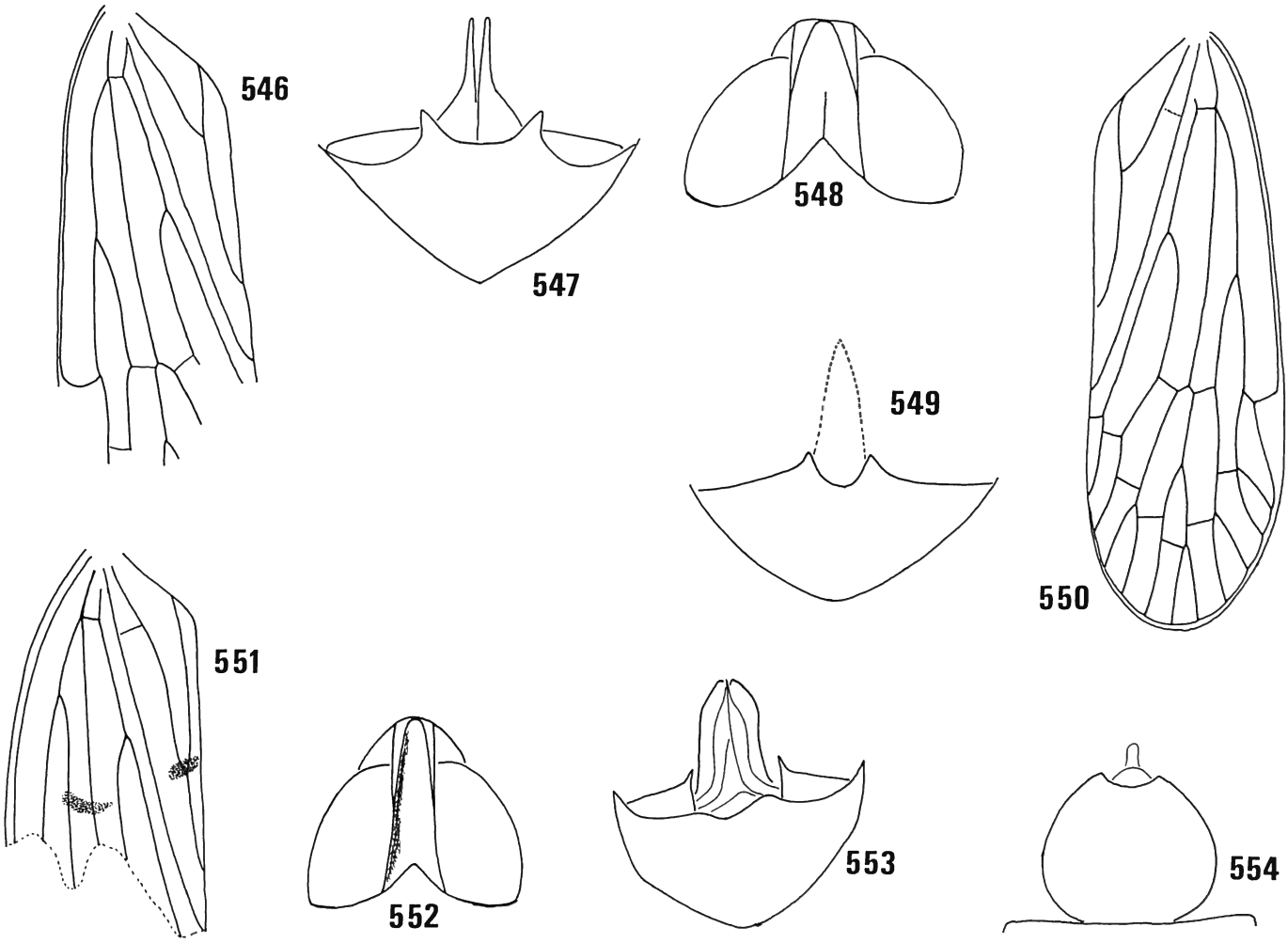
Material :
Holotype ♀, Java, Roban, F. MUIR, BPBM.

Oliarus vilis (WALKER)
(Figs 549-550)

Cixius vilis WALKER, 1857 : 148.
Oliarus vilis (WALKER); FENNAH, 1947 : 12.

Type damaged, head, part of the thorax and left tegmen missing. Mesonotum black with five sharp concolorous keels. Tegmina hyaline with yellowish brown, smooth veins, three times as long as broad; costal margin not granulate, costal cell broad, not narrowed at base, apex with 11 cells, Sc+R forking distad of Cu, r-m distad of first medial branch. Legs yellowish brown, chaetotaxy hind tarsi 7/5. Length from anterior border of mesonotum to apex of tegmina : 6.4 mm, length tegmen : 5.7 mm.
Male unknown.
Female genitalia : anal segment as broad as half the width of the pygofer, with convex lateral margins and narrowing distally. Pregenital sternite with a circular excavation bordered on each side by a triangular process.

Diagnosis :
As for many species the female genitalia are not yet described it is difficult to place this species although the circular incision of the pregenital sternite is characteristic for only a small number of species. The habitus resembles that of the *spinosus* group or that of the *walkeri* group; in my key it runs to *stigma, simlae, acuminatus, walkeri* and *proprius.*



Figs 546-548 : Oliarus singularis *Muir - 546 : left tegmen, holotype (damaged); 547 : female genitalia, ventral view, holotype; 548 : head.*

Figs 549-550 : Oliarus vilis *(Walker) - 549 : female genitalia, ventral view, lectotype; 550 : right tegmen.*

Figs 551-554 : Oliarus siporiensis *Metcalf - 551 : left tegmen, lectotype (damaged); 552 : head; 553-554 : female genitalia, ventral and dorsal view, lectotype.*

Distribution :
Borneo.

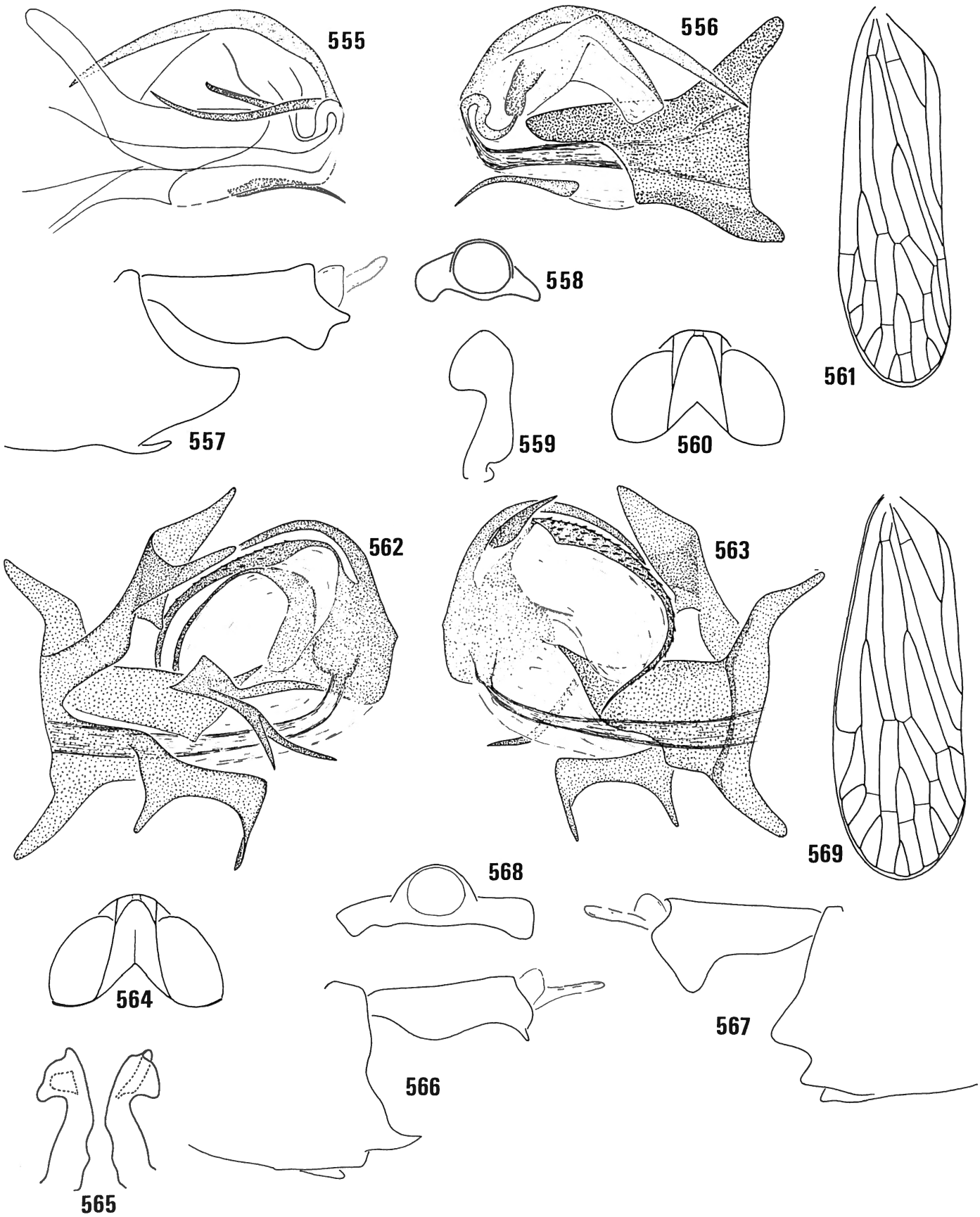
Material :
Lectotype ♀, here designated, "Wallace", BMNH.

Oliarus siporiensis Metcalf
(Figs 551-554)

Oliarus angusticeps Muir, 1926 : 396 (nom. praeocc.).
Oliarus siporiensis Metcalf, 1936 : 102.

Head and pronotum pale brown; colour on face uniformously brown and keels sharp. Vertex three times as long as broad and deeply excavated with very prominent lateral keels; subapical keel forking at 0.6 distance from base and U-shaped. Mesonotum fuscous with slightly paler carinae. Tegmina mutilated, Sc+R forking slightly basad of Cu and probably with long apical cells; costal margin and veins pale brown, costal margin covered with small concolorous granules. Legs yellowish, chaetotaxy hind tarsi 7/5. Length from apzx of head to tip of clavus : 5.2 mm.
Male unknown.
Female genitalia : caudal border of pregenital sternite asymmetrical with one excentric lobe and slightly excavated at middle. Ovipositor as long as anal segment; anal segment round, 0.7 times as broad as pygofer. Valvifers with inner edge produced into a short spinose process.

Diagnosis :
It is difficult to place this species by the lack of males and by the fact that the lectotype is severally damaged.



Figs 555-561 : Oliarus speciosus *Matsumura* - *555-556 : aedeagus, ventral and dorsal view, lectotype; 557 : anal segment and pygofer; 558 : anal segment, caudal view; 559 : left genital style; 560 : head; 561 : left tegmen.*

Figs 562-569 : Oliarus granulatus *Muir* - *562-563 : aedeagus, ventral and dorsal view, holotype; 564 : head; 565 : genital styles; 566-567 : anal segment and pygofer; 568 : anal segment, caudal view; 569 : left tegmen.*

Material :
Lectotype ♀, here designated, Mentawei, Sipora I., 31.X.1924, H. H. Karny, BMNH.

Oliarus speciosus MATSUMURA
(Figs 555-561)

Oliarus speciosus MATSUMURA, 1914 : 424.
Oliarus asiaticus ISHIHARA, 1961 : 229, fig. 8-9, syn. n.
Oliarus speciosus; TSAUR, HSU & VAN STALLE, 1988 : 62, figs 15, A-E.

Description :
General colour ochreous to brown. Face yellowish, embrowned near vertex in male lectotype. Vertex 1.3 to 1.4 times as long as broad, brown, keels paler, subapical keel U-shaped, connected with apical border by two indistinct keels and forking from lateral margin at 0.6 distance from base. Pronotum and tegulae pale brown, mesonotum brown with keels paler. Tegmina 3.5, 3.6 times as long as broad, Sc+R forked distad of Cu, r-m basad of first medial branch, apex with 11 cells, veins yellowish, covered with brown granules, transverse veins and stigma embrowned; costal margin yellowish, without granules. Legs yellowish brown, chaetotaxy hind tarsi 7/7. Length : 6-6.5 mm.; tegmen 4.8 mm.
Male genitalia : anal segment, pygofer and genital styles symmetrical or nearly so. Anal segment somewhat broader on left side. Aedeagus (fig. xx) with four spines, two of which on ventral margin. The aedeagus from the specimen from "Siam" shows small differences with respect to the direction of the spines.
Female unknown.

Diagnosis :
Oliarus speciosus can be recognized by the shape of the aedeagus; no closely related species have been observed.

Remark :
The holotype and paratype of *O. asiaticus* agree perfectly with the series from "Siam", and *O. asiaticus* is therefor considered as a junior synonym of *O. speciosus*.

Distribution :
Taiwan, Thailand ? ("Siam").

Material :
Lectotype ♂ *O. speciosus* Mats., designated by TSAUR, HSU & VAN STALLE (1988), "Formosa, MATSUMURA, Koshun (= Henchun), 1.VII.1906", HU (examined). Paralectotype *O. speciosus : 1 ♀, same data, HU (examined), two more specimens not examined. holotype ♀ and paratype ♀ O. asiaticus* ISHIHARA, Thailand, Chieng Mai, 10.V.1958, H. Ikoma, EUM (examined).
Additional : 1 ♂, 1 ♀, "Siam, W.R.S. Ladell", BMNH.

Oliarus granulatus MUIR
(Figs 562-569)

Oliarus granulatus MUIR, 1924 : 514, Pl. 1, fig. 5a, 5b.

Description :
Head dark brown, keels on face and vertex yellow. Vertex 1.3 times as long as broad, with an arcuate subapical keel connected to anterior border by two short longitudinal keels and forking from lateral margin at 0.7 distance from base; basal median keel well-developed, but not reaching subapical keel. Pronotum pale yellowish. Mesonotum brown with paler keels. Tegmina hyaline, with yellow veins, stigma and tips of apical veins fumated with brown; costal margin with small concolorous granules; Sc+R forked at same level as Cu, r-m forking basad of first medial branch, apex with 11 cells. Legs yellowish, chaetotaxy hind tarsi 7/7. Length : 6-6.5 mm.
Male genitalia : asymmetrical; anal segment in dorsal view strongly broadened apically; pygofer on left side with a tapering lobe, on right side excavated in the lower half, thus separating two small blunt processes. Genital styles with a second process on inner side. Aedeagus with two large spinose processes implanted on each side of base, three spines on apex running parallel to flagellum and very unequal in length, the longest one toothed over its length, and finally a spinose process on ventral margin halfway length of aedeagus, bifurcated apically.
Female genitalia : (not dissected) pregenital sternite with a shallow excavation in middle. Anal segment half as broad as pygofer in dorsal view.

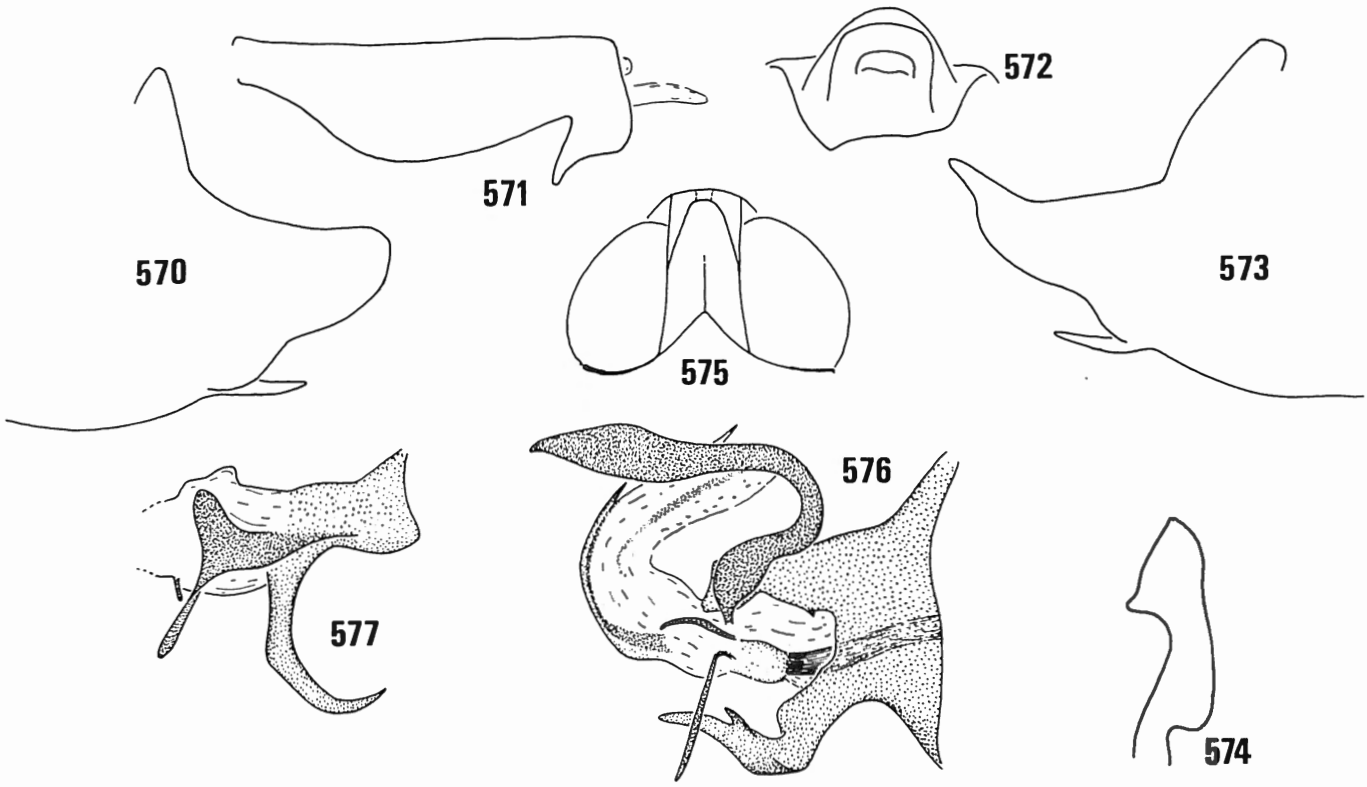
Remark :
The reference "Type N° 1078" is considered as a holotype designation.

Distribution :
Philippines.

Material :
Holotype ♂, Mt Limay, Luzon, Baker, BPBM. Paratypes : 1 ♀, "allotype", Philippine Isl., Los Baños, IX.1915; 1 ♀, "paratype", Mt Makiling, Luzon, Baker, BPBM.

Oliarus manbhumensis sp. n.
(Figs 570-577)

Description :
General colour ochreous to brown; face ochreous with yellowish keels. Vertex 1.6 times as long as broad, with a short median keel at base; subapical keel U-shaped, forking at 0.5 distance of base and connected to apical border by two small longitudinal keels. Pronotum and mesonotum brown with pale keels, mesonotum some-



Figs 570-577 : Oliarus manbhumensis *sp. n. - 570 : pygofer, left margin; 571 : anal segment; 572 : anal segment, caudal view; 573 : pygofer, right margin; 574 : left genital style; 575 : head; 576 : aedeagus, dorsal view, holotype; 577 : ventral process on aedeagus, right lateral view.*

what darker than pronotum. Tegmina 3.3 times as long as broad, Sc+R forking slightly distad of Cu, r-m basad of first medial branch, apex with 12 cells and costal margin without granules; veins and stigma yellowish, transverse veins fumated with brown. Legs yellowish, chaetotaxy hind tarsi 7/7. Length : (tegmina of unique specimen not in resting position) approximately 6.3 mm. Male genitalia : anal segment and pygofer slightly asymmetrical. Pygofer with left process somewhat broader than right lobe. Genital styles as illustrated in fig. xx. Aedeagus (fig. xx) with two large spinose processes apically on sclerified periandrium and two smaller spines close to these; furthermore two spines on flagellum, one large spine on ventral margin of aedeagus, and a small tooth ventrally near implantation of flagellum. Female unknown.

Diagnosis :
O. manbhumensis can be recognized by the characteristic shape of the aedeagus; no closely related species have been observed.

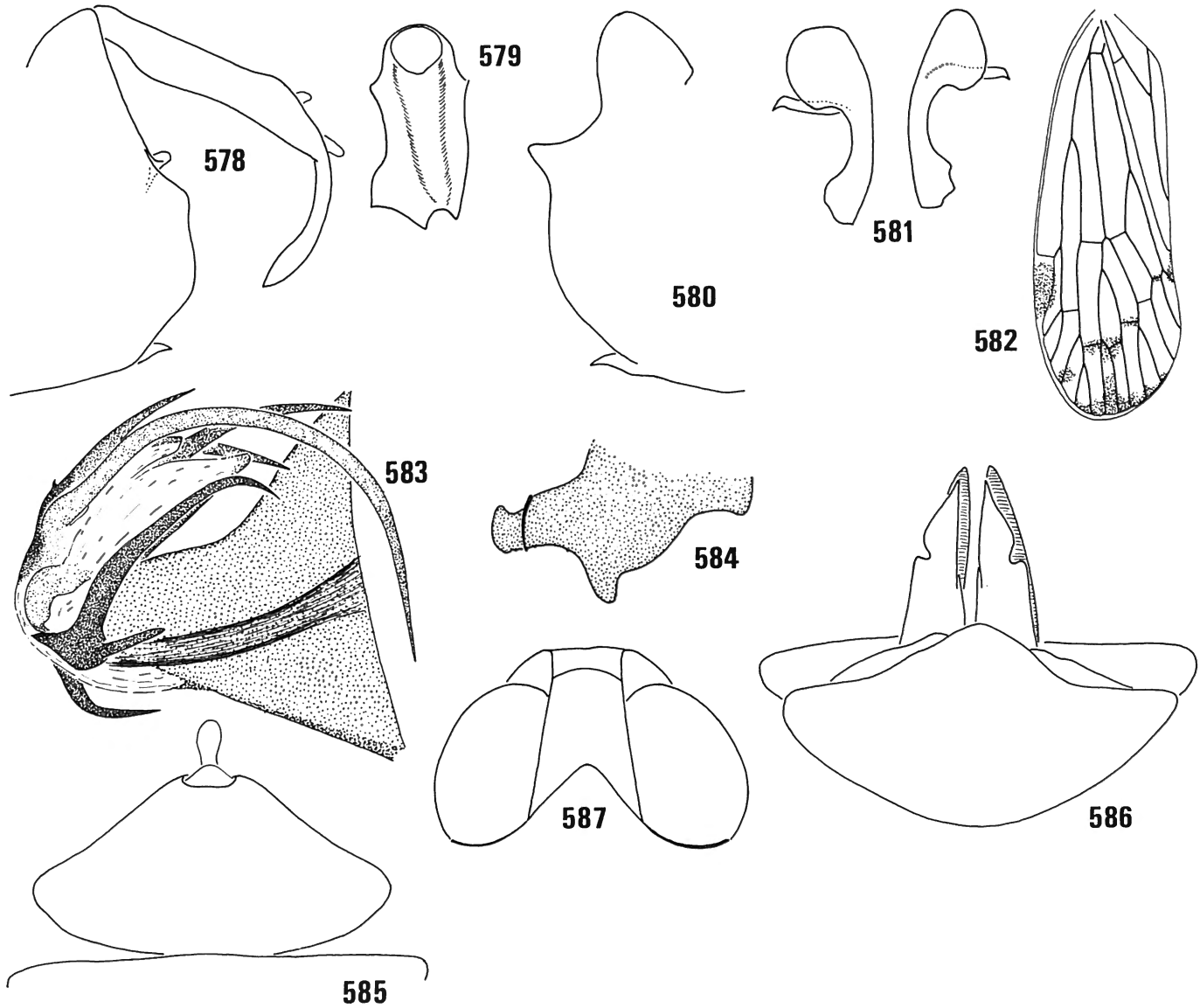
Distribution :
India.

Material :
Holotype ♂, (India ?), Purulia, Manbhum distr., Chota Nagpur, 10.II.1912, "DISTANT coll.", BMNH.

Oliarus niuginiensis VAN STALLE
(Figs 578-587)

Oliarus niuginiensis VAN STALLE, 1990 : 175, figs 10-19.

Description :
Face brown, with two large white maculae on frontoclypeal suture; keels sharp, yellowish, labium yellow, embrowned apically. Vertex 1.2 times as long as broad, brown, with prominent yellow keels; transverse keel branching from lateral margin close to apex, at 0.8 distance from base and straight, not connected with the anterior border. Pronotum yellow with a black spot on sides. Mesonotum black with concolorous keels, with two paler fasciae between outer keels. Tegmina hyaline, three times as long as broad, all veins and stigma black, except anterior border of stigma which is yellow. Apical border of tegmina and transverse veins brown fumated, Sc+R forking basad of Cu, r-m distad of first medial branch, apex with 12 cells, costal margin bent, without granules; veins covered with small and concolorous granules. Legs yellowish brown, femora and tarsi brown, chaetotaxy hind tarsi 7/7. Length ♂ : 9 mm; ♀ : 10 mm. Male genitalia : asymmetrical; anal segment with a large apical process excavated at apex. Pygofer with a small process on left side which continues internally into the attachment of the aedeagus, on right side with a small triangular process in dorsal half of lateral margin.



Figs 578-587 : Oliarus niuginiensis *Van Stalle* - *578 : anal segment and pygofer; 579 : anal segment, caudal view; 580 : right margin of pygofer; 581 : genital styles; 582 : left tegmen; 583 : aedeagus, dorsal view, holotype; 584 : ventral process on aedeagus; 585-586 : female genitalia; 587 : head.*

Genital styles with a spinose process on inner side of apex. Aedeagus with five long spines and two short spines at apex, periandrium with a plate-shaped process on ventral margin as illustrated in fig. xx.

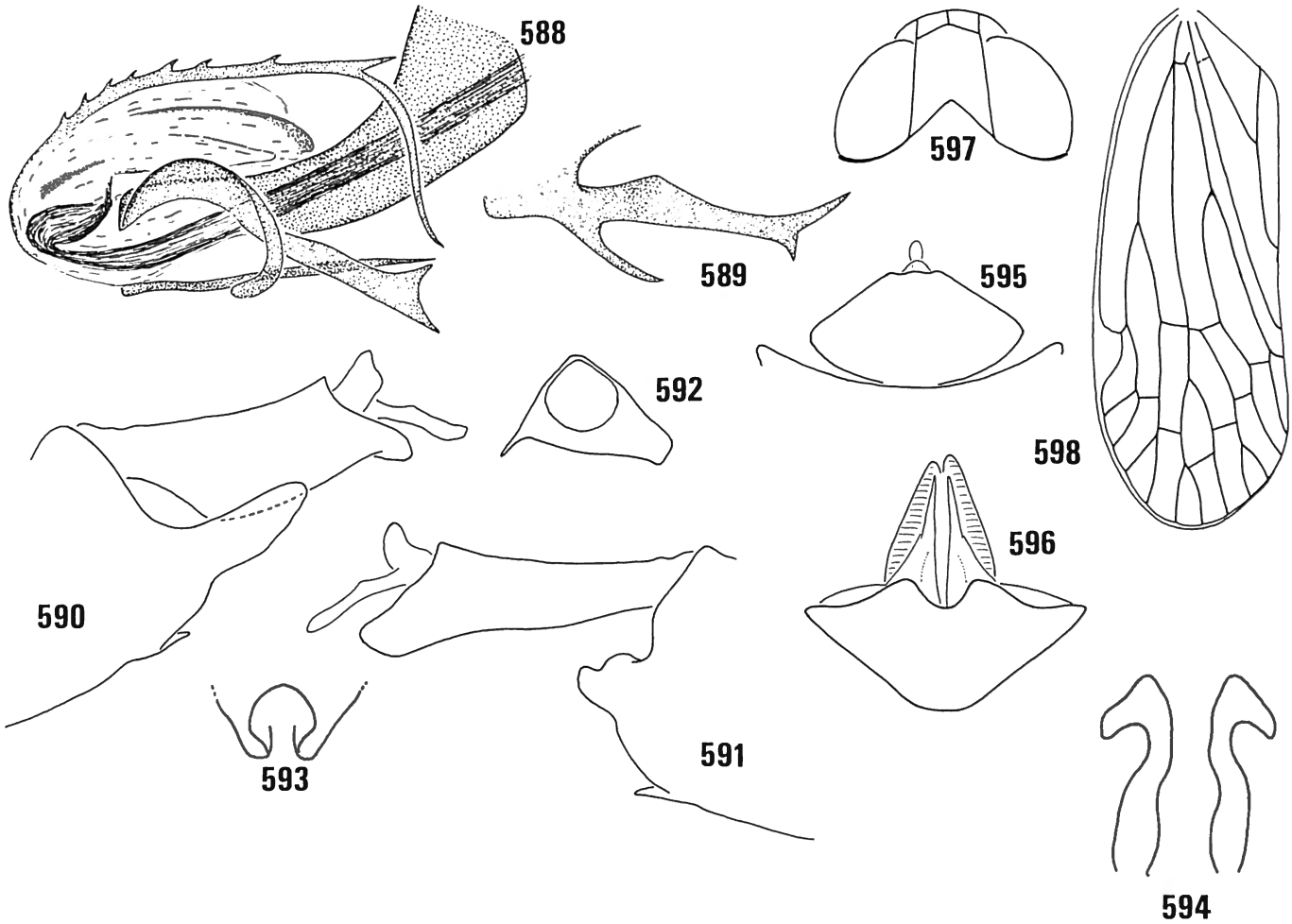
Female genitalia : Pregenital sternite with a median broad, triangular projection, blunt or sharp. First valvulae with a basal thickened part extending over half or more of its length, and abruptly narrowing into a distal, less chitinized part. Second pair as long as first pair and third valvulae slightly longer than first pair. Anal segment nearly as broad as pygofer, diamond-shaped.

Diagnosis :

O. niuginiensis can not be related to any of the known *Oliarus* species or to those described in this paper. The chaetotaxy of the hind tarsi, the large process on the anal segment and the characteristic structure of the aedeagus distinguish it from all other species.

Material :

Holotype ♂, PNG, Madang Prov., Sepen Village n° 2, 10.VI.1988, KBIN. Paratypes : 1 ♀, PNG, Madang Pr., Mt Hanseman (nr. Madang), 14.VI.1988, KBIN; 1 ♂, 5 ♀♀, PNG, Madang P., Baiteta (12 km NW Alexishafen), 5°00'S 145°45'E, 17.XI.1987, leg. M. Wasbauer, CAS; 3 ♀♀, PNG, Madang P., Tapo Creek (26 km SE Madang), 5°24'S 145°8'E, 21.II.1987, N. D. Penny, CAS; 1 ♂, 1 ♀, PNG, Madang P., Sapi Forest Res., 30 km W Madang, 5°12'S 145°30'E, light trap, 20.III.1987, N. D. Penny, CAS; 4 ♀♀, PNG, Nobonob Hill (7 km NW Madang), 5°10'S 145°45'E, 19.III.1987, N. D. Penny, CAS; 1 ♀, PNG, Madang Prov., 4 km S Hatzfeldhaven, 4°25'S 145°13'E, 19.III1987, Malaise trap, N. D. Penny, CAS; 2 ♀♀, Dutch NG, Maffin Bay, 27.VIII.1944 & 30.VI.1944, E. S. Ross, BMNH.



Figs 588-598 : Oliarus decumbens *Jacobi* - *588 : aedeagus, dorsal view, lectotype; 589 : basal process of aedeagus, right lateral view; 590-591 : anal segment and pygofer, left and right lateral view; 592 : anal segment, caudal view; 593 : medioventral process of pygofer; 594 : genital styles; 595-596 : female genitalia; 597 : head; 598 : left tegmen.*

Oliarus decumbens Jacobi
(Figs 588-598)

Oliarus decumbens Jacobi, 1941 : 293.

Face entirely black with strongly contrasting yellow keels; labium yellowish, embrowned apically. Vertex black with yellow keels, 1.2 times as long as broad, subapical keel slightly angulate, forking at 0.8 distance from base, and connected with anterior border by one median keel. Mesonotum black, keels tinged with yellow. Tegmina 2.8 times as long as broad, Sc+R forking distad of Cu, r-m slightly basad of first medial branch, apex with 11 cells, costal margin covered with small and slightly protruding granules. All veins, stigma and costal margin yellow with brown granules, tips of apical veins, transverse veins, tip of claval vein and inner margin of stigma pale brown fumated. Legs yellow, chaetotaxy hind tarsi 7/7. Length : 5.5 mm.
Male genitalia : anal segment slightly asymmetrical. Pygofer with a long finger-shaped process on left side and a short process on right lateral margin. Genital styles with an elongate apex and a process on inner side. Aedeagus with a toothed process along flagellum, another process on the base of the flagellum consisting of a part almost curved in a semi-circle and a second straight spinose portion; a third thin and long process inserted near apex and running cephalad, and two other processes on the ventrolateral margin, a short hook-shaped process near apex (not visible on figures) and a bifurcate process on base of aedeagus and directed caudad.
Female genitalia : pregenital sternite with a large round excavation bordered by two submedian triangular processes. Ovipositor as long as anal segment. Anal segment diamond-shaped.

Diagnosis :
This species does not resemble any known *Oliarus*. It is characterized by the chaetotaxy of the hind tarsi (7/7) in combination with its small size, and the relatively quadrate and flat vertex in combination with a slightly angulate subapical keel, which is connected through one keel with the anterior border.

Material :
Lectotype ♂, here designated, S.-Mittel Flores, Poeloe Endeh, 11.VI.1927, B. Rensch S.G., SMT (examined). Paralectotype ♀, S.-Mittel Flores, Poeloe Endeh, 11.VI.1927, B. Rensch S.G., HM (examined).

Oliarus laratensis Muir
(Figs 599-604)

Oliarus laratensis Muir, 1924 : 526; Pl. 2, figs 20a, 20b.

Face yellow, fumated with black on apex of postclypeus and on apex of labium. Vertex 2.7 times as long as broad, black with yellow borders, subapical keel slightly arcuate, forking from lateral keel at 0.9 of base and connected to apical border by one short longitudinal keel; no median longitudinal keel on base, junction of face and vertex marked by a very distinct keel. Pronotum yellowish, mesonotum black with portion between outer keels yellow. Tegmina hyaline, 3.3 times as long as broad, veins brown, smooth, covered with very small granules; costal margin yellow, without granules, stigma yellowish brown, Sc+R forking distad of Cu, r-m basad of first medial branch, apex with 12 cells. Legs yellow with brown hind femora brown and tarsi slightly embrowned. Chaetotaxy hind tarsi 9/9-10. Length 8 mm.
Male genitalia : anal segment, pygofer and genital styles symmetrical. Anal segment with a small excavation when viewed from behind. Pygofer with lateral margin triangular. Genital styles with a spine on apex. Aedeagus with a long, curved spine on left side and with a ventral plate-shaped process bearing a perpendicular short spine.
Female genitalia not examined.

Diagnosis :
This species is closely related to *O. morobensis*. The differences are discussed under this species.

Remark :
The reference "type N° 1096" in the original description is interpreted as a holotype designation.

Distribution :
Larat I.

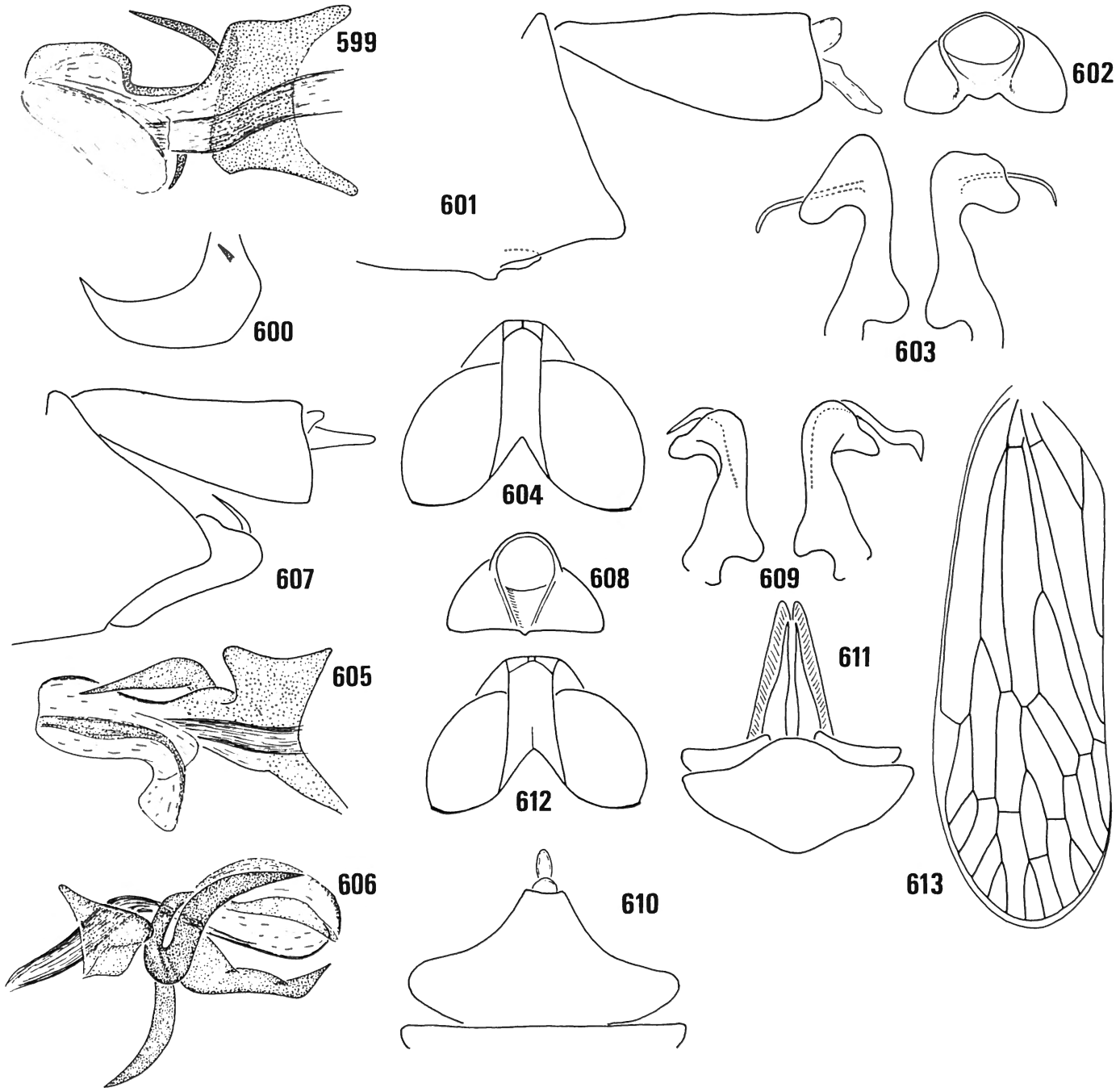
Material :
holotype ♂, Larat, F. Muir, BPBM (examined). Paratypes : 3 ♂♂, 6 ♀♀, same data, BPBM, 1 ♀ examined.

Oliarus morobensis Van Stalle
(Figs 605-613)

Oliarus morobensis Van Stalle, 1990 : 174, figs 1-9.

Description :
Frons, postclypeus and anteclypeus black, keels broadly coloured with yellow. Two large white maculae present on each side of face at level of frontoclypeal suture; labium yellowish with a black terminal segment. Vertex 1.8 as long as broad, transverse keel situated close to anterior border (1 :0.9), and connected with apex by two short keels which are united to one broad keel-shaped structure; lateral margins of vertex elevated. Pronotum yellow, fumated with black on lateral margin. Mesonotum black with concolorous keels, or with two yellow longitudinal fasciae on each side between the two outer keels. Tegmina hyaline, 3.2 times as broad as long, costal margin straight, pale stramineous and without granules, Sc+R forking distad of Cu, r-m situated basad of first medial branch, apex with 12 cells; proximal veins (between base and level of stigma) yellow or partly brown, apical veins black; transverse veins black fumated. Coxae and femora black fumated, tibiae and tarsi yellow, last segment of hind tarsi black, chaetotaxy 8/8, 8/7 on one leg in one specimen, on second tarsomere placed in a regular row, on third one placed in a semicircle. Length : 7.5 mm.
Male genitalia : anal segment and pygofer symmetrical. Anal segment without an apical lobe. Pygofer on each side with a large triangular lobe. Genital styles asymmetrical, with a spinose process on inner side of apex, right one longer and more curved than left one. Aedeagus with three spines : two on ventral margin, one directed caudad and one directed ventrad, and a third curved spine on left lateral margin pointing caudad.
Female genitalia : pregenital sternite with a large median lobe. First pair of valvulae gently narrowing from base to apex, ovipositor in lateral view not extending behind level of apex of anal segment. The latter diamond-shaped, as broad as pygofer, with caudal margin slighlty excavate.

Diagnosis :
This new species is related to *Oliarus laratensis* Muir. The most striking differences in the external morphology are the colour of the face which is yellow in *laratensis* and black in *morobensis*, and the chaetotaxy of the hind tarsi which is 9/10 or 9/9 in *O. laratensis* and 8/8 or 8/7 in *O. morobensis*. The shape of the male genitalia differs in the structure of the spines on the genital styles which are thinner in *O. laratensis* and in the structure of the spines on the aedeagus; the ventral spine is much broader in *O. laratensis* and the lateral spine is typically curved in *O. morobensis*. From all New Guinean species it can be distinguished by the presence of long spines on the apices of the genital styles; these spines are much



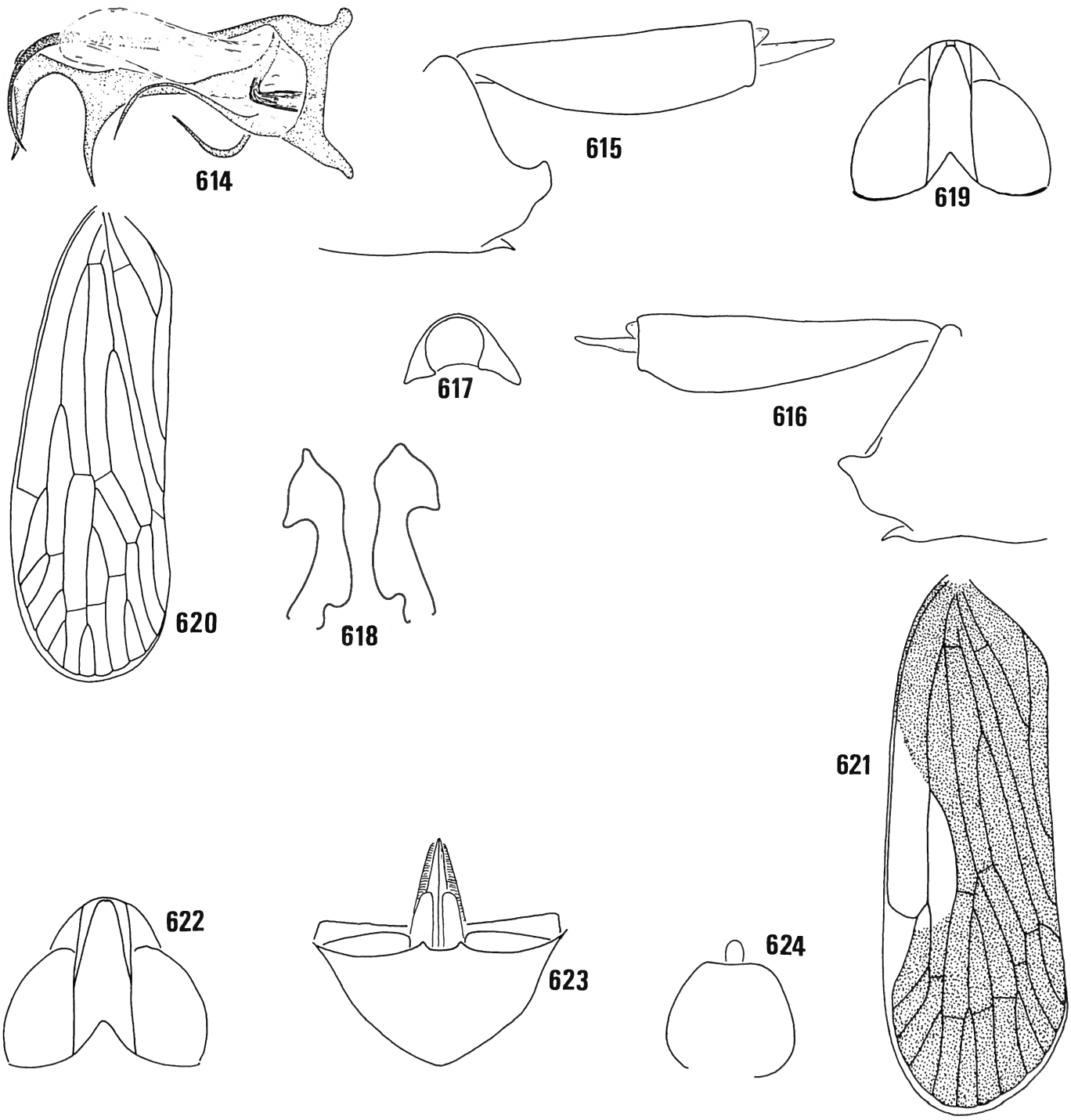
Figs 599-604 : Oliarus laratensis *Muir* - *599 : aedeagus, dorsal view, holotype; 600 : ventral process of aedeagus; 601 : anal segment and pygofer; 602 : anal segment, caudal view; 603 : genital styles; 604 : head.*

Figs 605-613 : Oliarus morobensis *Van Stalle* - *605-606 : aedeagus, dorsal and left lateral view; 607 : anal segment and pygofer; 608 : anal segment, caudal view; 609 : genital styles; 610-611 : female genitalia; 612 : head; 613 : left tegmen.*

smaller in *O. niuginiensis* and absent in all remaining species.

Distribution :
New Guinea.

Material :
Holotype ♂, Papua New Guinea, Morobe prov., Bulolo, 20.V.1988, KBIN. Paratypes : 2 ♂♂, 1 ♀, same data; 1 ♂, same loc., 18.V.1988, KBIN; 1 ♂, 1 ♀, Port Moresby, 1 & 2.IV.1987, N.D. Penny, CAS; 3 ♂♂, 1 ♀, Papua New Guinea, Central Province, Laloki Quarantaine Station, 23.VI.1983, "collected from paw-paw trunk and fruits, BMNH; 2 ♂♂, 1 ♀, Papua New Guinea, Central Prov., Laloki D.P.I., 24.X.1980, "ex L. pomoea", "batatas", BMNH.



Figs 614-620 : Oliarus pallidifrons *Muir - 614 : aedeagus, dorsal view, holotype; 615-616 : anal segment and pygofer; 617 : anal segment, caudal view; 618 : genital styles; 619 : head; 620 : left tegmen.*

Figs 621-624 : Oliarus bakeri *Muir, holotype - 621 : left tegmen; 622 : head; 623 : female genitalia, ventral view; 624 : female anal segment.*

Oliarus pallidifrons MUIR
(Figs 614-620)

Oliarus pallidifrons MUIR, 1924 : 522.

Description :
Face entirely yellow; vertex black with yellow keels, 2.5 times as long as broad, subapical keel forking from lateral border at 0.6 distance from base and connected to apical border by two small longitudinal keels; no median longitudinal keel. Pronotum and tegulae yellowish. Mesonotum black, brown between outer keels, these keels ochreous to brown. Tegmina hyaline, three times as long as broad, veins yellowish to brown apically, transverse veins bordered with brown, costal margin yellowish, covered with concolorous granules, stigma yellowish brown; Sc+R forked distad of Cu, r-m basad of first medial branch, apex with 12 cells. Legs entirely yellowish, chaetotaxy hind tarsi 15/11. Length : 7 mm.
Male genitalia : anal segment long, without distinct apical lobes. Pygofer and genital styles slightly asymmetrical, as illustrated in fig. xx and xx. Aedeagus as illustrated in fig. xx, a long spine on right side, two small and thin spines on left side and a long process with two spines on ventral margin.
Female unknown.

Diagnosis :
O. pallidifrons can be distinguished from any other *Oliarus* by the structure of the aedeagus and by the chaetotaxy of the hind tarsi, namely 15 small black teeth on the first tarsite and 11 small black teeth on the second tarsite.

Distribution :
The Phiippines.

Remark :
The reference "Type N° 1090" in the original description is considered as a holotype designation.

Material :
Holotype ♂, Los Baños, IX.1915, labeled "holotype" (examined); other ♂ not examined, BPBM.

Oliarus bakeri MUIR
(Figs 621-624)

Oliarus bakeri MUIR, 1924 : 522.

Head light brown, vertex somewhat darker in middle with pale keels, 2.1 times as long as broad, with elevated lateral margins, subapical keel U-shaped, forking from lateral margin at 0.4 distance of base. Pronotum yellowish; mesonotum dark brown with sharp longitudinal keels. Tegmina 3.1 times as long as broad, dark brown with a sharp hyaline white area on costal margin before stigma extending to halfway along base and extending beyond Sc+R fork along R. Sc+R forking distad of Cu, r-m distad of first medial branch, apex with 11 cells; costal margin without granules. Second wings dark brown. Legs yellowish to light brown, femora brown, chaetotaxy hind tarsi 7/4 and 7/5. Length : 7.5 mm.
Male unknown.
Female genitalia : (genitalia not dissected) pregenital sternite with two submedian teeth. first pair of valvulae broadened over half their length. Ovipositor shorter than anal segment, which is circular in dorsal view and half as broad as pygofer.

Diagnosis :
Easily distinguished from any other species by the brown colour of the tegmina and wings.

Distribution :
Borneo.

Material :
Holotype ♀, Borneo, Sandakan, Baker, BPBM.

Species of unknown taxonomic position :

Oliarus tabrobanensis MELICHAR

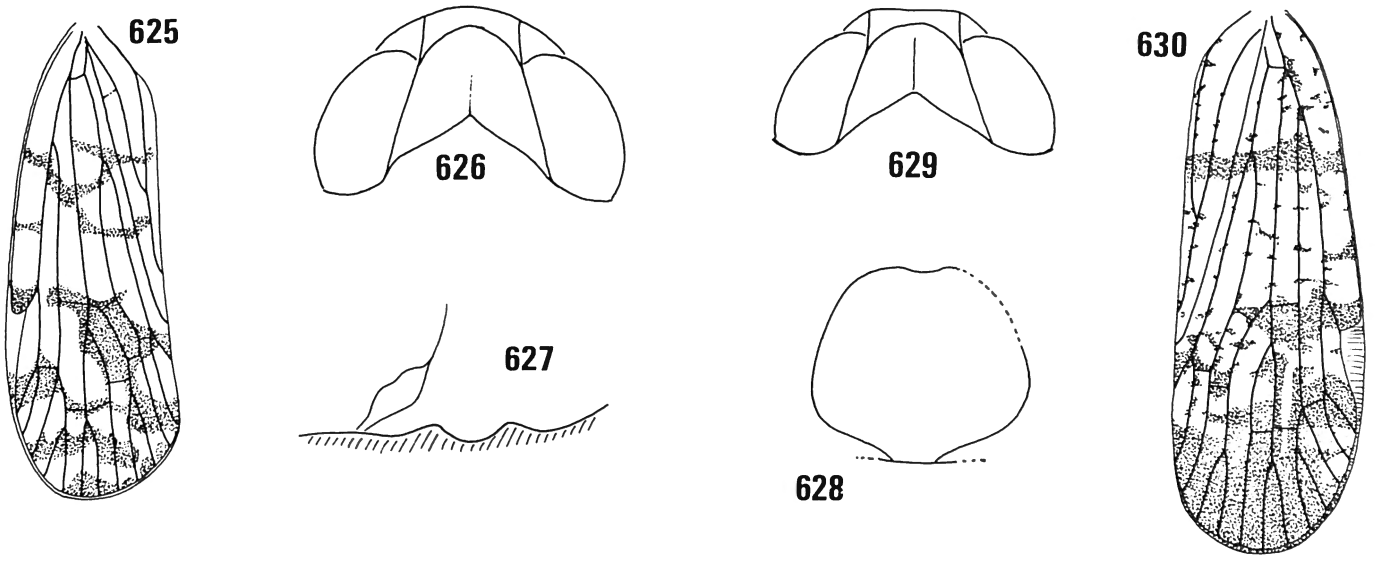
Oliarus tabrobanensis MELICHAR, 1903 : 223.

(Translated from the original description of MELICHAR, 1903) colour yellowish brown. Vertex 2.5 times as long as broad, with a U-shaped subapical keel forking from lateral border at 0.5 distance from base and connected to apex by two longitudinal keels ("...einen viereckigen kleinen Callus..."). Mesonotum brown. Tegmina hyaline with yellowish veins which are covered with small dark granules; transverse veins brown. Costal margin granulate, with three transverse spots. Stigma brown, yellow on its anterior border; apex with several brown spots. Legs yellowish with indistinct brown longitudinal stripes. Length : 6-6.5 mm.
Male unknown.
Female genitalia : ovipositor very long, longer than the anal segment.

Diagnosis :
This species might be related to *O. cingalensis, O. caudatus,* and *O. indicus* by the presence of a very long ovipositor. Its size however is much smaller.

Distribution :
Sri Lanka.

Material :
1 (number not specified) ♀, Sri Lanka; I have not been able to locate the type of this species.



Figs 625-628 : Oliarus binghami *Distant, lectotype - 625 : left tegmen; 626 : head; 627 : pregenital sternite and first left valvula of female; 628 : anal segment of female.*

Figs 629-630 : Oliarus fusconebulosus *Distant, lectotype - 629 : head; 630 : right tegmen.*

Oliarus buruanus Schmidt

Oliarus buruanus Schmidt, 1926 : 230.

Colour dark brown to black with pale keels. Vertex deeply excavated (rinnenförmig), three times as long as broad (how was it measured ?), subapical keel U-shaped and forking from lateral margin at 0.5 distance from base and fused with apical margin. Pronotum yellow, brown fumated on sides. Mesonotum brown to black, keels and tip paler. Tegmina hyaline with veins yellowish brown and stigma brown with a pale anterior margin. Legs yellowish with brown tarsi. Total length 7 mm.

Material :
Type ♀ (number not specified), [buru I. ?], Station XVII. (1300 m 1921); I have not been able to locate the type. It might be deposited in the IZP, and I have written several times to this institution without any result.

Oliarus bimaculatus Schmidt

Oliarus bimaculatus Schmidt, 1930 : 116.

Face yellow, vertex black, deeply excavated and with prominent keels, without a median keel. Pronotum yellow, fumated with brown, mesonotum brown with yellow keels and tip. Tegmina hyaline with yellow veins, without dark granules, and brown stigma. Legs yellow with brown femora. Total length : 9 mm.

Material :
Type ♂ (number not specified), Java : Semarang, Teakforest, 10.XI.1925, (L. G. E. Kalshoven). I have not been able to locate the type. It might be deposited in the IZP, and I have written several times to this institution without any result.

Oliarus kempi Muir

Oliarus kempi Muir, 1922 : 344.

Vertex 3.3 times as long as width at base, base slightly wider than apex, inner carinae leaving lateral carinae one-third from base, gradually converging to apex where they meet and touch the apical transverse carina. Face very narrow at base; median carina forked at base. Frontoclypeal suture straight at sides, the middle half rounded. Median ocellus present a little distance before apex of face. Forking of Sc and R slightly distad of fork of Cu. Length 4.3 mm [body ?]; tegmen 5.3 mm.
Female genitalia : Pygofer oblong, broader than long (1.8 to 1). Anal segment small, half the width of pygofer, ovate, anus at apex. Genital styles not quite so long as anal segment. Hind margin of pregenital plate slightly emarginate in middle, the corners forming a small angular projection.
Dark brown; carinae of head and pronotum, abdominal pleura and hind margin of segments yellow. Tegmina hyaline, very slightly infuscous, darker over apical portion; veins brown with small tubercles bearing small, black macrotrichia.

Material :
Holotype ♀, Talewadi, near Castle Rock, North Kanara District, Bombay Pres. (S. Kemp, October, 1916). Depository unknown; not in ZSI (Dr Kuldip Rai pers. comm.).

Oliarus turae Muir

Oliarus turae Muir, 1922 : 345.

Length of vertex from apex to basal angles slightly greater than width ar basal angles; base deeply and angularly emarginate, 1.4 times the width at apex, converging and meeting in middle at apex.Length 3.8 mm [body ?]; tegmen 5.7 mm.
Female genitalia : pygofer large, oval, width 1.5 times the length. Anal segment not reaching quite across pygofer, flat, length nearly twice the width, sides slightly curved, width about one-third the width of pygofer, ovipositor incomplete, the styles reaching about two-thirds across pygofer; pregenital segment small, hind margin straight or very slightly curved.
Dark brown or black; carinae of frons, vertex and pronotum and the margin of pronotum and margin of metanotum light brown, legs light brown. Tegmina with venation as in *O. kurseongensis* Dist.; clear hyaline with brown veins, stigma brown, tubercles brown bearing black macrotrichia. Wings hyaline with brown veins.

Material :
Holotype ♀, Tura, Garo Hills, Assam, 3500 to 3900 feet elevation (S. kemp, July, 1917), deposited in ZSI but not available on loan.

Oliarus goae Muir

Oliarus goae Muir, 1922 : 345.

Length of vertex twice the width at base, base very slightly wider than apex, angularly emarginate; mediolateral carinae [subapical keel] leaving sides one-fourth from apex, straight, converging and meeting in middle slightly before apex. Face narrowed for some slight distance at base, fronto-clypeal suture obscure, median ocellus distinct. Cu forking some distance basad of fork of Sc and R.
Male genitalia : pygofer lage, wider than long. Anal segment subdiamond shape, slightly broader than long, apex small, truncate, on dorsal aspect a raised, longitudinal ridge down middle. Hind margin of pregenital plate very slightly curved. Genital styles reaching across pygofer.
Dark brown or black; carinae of head and thorax lighter, more especially so on pronotum; legs lighter brown; hind margin of abdominal segments yellowish. Tegmina hyaline, very slightly opaque and whitish, veins light brown with darker tubercles bearing light brown macotrichia; a dark mark on margin of clavus at apex of claval vein; fuscous over cross-veins and apical cross-veins and apical veins; stigma dark brown. Wings hyaline with brown veins.

Remark :
The following characters are of importance : Sc+R forking distad of Cu, subapical keel of vertex leaving lateral margin close to the apex and thus probably straight or arcuate, not U-shaped. It might thus be related to *O. kurseongensis.*

Material :
Holotype ♀, Mormugao [Maramagao], Goa, Portugese India (S. Kemp, XI.1916), deposited in ZSI but not available on loan.

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