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IDENTIFICATION KEY TO THE GENERA OF THE GALUMNIDAE JACOT, 1925 (ACARI: ORIBATEI)

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(Received 9th March, 1989)

A short historical review and identification keys for the 35 known galumnoid genera are given. Four more genera and one subgenus as "genera inquirenda" are enumerated. With 71 figures.

The genus *Galumna* was described in 1826 by Heyden. A number of species of this genus were described already in the last century, as these characteristically shaped animals were big enough to be noticed. These species were usually described under the name *Oribates*. At that time the Berlese-Tullgren extraction funnels were not yet developed, so animals were collected directly, mostly from tree leaves and trunks. Later it was discovered that some galumnid species are intermedier hosts of the anoplocephapoid worms, thus galumnids became important animals in parasitology, as well.

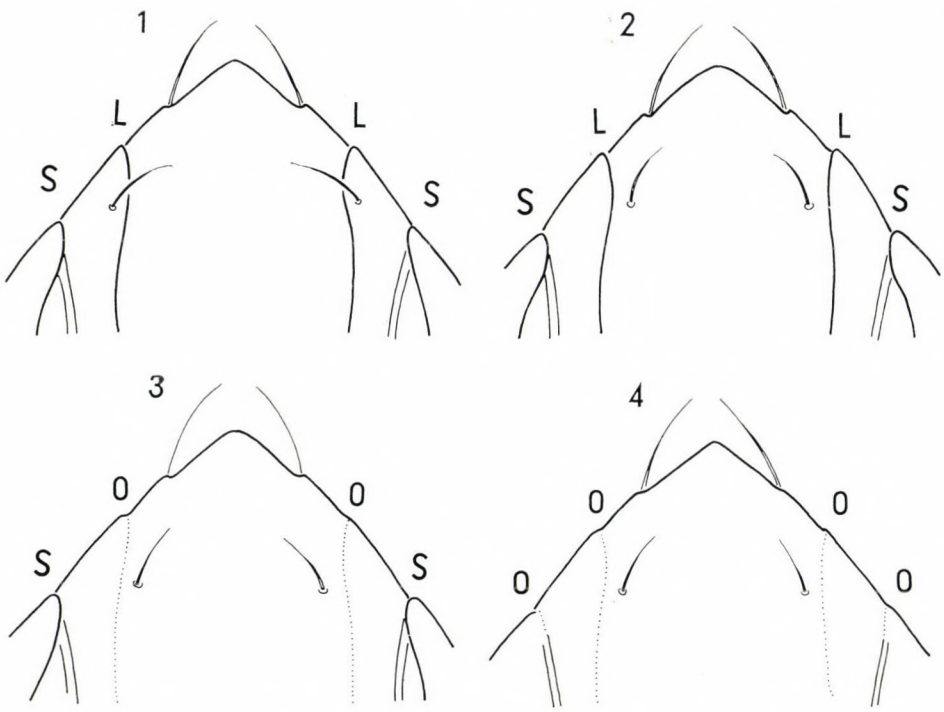
Among early authors Berlese (1914) and Oudemans (1915) studied galumnids. Berlese (1914) described the first significant tropical genera, while Oudemans (1919) gave a critical review of the species known by him. The modern taxonomy of the galumnids begins with Grandjean's (1936) fundamental work. In this publication Grandjean described the lateral side of the prodorsum, and the lamellar and the sublamellar lines for the first time. Twenty years later, in 1956 and 1957 he published five papers in which he started to establish the system of the family.

The first world-wide summary of the galumnoid genera was published by J. Balogh (1960c) who followed Grandjean's new view. In this work fifteen genera are given, three of which were new to science. It was also J. Balogh who in 1961 published the "Identification keys of world oribatid (Acari) families and genera", the first world-wide summary of oribatid mites since Michael's (1898) work that had appeared in "Das Tierreich". There are 21 genera in this work. Four years later its new edition, "A synopsis of the world oribatid (Acari) genera" keyed 23 true galumnoid genera without the "genera inquirenda". Finally, in the third edition of the 1961 work, J. Balogh's "The Oribatid genera of the world", published in 1972, a total of 28 galumnoid genera are given. Since then a number of oribatid genera and species have been described especially from the extraholarctic region. The number of valid

galumnoid genera reached 35 by now. In this period especially ENGELBRECHT's (1969, 1972a—d) studies on the South African galumnids are significant. The author gave an excellent summary on the galumnids of this region and described some very interesting genera.

Our aim is to give identification keys for the 35 genera, as well as to provide information that would help the orientation on the generic level. The identification of the genera requires some technical practice. The prodorsum needs to be examined in lateral view, so that we can establish the presence, absence of line *L* and line *S*, and the position of seta *1e*. To do so we have to remove the legs and pteromorphae. We ought to choose weakly pigmented specimens for these examinations. Dark, large specimens need to be depigmented in hypochlorite solution before lactic acid treatment. The hypochlorite treatment causes some damage (legs fall off, some of the leg and body hairs become detached), therefore we should use this method only if we have more than one specimen. The examination of the smaller and weakly pigmented animals in lateral view is often possible without dissection.

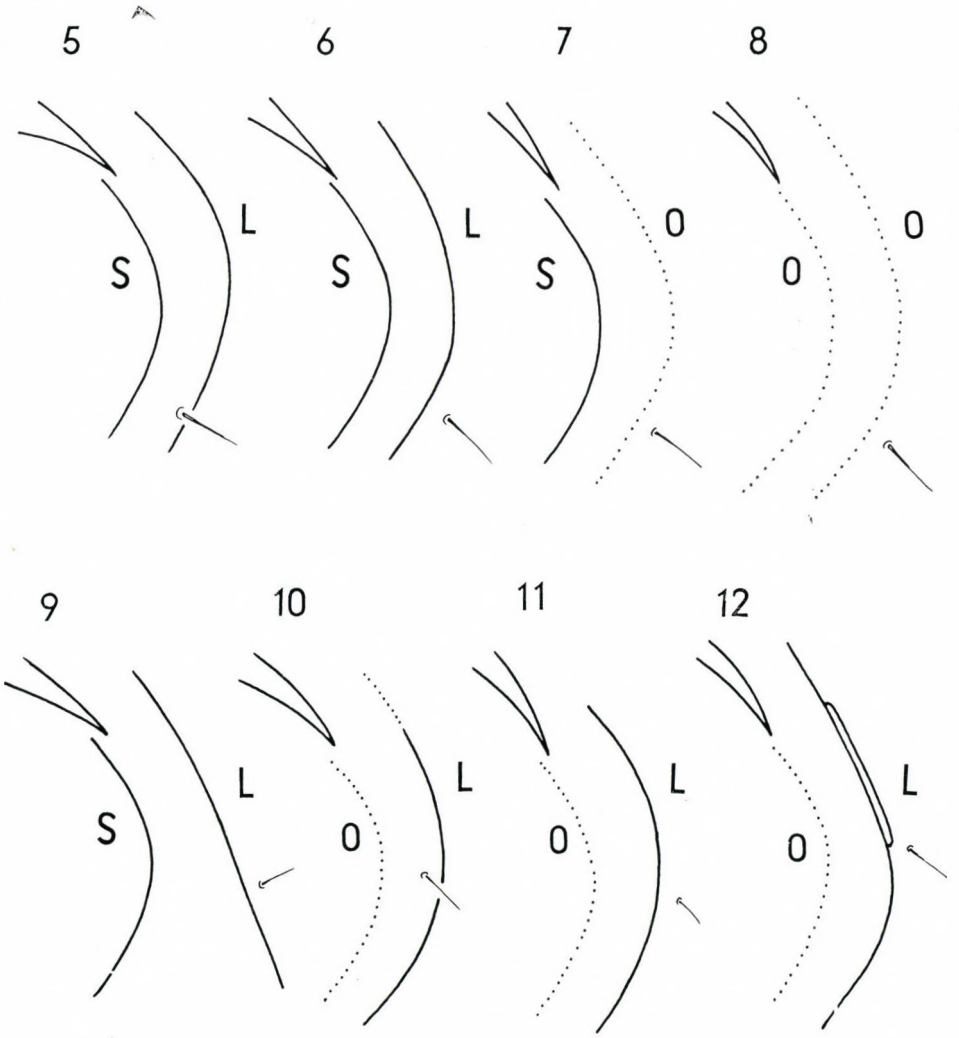
Having examined a large Berlese-sample there seems to be a number of undescribed galumnid species especially from the extraholarctic region. The



Figs 1—4. The position of seta *1e* (dorsal view): 1 = seta *1e* between *L* and *S (S-1e-L)*, 2 = seta *1e* between the *L* and *L (S-L-1e)*, 3 = seta *1e* between the missing *L* and *L*, *S* present *(S-L-1e)*, 4 = seta *1e* between the missing *L* and *L*, *S* absent (0-0*1e*)

plant inhabitant species need special attention because, on the one hand, mostly plant inhabitants were described in the early studies, on the other hand, in the last decades direct collecting methods somewhat lost their importance due the Berlese-apparatus.

Some figures showing the main types of the prodorsum are given below to help the identification.



Figs 5—12. The position of seta *le* (lateral view): 5 = seta *le* between the *L* and *S (S-le-L)*, 6 = seta *le* mediad from the *L (S-L-le)*, 7 = seta *le* mediad from the missing *L*, *S* present *(S-0-le)*, seta *le* mediad from missing *L*, *S* absent, 8 = seta *le* mediad from missing *L*, *S* absent (0-0-*le*), 9 = seta *le* mediad from the *L*, *S* present, *L* straight *(S-L-le)*, 10 = seta *le* between the *L* and missing *S* (0-*le*-*L*), 11 = seta *le* mediad from the *L*, *S* absent (0-*L*-*le*), 12 = seta *le* mediad from *L*, *L* with carina, *S* absent (0-*L*-*le*)

THE TYPES OF THE LAMELLAR AND SUBLAMELLAR LINES

Type of *Galumna* (Figs 1, 5): *Galumna* HEYDEN, 1826, Centroribates BERLESE, 1914, *Dicatozetes* GRANDJEAN, 1956, *Erogalumna* GRANDJEAN, 1966, *Neogalumna* HAMMER, 1973, *Rostrogalumna* ENGELBRECHT, 1973, *Sacculogalumna* ENGELBRECHT, 1973, *Sphaerogalumna* BALOGH, 1961, *Vaghia* OUDEMANS, 1919.

Type of *Orthogalumna* (Fig. 9): *Orthogalumna* BALOGH, 1960.

Type of *Dimidiogalumna:* (Fig. 11) *Dimidiogalumna* ENGELBRECHT, 1972.

Type of *Pergalumna* (Figs 2, 6): *Pergalumna* GRANDJEAN, 1936, *Flagellozetes* BALOGH, 1970, *Heterogalumna* BALOGH, 1960, *Pilizetes* SELLNICK, 1937, *Trachygalumna* BALOGH, 1960, *Trichogalumna* BALOGH, 1960.

Type of *Allogalumna* (Figs 4, 7): *Allogalumna* GRANDJEAN, 1936, *Acrogalumna* GRANDJEAN, 1956, *Cryptogalumna* GRANDJEAN, 1957, *Leptogalumna* BALOGH, 1960, *Xenogalumna* BALOGH, 1960.

Type of *Carinogalumna* (Fig. 12): *Carinogalumna* ENGELBRECHT, 1973.

Type of *Taeniogalumna* (Fig. 11): *Taeniogalumna* BALOGH, 1961.

Type of *Pilogalumna* (Fig. 8): *Pilogalumna* GRANDJEAN, 1956, *Ctenogalumna* BALOGH, 1960, *Disparogalumna* HAMMER, 1973, *Psammogalumna* BALOGH, 1943.

KEY TO THE GENERA OF GALUMNIDAE

1 (50) Lamellar line (line *L*) present. Sublamellar line (line *S*) mostly present

2 (31) Lamellar setae originate laterad to line *L*, i.e. between lines *L* and *S* (*Galumninae*) (Figs 1, 5)

3 (4) 14—15 pairs of notogastral setal alveoli. Pteromorphae with two setal alveoli. — Mediterranean (Figs 13—14) **Vaghia** OUDEMANS, 1919

4 (3) 10 pairs of notogastral setal alveoli or setae. Pteromorphae with one setal alveolus or setae.

5 (6) Prodorsum, notogaster and epimeral region with dense longitudinal lines. Male with specialized tarsal setae. — S. America (Fig. 16) **Erogalumna** GRANDJEAN, 1966

6 (5) Prodorsum, notogaster and epimeral region without dense longitudinal lines. Male without specialized setae on tarsus.

7 (8) Notogaster, pteromorphae and prodorsum with fine polygonal structure. Notogaster with 9 pairs of fine, long, flagellate setae. — Ceylon, S. India (Fig. 15) **Flagellozetes** BALOGH, 1970

8 (7) Neither polygonate structure nor long, fine, flagellate setae on notogaster.

9 (14) A conspicuous sexual dimorphism present: male either with obtuse tip posteriorly on notogaster or with transversally extended sclerotized crest on the rostral region of prodorsum.

10 (11) Male with transversally extended sclerotized crest on the rostral region of prodorsum. — N. Africa (Figs 17—19) **Kabylogalumna** BERNINI, 1984

11 (10) Male with obtuse tip posteriorly on notogaster.

12 (13) Four pairs of well discernible notogastral setae on the distal part of notogaster; the remaining notogastral seta represented with alveoli. — S. Europe (Fig. 20) **Centoribates** BERLESE, 1914

13 (12) No discernible notogastral setae; 10 pairs of setal alveoli. — S. Europe (Fig. 21) **Dicatozetes** GRANDJEAN, 1956

14 (9) Sexual dimorphism inconspicuous or absent (some Galumna species)

15 (16) Body elongate, notogaster almost hexagonal. Three pairs of areae porosae, *A1* and *A2* confluent. — Africa, Oceania (Fig. 22) **Notogalumna** SELLNICK, 1959

16 (15) Body more or less circular.

17 (18) Rostrum with tubuliform, elongate tip. — S. Africa (Fig. 23) **Rostrogalumna** ENGELBRECHT, 1973

18 (17) Rostrum without tubuliform, elongate tip.

19 (20) Line *L* straight, lamellar setae near to end of lamellae. — Asia (Fig. 24) **Angulogalumna** GRISINA, 1981

20 (19) Line *L* more or less arched, lamellar setae far from end of lamellae.

21 (22) Line *S* absent, proximal part of line *L* disappearing. — S. Africa (Fig. 27) **Dimidiogalumna** ENGELBRECHT, 1972

22 (21) Line *S* present.

23 (26) Notogaster with sacculi.
24 (25) Body almost spherical. Line *L* and *S* near to each other. Lamellar and interlamellar setae only with alveoli represented. — W. Africa (Figs 25—26)
Sphaerogalumna BALOGH, 1961
25 (24) Body normal. Line *L* and *S* of normal type, farther from each other. Lamellar and interlamellar setae present, of normal length. — S. Africa (Fig. 28)
Sacculogalumna ENGELBRECHT, 1973
26 (23) Notogaster with areae porosae.
27 (28) Lyrifissurae *iad* adanal: near to margin of anal plates. — Cosmopolitan (Figs 29—30)
Galumna HEYDEN, 1826
28 (27) Lyrifissures *iad* apoanal: farther from anal plates.
29 (30) Notogastral setae disappearing. Seta on pteromorphae absent. Interlamellar setae absent, only with alveoli represented. Sensillus long: longer than distance *in-in*. — W. Samoa (Figs 31—32) **Neogalumna** HAMMER, 1973
30 (29) Notogastral setae present. Seta on pteromorphae present. Interlamellar setae very long, than prodorsum. Sensillus short, shorter than distance *in-in*. — Australia: Queensland (Figs 33—34) **Setogalumna** P. BALOGH, 1985
31 (2) Lamellar setae originate mediad to line *L*, i.e. between lines *L* and *L* (*Pergalumninae*) (Figs 2, 6).
32 (39) Notogastral setae present.
33 (36) Notogastral seta usually long and rigid; surface of notogaster either foveolate or longtudinally lineate.
34 (35) Dorsosejugal suture present. Prodorsum and notogaster with longitudinal lines. — Brazilia (Figs 35—36) **Neopilizetes** J. BALOGH et P. BALOGH, 1989
35 (34) Dorsosejugal suture absent. Notogaster foveolate, exceptionally punctate. — Africa (Figs 37—38) **Pilizetes** SELLNICK, 1937
36 (33) Notogastral seta short, almost disappearing.
37 (38) Dorsosejugal suture interrupted. All notogastral seta well observable. Area porosae of normal size. Surface of notogaster smooth. — Possibly cosmopolitan (Figs 39—40)
Trichogalumna BALOGH, 1960
38 (37) Dorsosejugal suture continuous. Notogastral seta partly disappearing. Area porosae punctiform. Surface of notogaster finely granulate. — Africa (Figs 41—44)
Trachygalumna BALOGH, 1960
39 (32) Notogastral setae absent.
40 (41) Lyrifissures *iad* far from anal plates. Legs I—III monodactyle, legs IV tridactyle. — Africa (Figs 45—46) **Heterogalumna** BALOGH, 1960
41 (40) Lyrifissures *iad* adjacent to anal plates. Legs monodactyle, exceptionally bidactyle.
42 (43) Epimeral and ventral region separated by a broad transverse streak. Line *S* disappearing. Body sphaeroid. — Africa (Figs 47—48) **Taeniogalumna** BALOGH, 1960
43 (42) Without broad transverse streak between the epimeral and ventral region.
44 (45) Proximal part of line *L* straight, like a narrow lamella, distal part an arched line. Line *S* fractures or absent. — S. Africa (Fig. 44)
Carinogalumna ENGELBRECHT, 1973
45 (44) Line *L* without straight, lamelliform proximal part.
46 (47) Line *L* straight, lines *L* and *S* diverging. — Madagascar, S. America (Fig. 53)
Orthogalumna BALOGH, 1960
47 (46) Line *L* arcuate, lines *L* and *S* more or less parallel.
48 (49) Legs bidactyle. Sensillus short with large, capitate head. — E. Africa (Figs 49—50)
Didymonycha MAHUNKA, 1984
49 (48) Legs tridactyle. — Cosmopolitan (Figs 51—52) **Pergalumna** GRANDJEAN,1936
50 (1) Lamellar line (line *L*) absent (*Allogalumninae*).
51 (64) Sublamellar line (line *S*) present.
52 (55) Notogastral setae present.
53 (54) Legs monodactyle. — Africa (Figs 55—56) **Leptogalumna** BALOGH, 1960
54 (53) Legs tridactyle, lateral claws very thin. — Egypt (Fig. 54)
Aegyptogalumna AL-ASSIUTY et al. 1985
55 (52) Notogastral setae absent.
56 (57) Lyrifissures iad far from anal plates. — Brazil (Figs 57—58)
Globogalumna J. BALOGH et P. BALOGH, 1989
57 (58) Lyrifissures iad in adanal position.
58 (59) Areae porosae postanalis ribbon-like, very long, embracing ventral plate almost in a semicircle, sometimes consisting of smaller parts. — Madagascar, Africa (Figs 59—60)
Xenogalumna BALOGH, 1960

59 (58) Areae porosae postanalis never ribbon-like or consisting of smaller parts.
60 (61) Notogaster with a lateral protuberance directed to the inside of body. — S. Europe (Fig 61) **Cryptogalumna** GRANDJEAN, 1957
61 (60) Lateral tuberance directed to the inside of notogaster absent.
62 (63) Notogaster with a median pore. — Cosmopolitan (Figs 63—64) **Allogalumna** GRANDJEAN, 1936
63 (62) Notogaster without median pore (female) or with several in a median group (male). — Cosmopolitan (Figs 65—66) **Acrogalumna** GRANDJEAN, 1956
64 (51) Sublamellar line (line *S*) absent.
65 (68) Lyrifissures *aid* more or less far from anal plates and oblique.
66 (67) One pair of areae porosae adalares (*Aa*). *A1* to *A2* circular. Sensillus pectinate. — Madagascar, Africa (Fig. 62) **Ctenogalumna** J. BALOGH, 1960
67 (66) Two pairs of areae porosae adalares (*Aa1* and *Aap*); *Aaa* large, irregular, *Aap* small, circular. The outline of *Aaa* and *A1* undulating. — Oceania (Figs 67—68) **Disparogalumna** HAMMER, 1973
68 (65) Lyrifissures *iad* in adanal position.
69 (70) 5—6 pairs of anal and 8—9 pairs of adanal setae. — Palearctis (Figs 69—70) **Psamogalumna** J. BALOGH, 1943
70 (69) Two pairs of anal and three pairs of adanal setae — Possibly cosmopolitan (Fig. 71) **Pilogalumna** GRANDJEAN, 1956

LIST OF GENERA

Generic names with asterisk (*) are genera inquirenda

Acrogalumna GRANDJEAN, 1956 — Type-species: Oribates longiplumus BERLESE, 1904
Aegyptogalumna ABDEL-HAMID et al., 1985 — Aegyptogalumna mastigophora ABDEL-HAMI et al., 1985
Allogalumna GRANDJEAN, 1936 — Type-species: Galumna alamellae JACOT, 1935
Angulogalumna GRISINA, 1981 — Type-species: Angulogalumna asiatica GRISINA, 1981
Carinogalumna ENGELBRECHT, 1973 — Type-species: Carinogalumna montana ENGELBRECHT, 1973
Centroribates BERLESE, 1914. — Type-species: Oribata mucronata G. et R. CANESTRINI, 1882
Cryptogalumna GRANDJEAN, 1957 — Type-species: Cryptogalumna cryptodontata GRANDJEAN, 1957
Ctenogalumna J. BALOGH, 1960 — Type-species: Ctenogalumna madagascrensis J. BALOGH, 1960
Dicatozetes GRANDJEAN, 1956 — Type-species: Centroribates uropygium GRANDJEAN, 1928
Didymonycha MAHUNKA, 1984 — Type-species: Didymonycha hesperis MAHUNKA, 1984
Dimidiogalumna ENGELBRECHT, 1972 — Type-species: Dimidiogalumna villiersensis ENGELBRECHT, 1972
Disparagalumna HAMMER, 1973 — Type-species: Disparagalumna tongaensis HAMMER, 1973
Erogalumna GRANDJEAN, 1966 — Type-species: Erogalumna zeuchta GRANDJEAN, 1966
Flagellozetes J. BALOGH, 1970 — Type-species: Flagellozetes porosus J. BALOGH, 1970.
Galumna HEYDEN, 1826 — Type-species: Notaspis alatus HERMANN, 1804
Globogalumna J. BALOGH et P. BALOGH, 1989 — Type-species: Allogalumna globuliferan, J. BALOGH et MAHUNKA, 1978.
Heterogalumna J. BALOGH, 1960. — Type-species: Heterogalumna lineolata J. BALOGH, 1960
*Holokalumma JACOT, 1929 — Type-species: Holokalumma coloradensis JACOT, 1929
*Holozetes JACOT, 1929 — Type-species: Galumna texana BANKS, 1906
Kabylogalumna BERNINI, 1984 — Type-species: Kabylogalumna rhinoceros BERNINI, 1984
*Kratzenseinia OUDEMANS, 1917 — Type-species: Oribata rugifrons STOLL, 1891
Leptogalumna J. BALOGH, 1960 — Type-species: Leptogalumna ciliata J. BALOGH, 1960
Neogalumna HAMMER, 1973 — Type-species: Neogalumna antenniger HAMMER, 1973
Neopilizetes J. BALOGH et P. BALOGH, 1988 — Type-species: Pilizetes neotropicus J. BALOGH et MAHUNKA, 1978
*Neorizetes JACOT, 1933 — Type-species: Oribata rugosula EWING, 1909
Notogalumna SELLNICK, 1959 — Type-species: Notogalumna praetiosa SELLNICK, 1959
Orthogalumna J. BALOGH, 1960 — Type-species: Orthogalumna saeva J. BALOGH, 1960
Pergalumna GRANDJEAN, 1936 — Type-species: Oribates nervosus BERLESE, 1914
Pilizetes SELLNICK, 1937 — Type-species: Pilizetes africanus SELLNICK, 1931
Pilogalumna GRANDJEAN, 1956 — Type-species: Pilogalumna ornatula GRANDJEAN, 1956
Psammogalumna J. BALOGH, 1943 — Type-species: Stictozetes hungaricus SELLNICK, 1925

Rostrogalumna ENGELBRECHT, 1973 — Type-species: Galumna rostrata ENGELBRECHT, 1969
Sacculogalumna ENGELBRECHT, 1973 — Type-species: Sacculogalumna saccularis ENGELBRECHT, 1973
Setogalumna P. BALOGH, 1985 — Type-species: Setogalumna excellens P. BALOGH, 1985
Sphaerogalumna J. BALOGH, 1961 — Type-species: Pergalumna index J. BALOGH, 1960
*Stictozetes BERLESE, 1916 — Type-species: Oribates (Stictozetes) scaber BERLESE, 1916
Taeniogalumna J. BALOGH, 1961 Type-species: Taeniogalumna sphaerula J. BALOGH, 1961
Trachygalumna J. BALOGH, 1960 — Type-species: Trachygalumna bisulcata J. BALOGH, 1960
Trichogalumna J. BALOGH, 1960 — Type-species: Pilogalumna lunai J. BALOGH, 1960
Vaghia Oudemans, 1919 — Type-species: Oribates (Stictozetes?) stupendus BERLESE, 1917
Xenogalumna J. BALOGH, 1960 — Type-species: Xenogalumna longula J. BALOGH, 1960

Remark — Original description of the genus *Cosmogalumna* AOKI, 1988, type-species: *Cosmogalumna ornata* AOKI, 1988; Southern Japan, Tokara Islands (AOKI. J.: Oribatid mites [Acari: Oribatida] from the Tokra Islands, Southern Japan — II: Bull. Biogeogr. Soc. Japan 43 [6], 1988: 31—33) reached us only after printing of this manuscript. In this way, unfortunately, it could not be inserted neither in the identification key nor in the List of Genera and the References.

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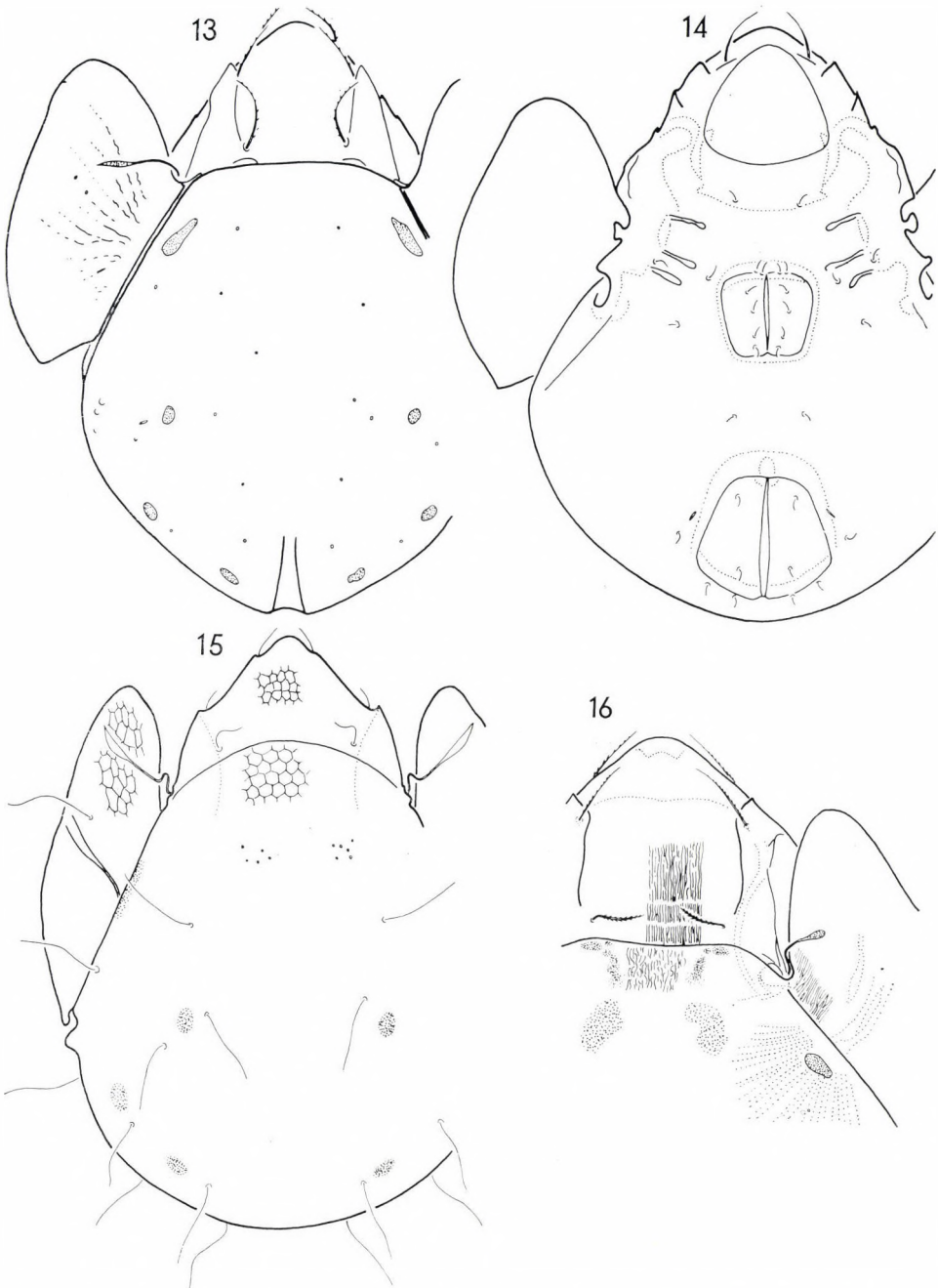
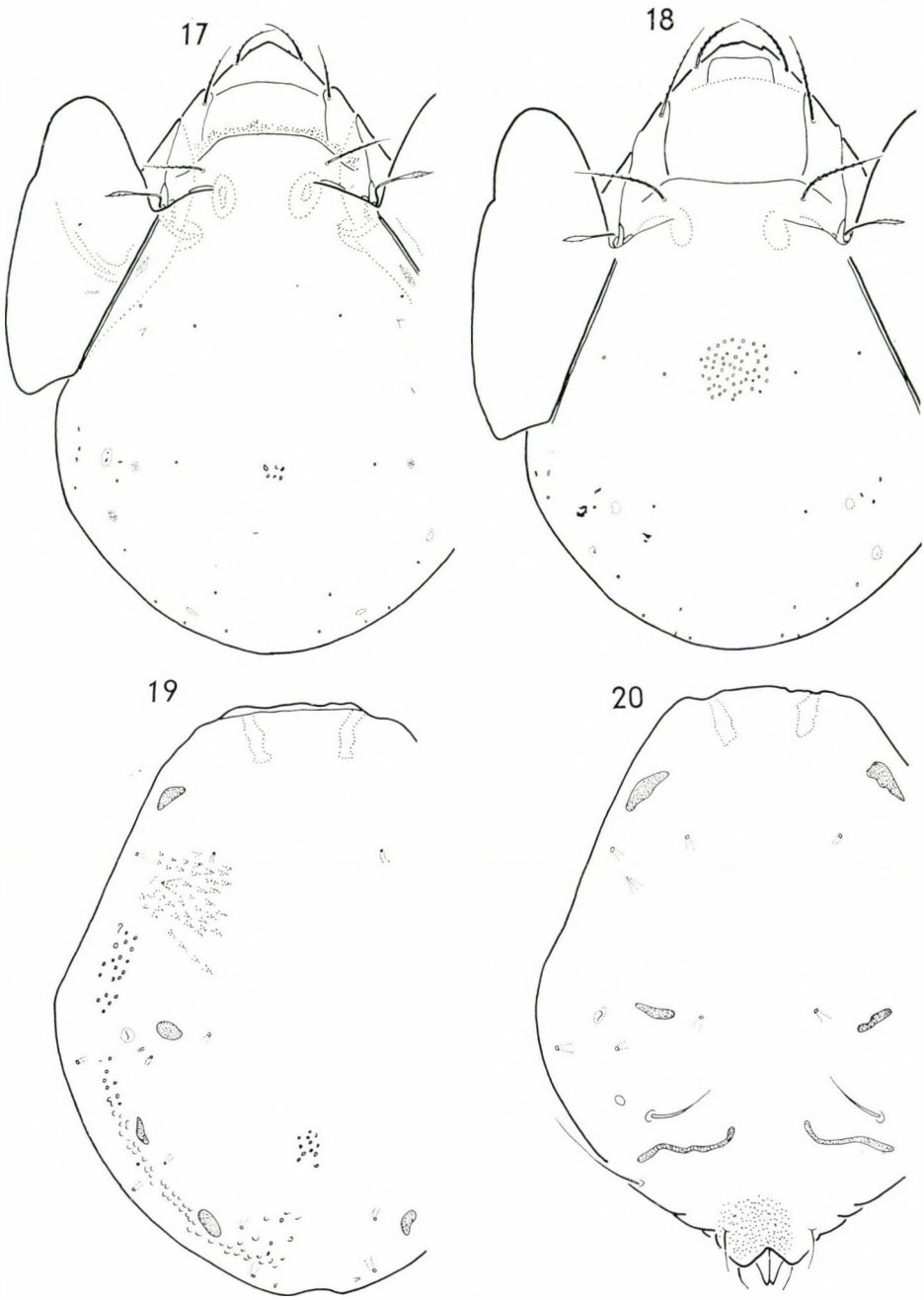
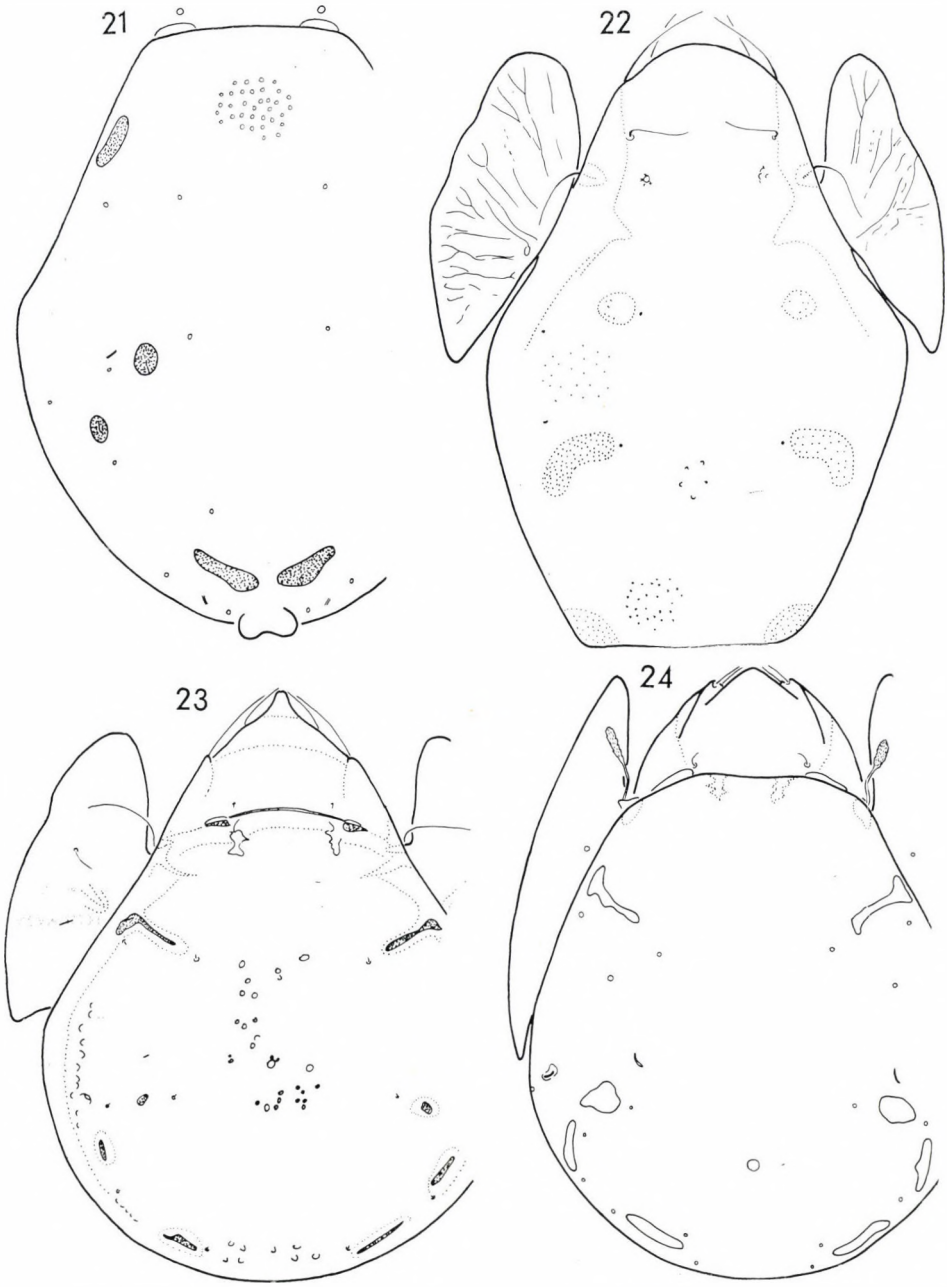


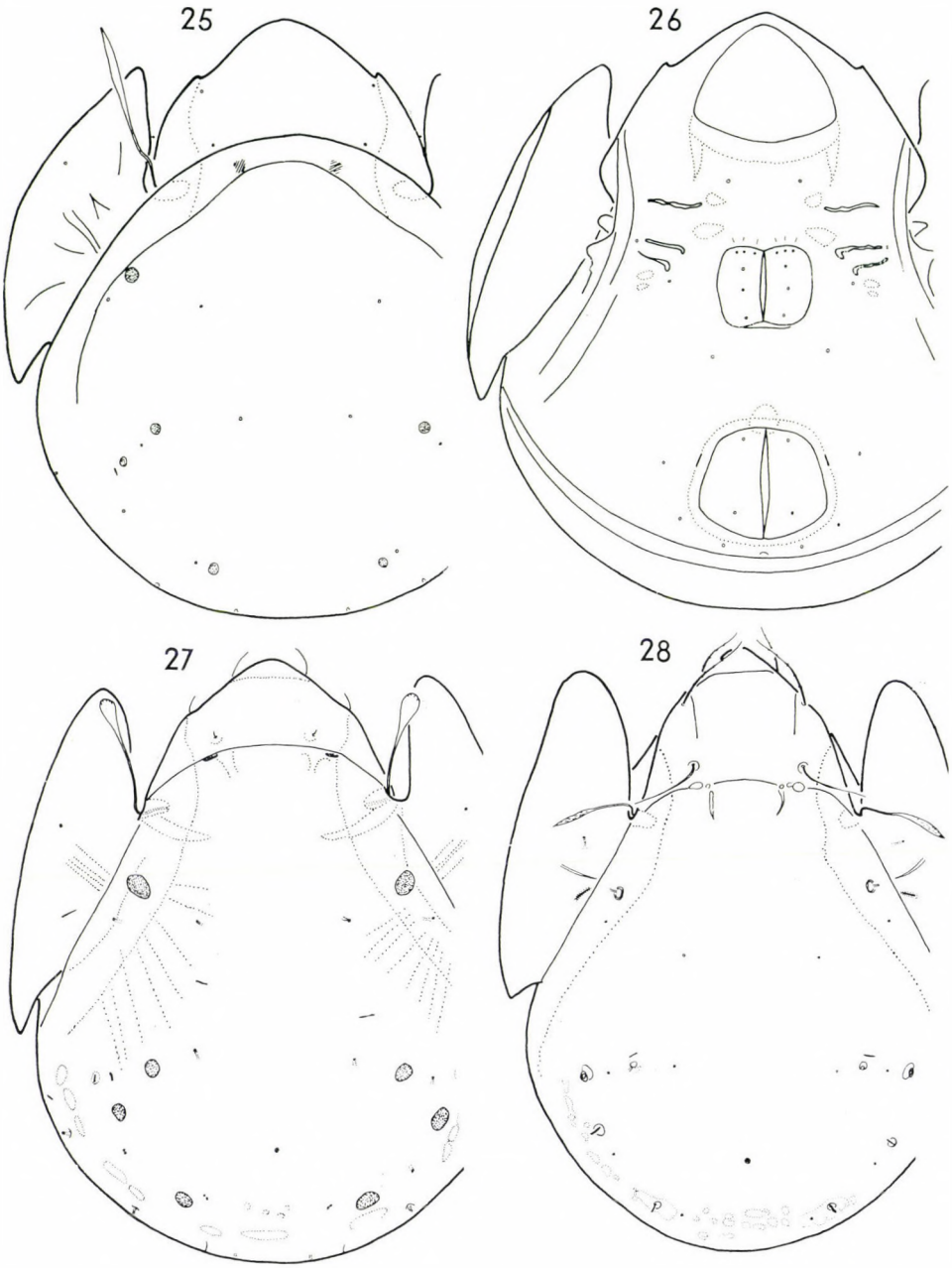
Figs 13—16. — 13—14 = *Vaghia carinata* (TRAVÉ, 1955), 15 = *Flagellozetes porosus* BALOGH, 1970, 16 = *Erogalumna zeucta* GRANDJEAN, 1966



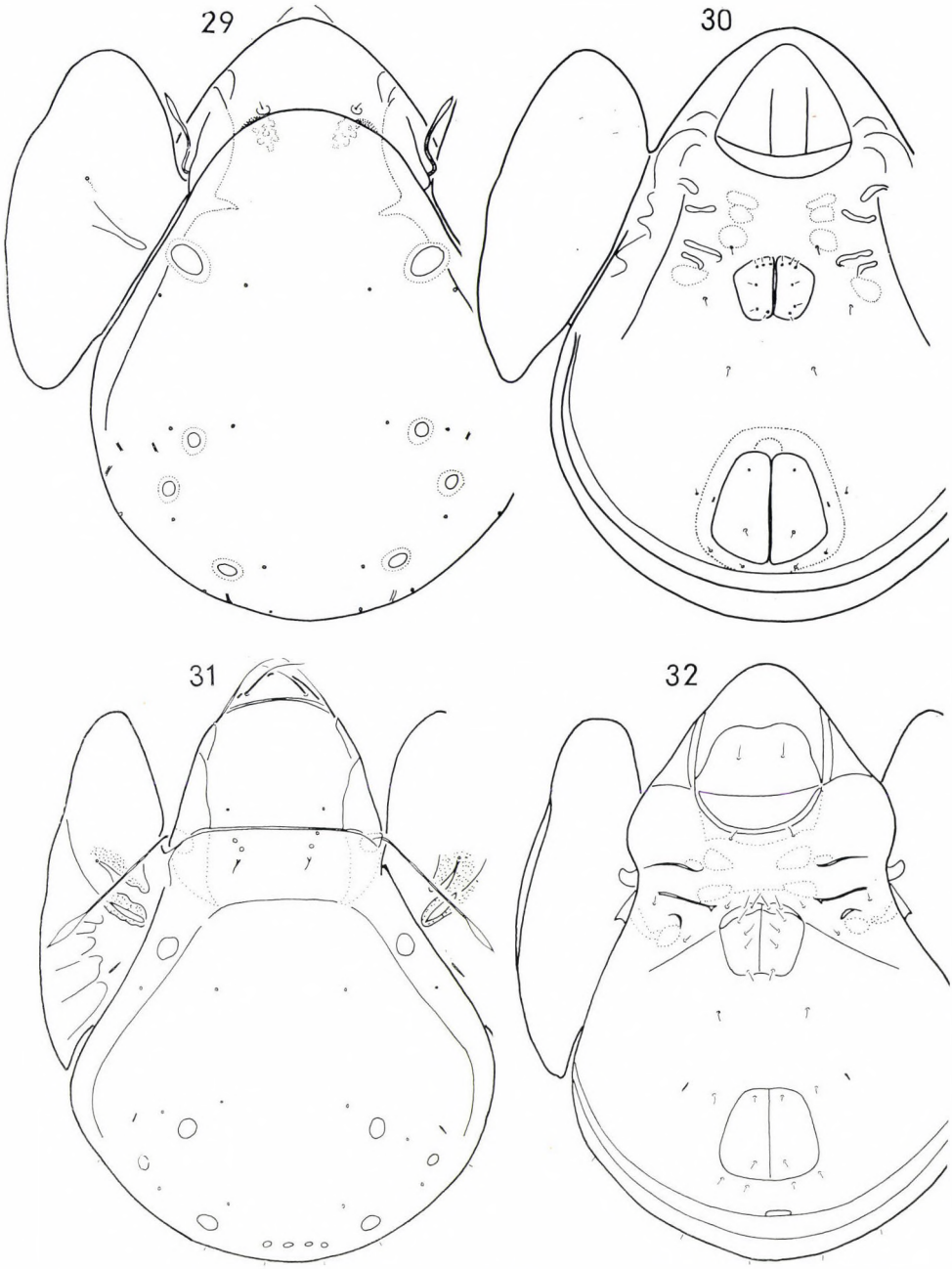
Figs 17—20. — 17 = *Kabylogalumna rhinoceros* BERNINI, 1984 female, 18 = *Kabylogalumna rhinoceros* BERNINI, 1984 male, 19 = *Centroribates mucronatus* (G. et R. CANESTRINI, 1882) female, 20 = *Centroribates mucronatus* (G. et R. CANESTRINI, 1882) male



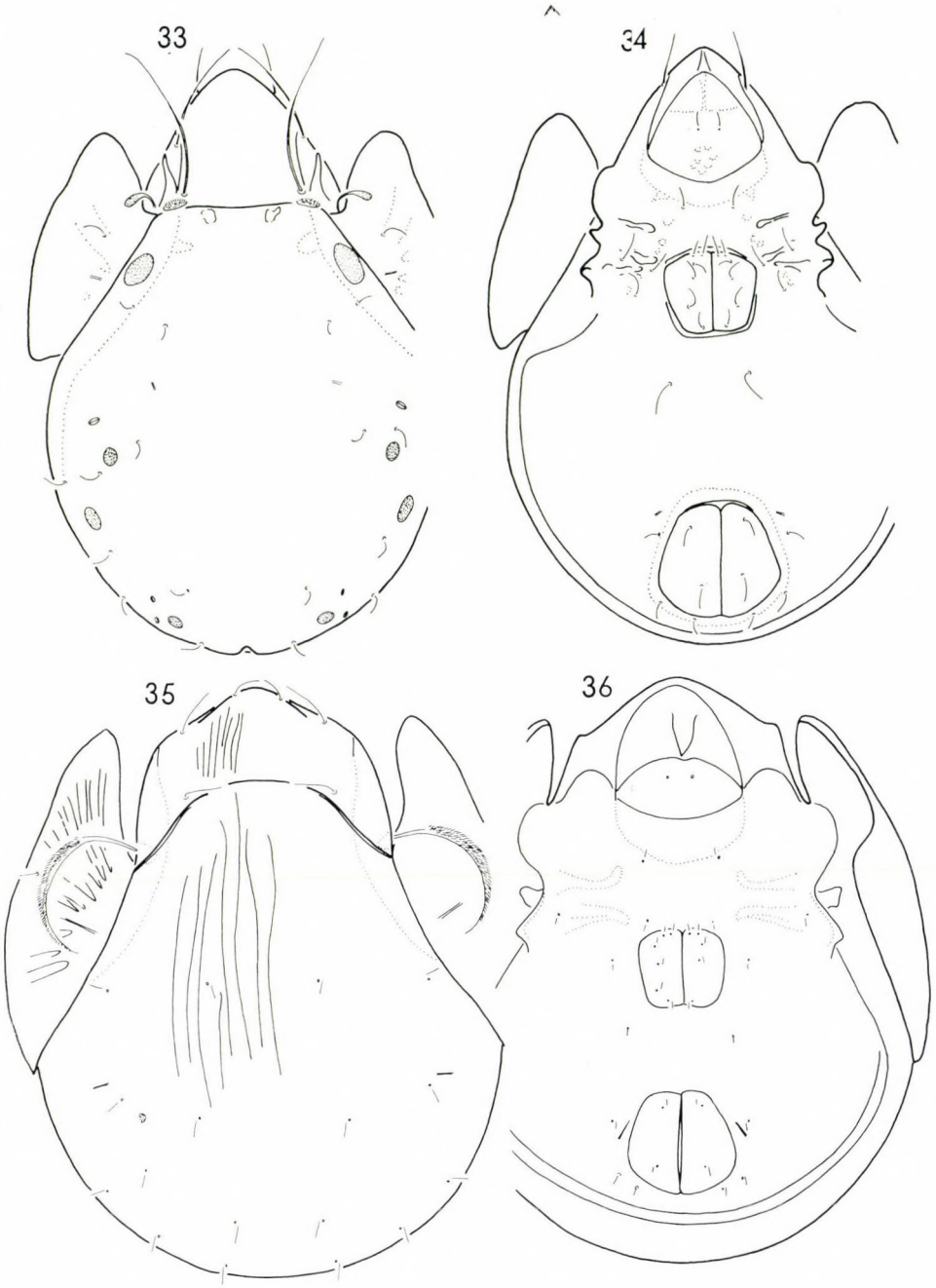
Figs 21—24. — 21 = *Dicatozetes uropygium* (GRANDJEAN, 1928) male, 22 = *Notogalumna africana* MAHUNKA, 1988, 23 = *Rostrogalumna rostrata* (ENGELBRECHT, 1969), 24 = *Angulogalumna asiatica* GRISHINA, 1981



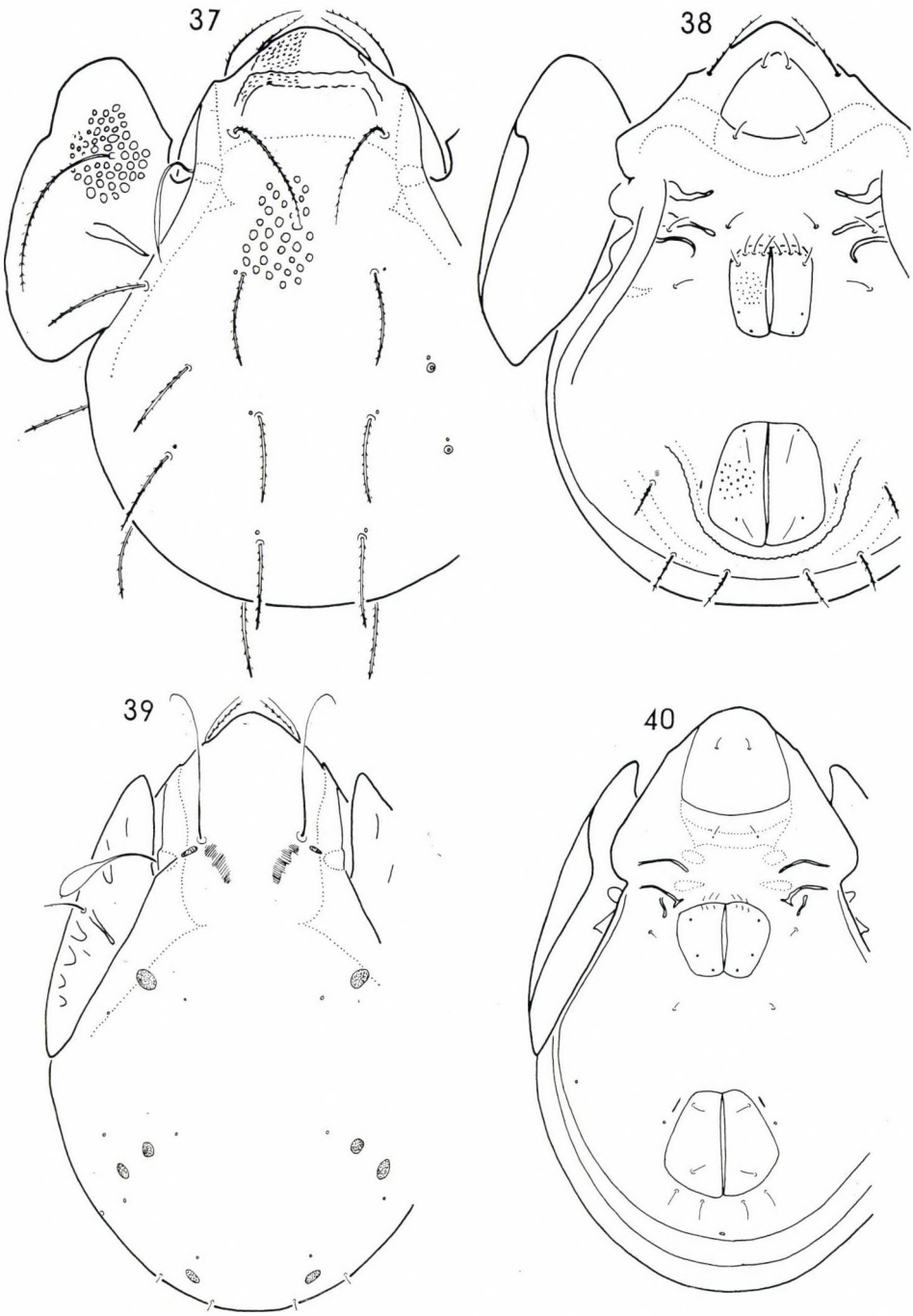
Figs 25—28. — 25—26 = *Sphaerogalumna index* (BALOGH, 1960), 27 = *Dimidiogalumna villiersensi* ENGELBRECHT, 1973, 28 = *Sacculogalumna saccularis* ENGELBRECHT, 1973



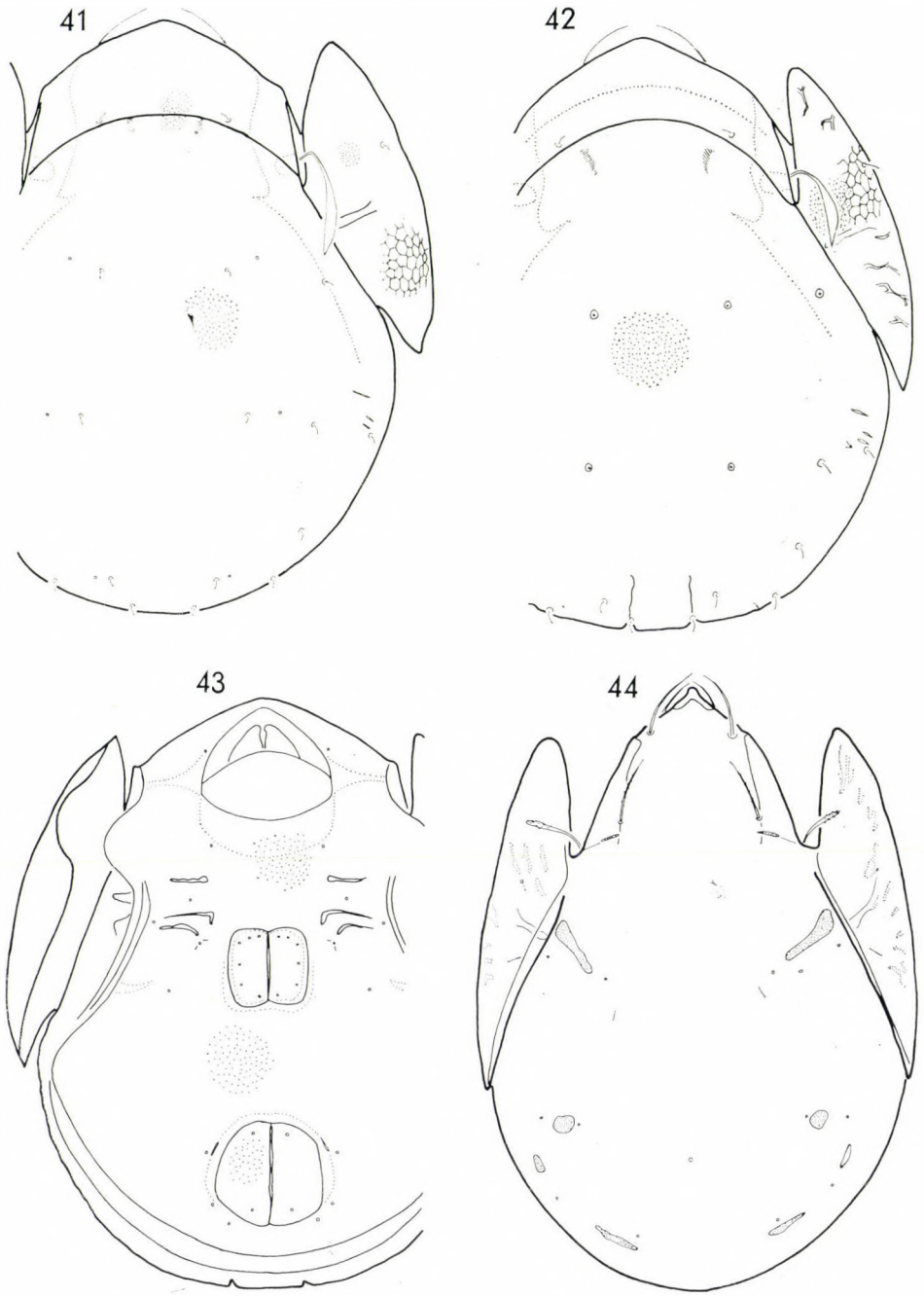
Figs 29—32. — 29—30 = *Galumna strinovichi* J. Balogh et P. Balogh, 1983, 31—32 = *Neogalumna antenniger* Hammer, 1973



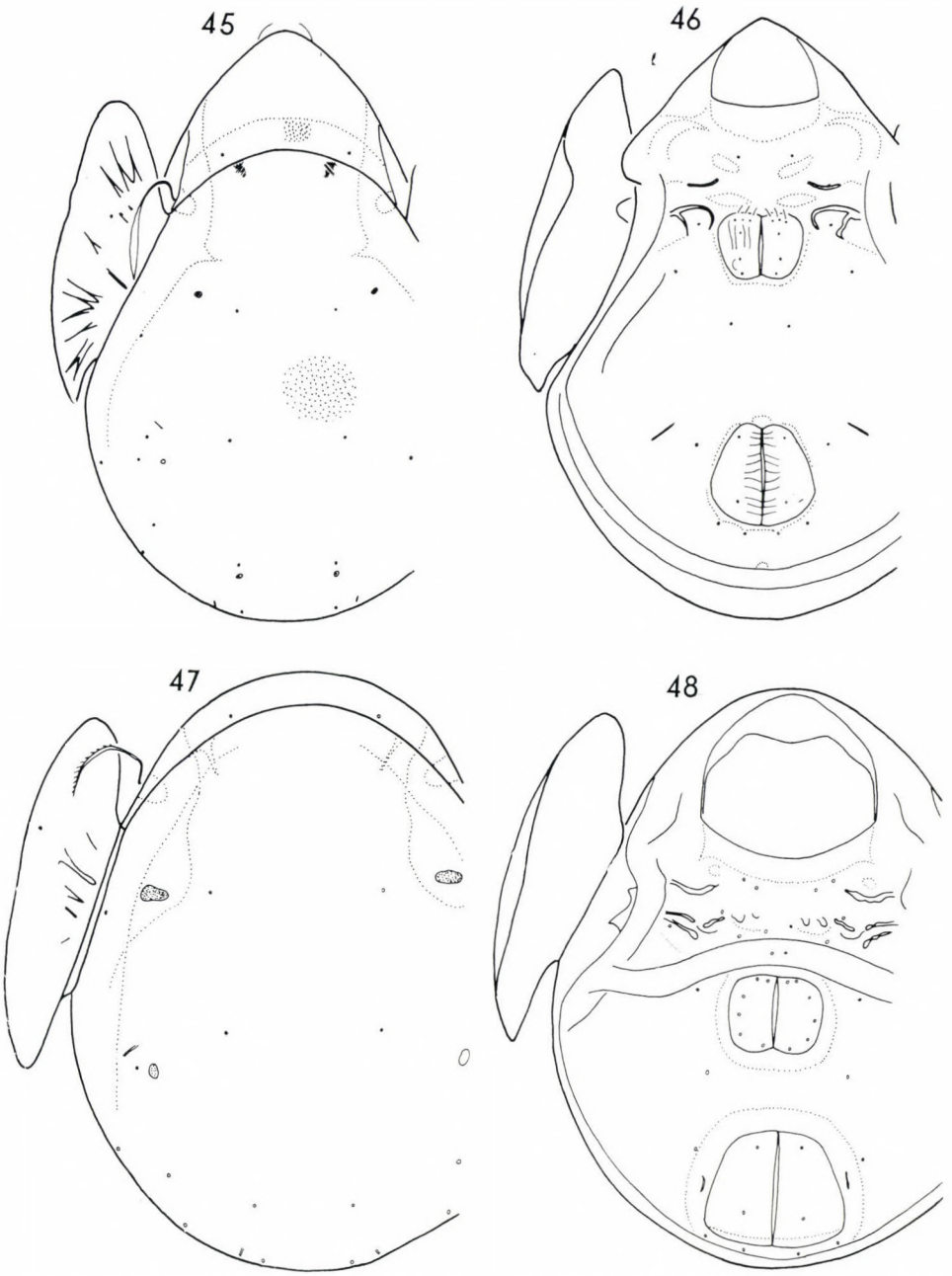
Figs 33—36. — 33—34 = *Setogalumna excellens* P. BALOGH, 1985, 35—36 = *Neopilizetes neotropicus* (BALOGH et MAHUNKA, 1978)



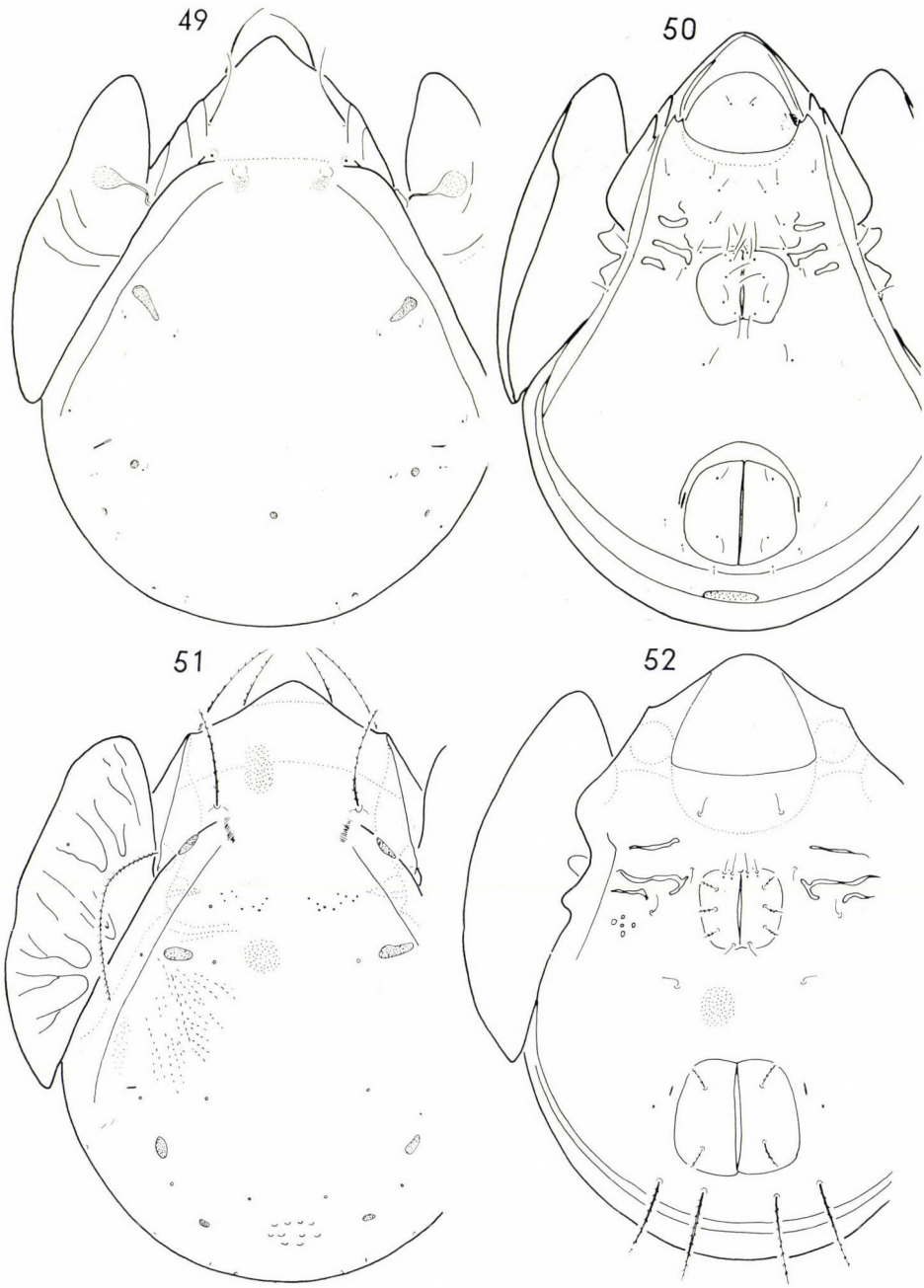
Figs 37—40. — 37—38 = *Pilizetes selnicki* BALOGH, 1958, 39—40 = *Trichogalumna seminuda* BALOGH, 1960



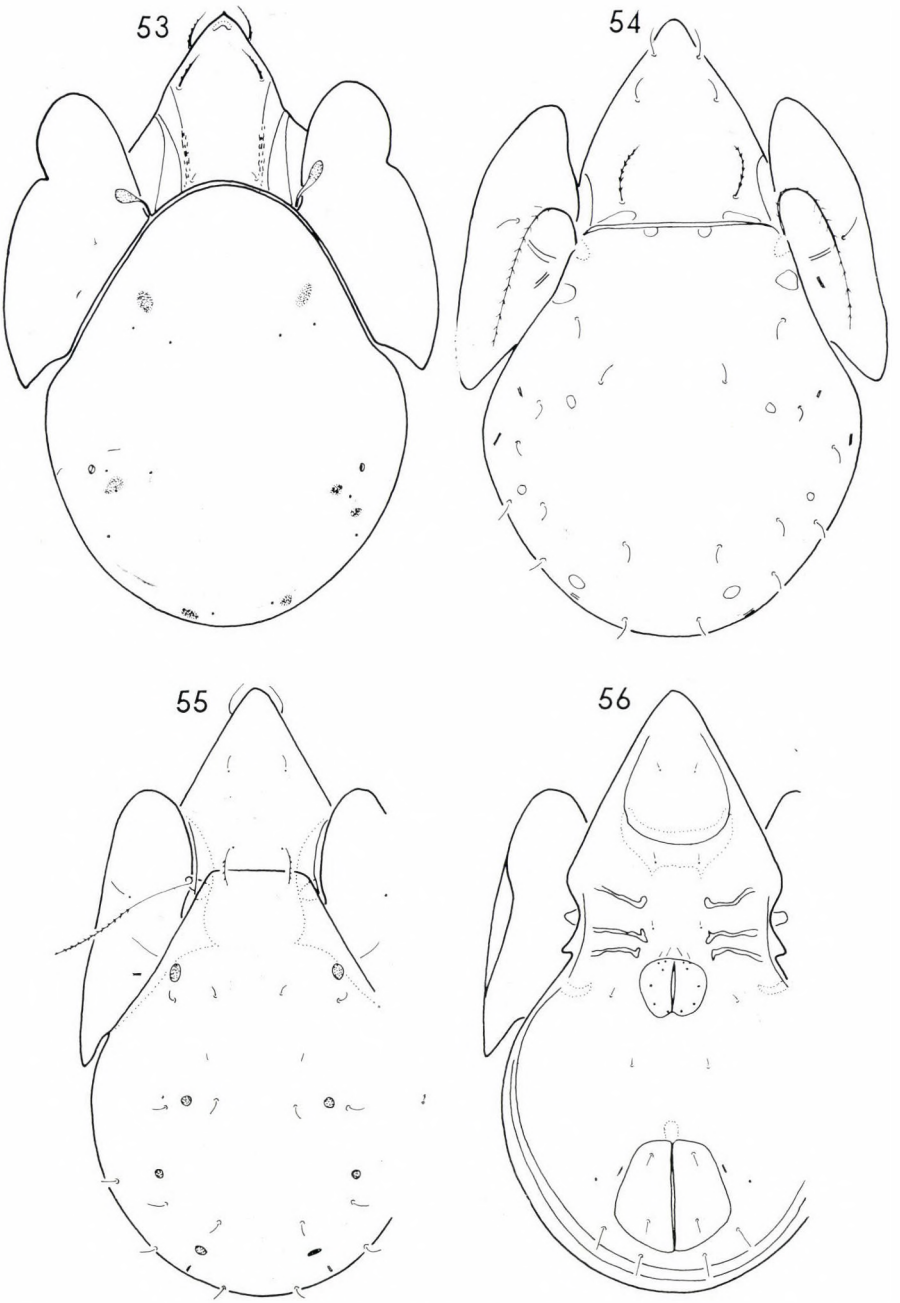
Figs 41—44 — 41 = *Trachygalumna bisulcata* BALOGH, 1960 female, 42—43 = *Trachygalumna bisulcata* BALOGH, 1960 male, 44 = *Carinogalumna montana* ENGELBRECHT, 1983



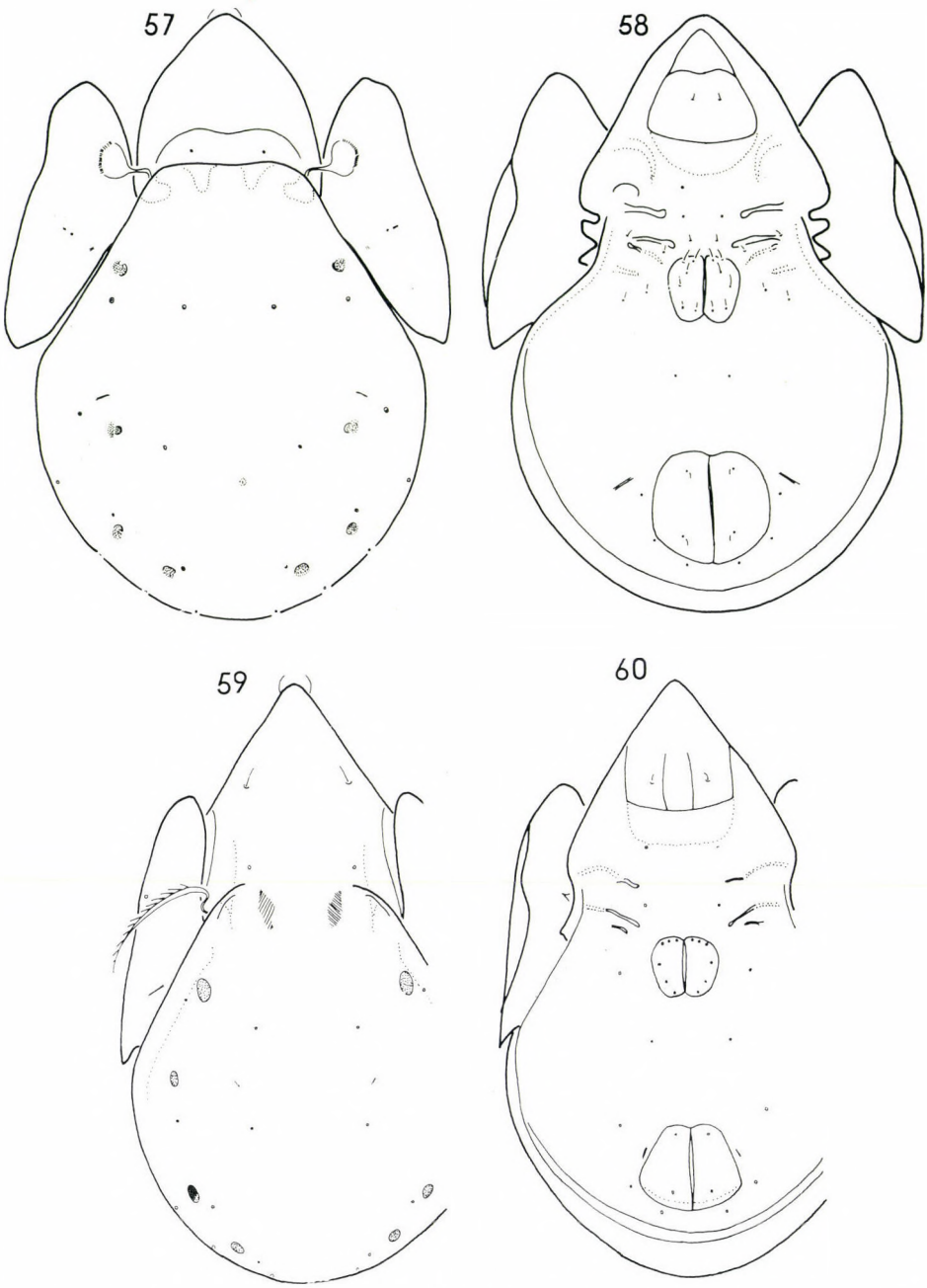
Figs 45—48. — 45—46 = *Heterogalumna lineolata* BALOGH, 1960, 47—48 = *Taeniogalumna sphaerula* BALOGH, 1962



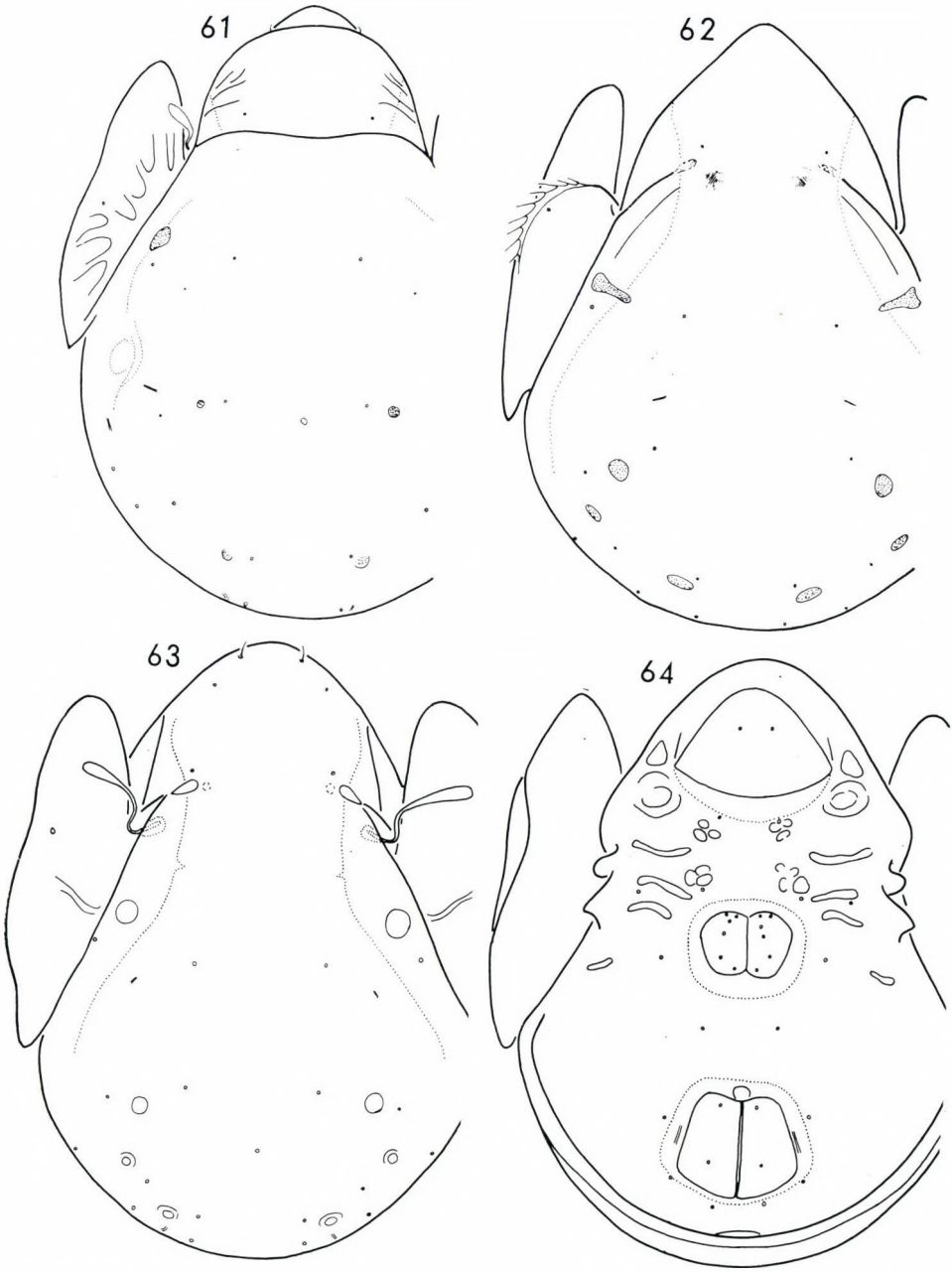
Figs 49—52. — 49—50 = *Didymonycha hesperis* MAHUNKA, 1984, 51—52 = *Pergalumna longisetosa* BALOGH, 1960.



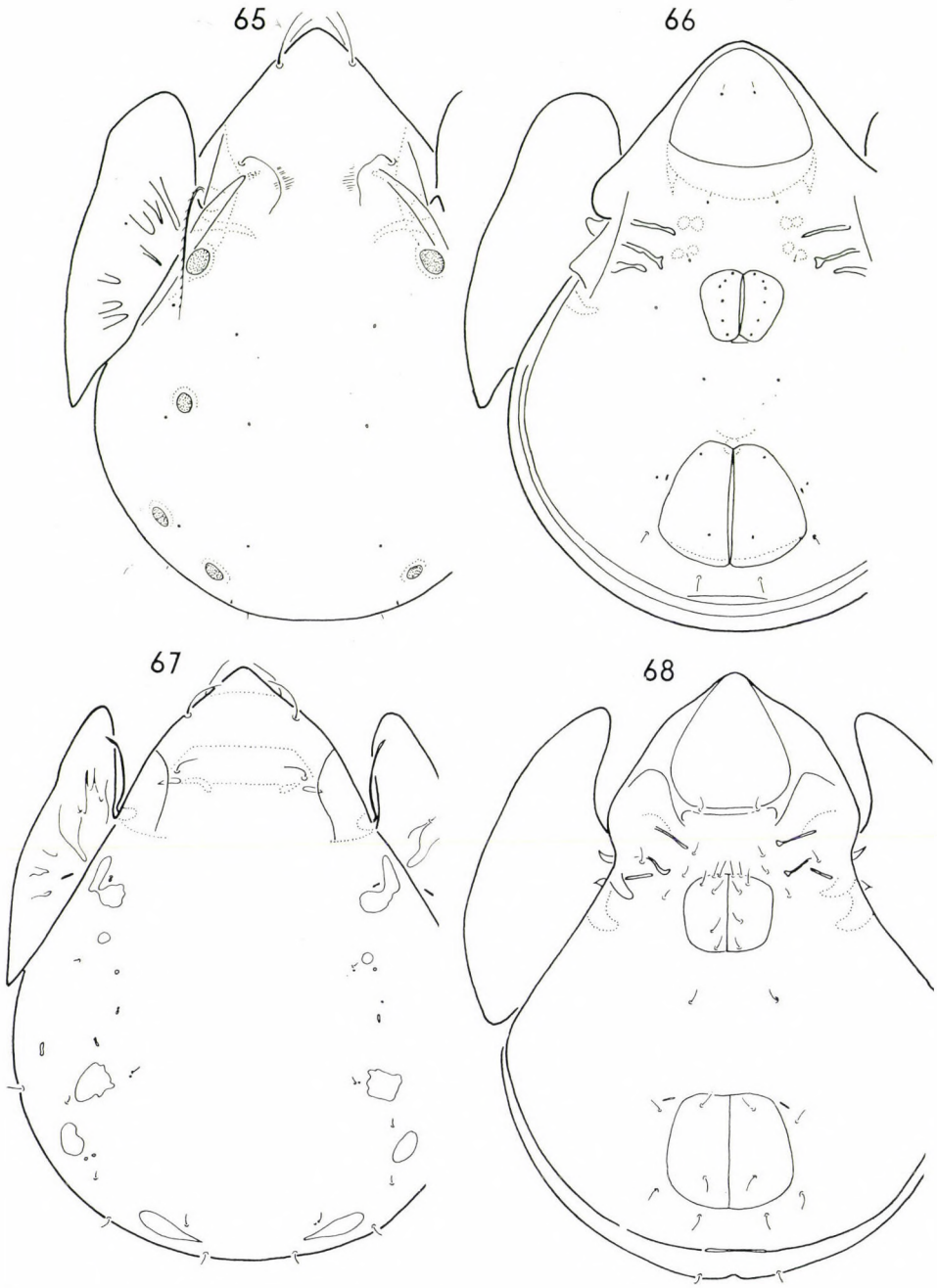
Figs 53—56 — 53 = *Orthogalumna terebrantis* WALLWORK, 1965, 54 = *Aegyptogalumna mastigophora* AL-ASSIUTY et al., 1985. 55—56 = *Leptogalumna ciliata* BALOGH, 1960



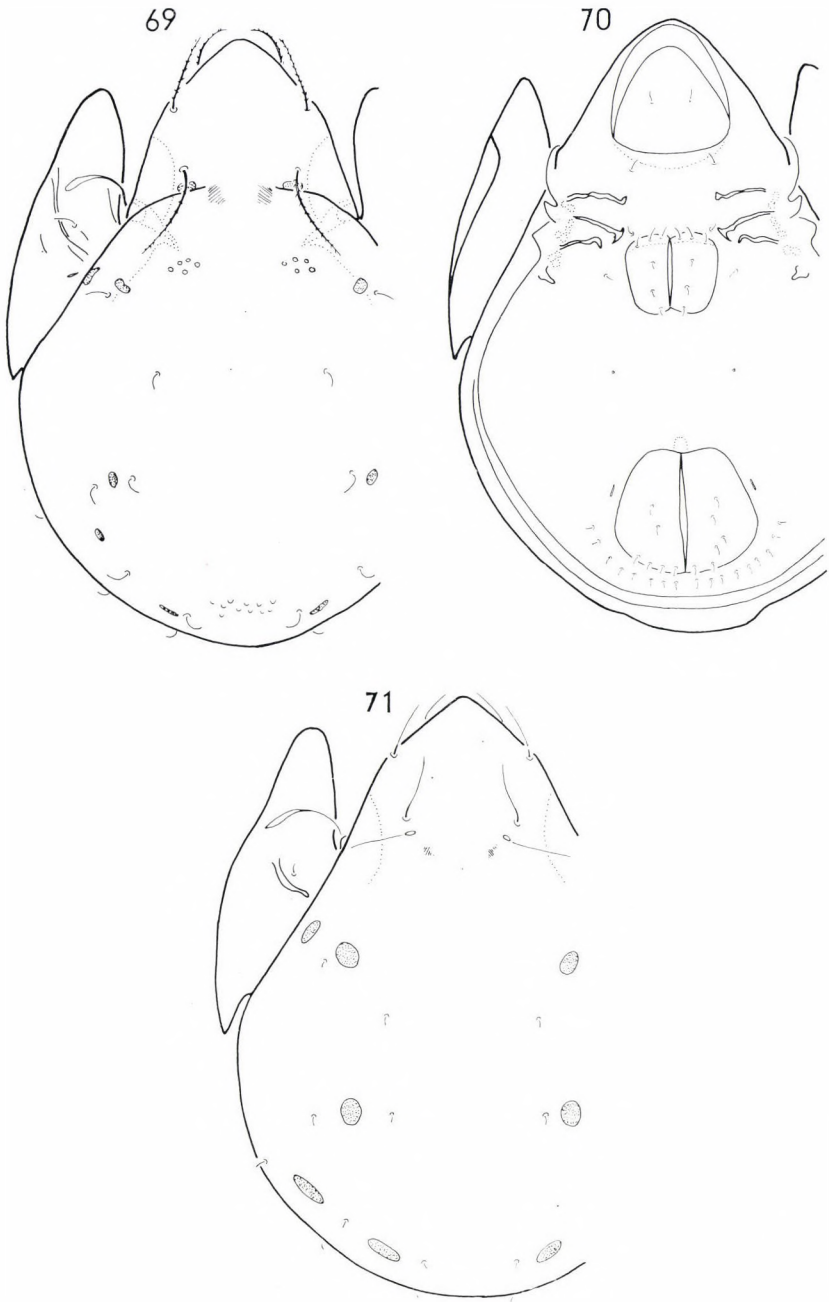
Figs 57—60 — 57—58 = *Globogalumna globulifera* (BALOGH et MAHUNKA, 1978), 59—60 = *Xenogalumna longula* BALOGH, 1960.



Figs 61—64. — 61 = *Cryptogalumna cryptodonta* GANDJEAN, 1957, 62 = *Ctenogalumna madagascarensis* BALOGH, 1960, 63—64 = *Allogalumna dilatata* J. BALOGH et P. BALOGH, 1983



Figs 65—68. *Acrogalumna machadoi* BALOGH, 1960, 67—68 = *Disparogalumna tongaensis* HAMMER, 1973



Figs 69—71. — 69—70 = *Psammogalumna hungarica* (SELLNICK, 1925), 71 = *Pilogalumna allifera* (OUDEMANS, 1919)

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CONTRIBUTIONS TO THE MILLIPEDE FAUNA OF VIETNAM (DIPLOPODA) III. SPIROBOLIDA*

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Two new species, *Aulacobolus brevipygus* sp. n. and *Physobolus pulvinipes* sp. n., deriving from the collections of the Hungarian Natural History Museum, Budapest, are described from Vietnam. Comments are made on a third species, the widespread *Trigoniulus lumbricinus* (GERSTÄCKER, 1873). With 22 figures.

Introduction — The present paper puts on record additional three diplopod species of the Vietnamese fauna as based on the collection of the Hungarian Natural History Museum, Budapest (HNHM). We treat now all the identifiable members of the order Spirobolida kept there from that country. Out of the three forms concerned, two appear to represent new species and one more a cosmopolitan, which also requires certain notes on its variation and geographical range.

Material treated here has been shared between the collections of the Zoological Department of the HNHM and the Zoological Museum of the Moscow State University, Moscow (ZMMU).

Acknowledgements — We are indebted to DR. H. ENGHOFF for loaning material from the Zoological Museum of the University of Copenhagen, Copenhagen (ZMUC). Many thanks are due to PROFS. R. L. HOFFMAN (Radford) and J.-P. MAURIÈS (Paris) for kindly giving comments on the status of the new species concerned, and to J.-P. MAURIÈS again for both gift material from Guadeloupe and permitting the publication of BRÖLEMANN's sketches.

* Hungarian zoological studies in Vietnam No. 13.

Aulacobolus brevipygus sp. n.

(Figs 1—7)

Locality: Vietnam, Prov. Ninh binh, Cuc phuong, in forest, 7. May 1966, (No. 266—267), leg. G. Topál, 1 ♂ (holotype), 1 ♀ and 2 juveniles. — Material examined: 4 specimens. — Holotype male and two juvenile paratypes are deposited in the HNHM, one female paratype in ZMMU.

Description: Length ♂ 62 mm, ♀ 60 mm, juv. 18—20 mm, midbody width 4.7, 5.0 and 2.5 mm, respectively, number of segments excluding telson 55 (♂), 50 (♀), 40(—7) and 46(—7) (juveniles).

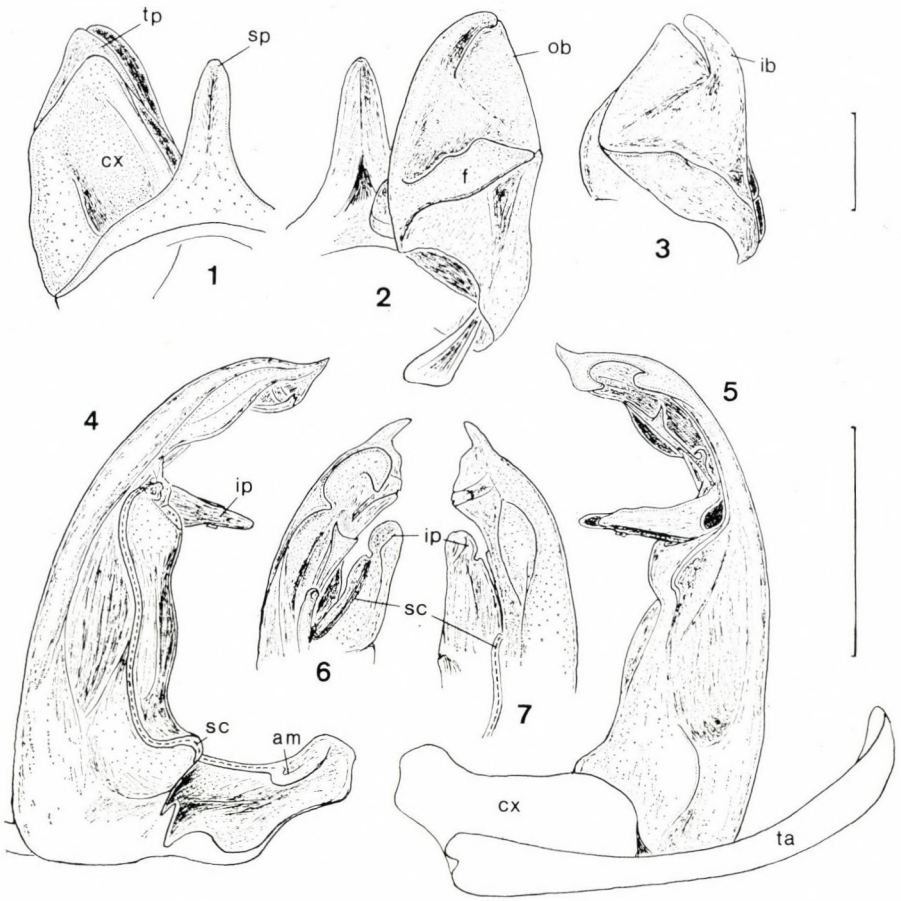
Coloration: holotype rusty brownish-grey, rather dark, more greyish posterior third, pale brownish; hind tergal limbus almost translucent. Prozona marble (especially anteriorly); collum almost entirely marble, head likewise, mottled yellowish-grey. Left antenna whitish, right antenna broken off on joint three (holotype); legs yellowish.

Body cylindrical, anterior postcollar constriction extremely feeble, best expressed on segment 4; till 51st segment body parallel-sided becoming gradually and gently tapering toward telson. Antennae short, clavate, cheeks excavated for antennae to hinge into. Eyes roundly subtriangular, blackish-brown, of ca. 35 compact ocelli. Frontal suture distinct. Labrum typical, deeply concave in the middle of anterior margin, with three medial teeth. Collum dorsally rather narrowly rounded, subrectangular, laterally and antero-laterally up to level of eyes rather distinctly margined, but not striate. Surface rather indistinctly and sparsely punctured. Similar punctures on metazona but not on prozona, body surface generally dull.

Metazonital striation very weak, somewhat better traceable ventro-laterally, never dorsally above pore level. Striation somewhat oblique, tending to grow still weaker toward telson (no more than 3 striae in a square with its length being equal to metazonite below pores). Anterior part of prozona dull, posterior part extremely finely, densely, subtransversally and rather confusedly striate. Prozona, like metazona, practically astriate dorsally above pore level, suture between pro- and metazona feeble. Very poor ring constriction, with a row of smaller, shallow, contiguous round pits (alveolae) in front of suture. Hind tergal limbus very finely crenulate, crenulae being rather well apart from each other. Defensive pores small, inconspicuous, lying just in front of and touching the row of pits, starting from 6th segment, there situated a little below midheight, immediately after that (on subsequent terga) already well above midheight. Anal valves very indistinctly margined, almost entirely regularly convex, subanal scale spindle-shaped, without particulars. Epiproct practically absent, as a simple knob, hanging just a little over the rounded outline of anal valves in lateral view, in dorsal view rather narrowly rounded, triangular, caudal angle about 100 degrees.

All legs rather stout, pregonopodal coxae about twice as high as wide, tarsi invariably with pads, claws slightly curved, sharp, long: ca. 1/3 of tarsal length, each with a strong seta dorsad of it, a similar seta present on distal part of all preceeding joints. Leg joints sparsely setose, growing a little slenderer towards telson, leg-pair 10 particularly reduced, coxae always contiguous. Lateral lobes of sternite 2 in males low and rounded like in *Aulacobolus dysoni* (see CARL 1941, Fig. 68). Segment 7 ventrally with a single flat plate, finely rugose.

G o n o p o d s : Anterior gonopods (coleopods) (Figs 1—3) with a high, membranous, frontally furrow-shaped, concave sternal process (*sp*) rather narrowly rounded at tip. Coxite (*cx*) a little shorter than telopodite (*tp*), subequal in height to "*sp*", frontally with a large shallow concavity, apically well rounded. Telopodites higher than "*sp*", distally bifid inner branch (*ib*)



Figs 1—7. *Aulacobolus brevipygus* sp. n.: 1—2 = left coleopod, frontal and caudal view, 3 = caudal view of right coleopod telopodite, 4—5 = right phallopod, frontal and caudal view, 6—7 = end of left phallopod, mesocaudal and mesofrontal view. Scales 1.0 mm each

being a bit higher and considerably slenderer than outer one (*ob*). Caudally with a good fold (*f*).

In posterior gonopods (phallopods, Figs 4—7) tracheal apodemes (*ta*) large, attached to a small sternite at base of the coxite (*cx*), which is delimited at least on caudal side from acropodite. From frontal side an ampulla (*am*) is visible (= "Coxaldrüse") from where seminal canal (*sc*) begins. Telopodite rather slender, suberect, at distal third branching into a smaller inner process (*ip*) (= "Innenarm") and a larger, apically pointed, complex outgrowth carrying a number of teeth on its caudal side. Seminal canal runs almost entirely along frontal side, only subterminally turning to caudal side to end on "*ip*". Latter seems to be movable.

♀paratype: Color pattern also quite dark, similar to that of holotype, the same alternation of greyish marble prozona and yellowish translucent metazona. Over 45 compact ocelli in a round-triangular eye; antennae in situ hardly reaching to end of collum. Anal valves much better margined, similarly regularly rounded. Instead of tarsal pads, 2—3 strong ventral setae. In juveniles coloration paler, whitish to cream.

Remarks: The new species seems to be a good member of *Aulacobolus* POCOCK, 1903, a genus encompassing about 15 nominal species, subspecies and varieties (cf. POCOCK 1892, 1893, 1903; SILVESTRI 1916; CHAMBERLIN 1920; ATTEMS 1936, 1938, 1953; CARL 1941), chiefly restricted to the Indian and Far Indian regions. Of the species only one, *A. rubropunctatus* ATTEMS, 1938 (= *rubrodorsalis* [ATTEMS, 1953], cf. HOFFMAN 1962), has been met with within Indochina (Ream, Cambodia).*

Morphologically, and zoogeographically likewise, the new species displays particularly close affinities with *A. rubropunctatus*, as expressed by the presence of a short tail, the sculpture of the prozona, the low and rounded outer sternal lobes of male leg-pair 2, the gonopod conformation, etc. However, both species are quite distinct by the pattern of metazonital striation, the shape and furcation of the coleopod telopodite, the armature of the distal half of the phallopod, etc. From all congeners, *A. brevipygus* sp. n. is easily distinguished by the shortest epiproct and certain details of gonopod structure. Being together with *A. rubropunctatus* somewhat disjunct in every way as compared to the Indian and Sri Lankan congeners (HOFFMAN 1962), *A. brevipygus* sp. n. represents the first formal record of *Aulacobolus* in Vietnam. To judge whether to treat both as a separate taxon of superspecies level or not, is the question of the future, along with further accumulation of both faunistic and revisionary data.

* HOFFMAN (1962) believes that it is possible that *A. rubropunctatus* is the same as "*Spirobolus*" *dollfusii* POCOCK, 1893 described from South Vietnam (Cochin China). However, he treats by himself *dollfusii* as a *Tonkinobolus* (p. 774), and even questions the generic allocation of *rubropunctatus* within *Aulacobolus* (p. 778).

Physobolus pulvinipes sp. n.

(Figs 8—13)

L o c a l i t y : Vietnam, Prov. Hoang lien son, 17 km SE of Lao cai, Dang khao valley, from under bark of trees, 29. Nov. 1971. (No. 163), leg. G. TOPÁL et I. MATSKÁSI, 2 ♂♂ and 2 ♀♀. — Material examined: 4 specimens. — H o l o t y p e male and two female paratypes are deposited in the HNHM, 1 male paratype in ZMMU.

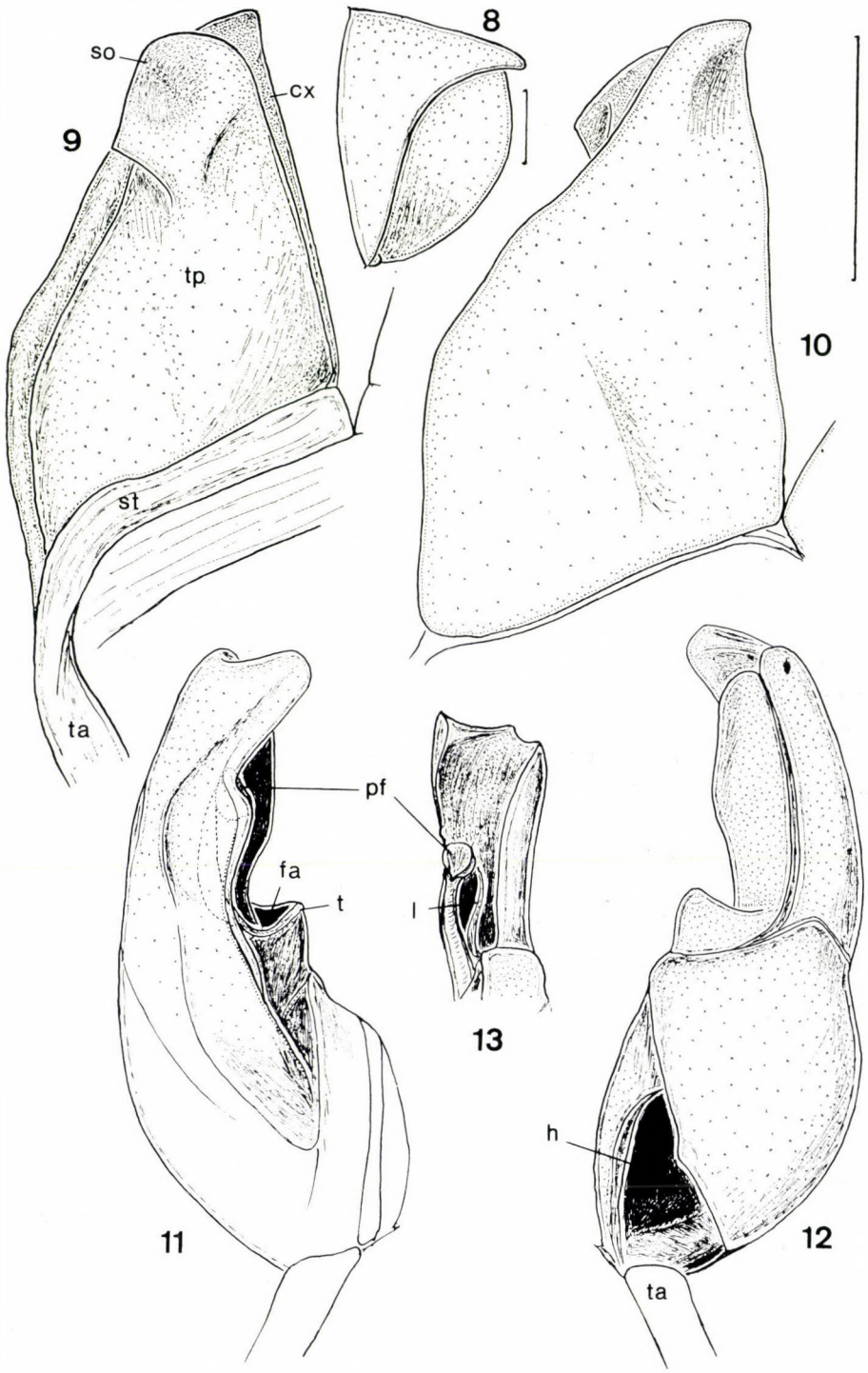
D e s c r i p t i o n : Length ♂ 70—80 mm, ♀ 65—95 mm, width on midbody ♂ 5—6 mm, ♀ 5—7.1 mm, number of segments excluding telson 52—64 (♂), 50—58 (♀).

C o l o r a t i o n : Body dark grey-brown, prozona dark grey, somewhat marble, mottled paler grey-brownish; anterior two-thirds of metazonites dark brown, hind third brownish-yellowish, almost translucent. Head grey-brown, antennae rusty brown, legs pinkish-brown.

Body cylindrical, anterior body constriction very feeble, best expressed on ring 4, continues until segment 6. Antennae short and clavate, in situ a little overreaching hind margin of collum. Cheeks prominently concave for antennae to hinge into. Frontal axial suture quite distinct, 31—33 blackish, flat, compact ocelli in a round-triangular eye. Labrum deeply incised in the middle, with three usual teeth, labral setae 4 + 4, 5 + 6 (♂), 5 + 4 or 6 + 6 (♀). Collum rather broadly and roundly truncate, rimmed along anterior margin from level of eyes to hind edge, on sides laterally with a few incisions. Surface rather roughly and sparsely punctured, dorsally on both pro- and metazona and laterally (above and just below pore level) on prozona finely rugose, below pore level prozona well obliquely striate.

Metazonital striation rather distinct, especially ventrally, tending to grow less expressed towards both ozopores and telson, never reaching to dorsum, but in an increasingly confused way reaching to well above pore level. Striae of metazona, like those of prozona, rather sparse, some three in a square with its side equal to metazonital length below pores. Suture between pro- and metazona indistinct, ring constriction very feeble. Defensive pores inconspicuous, starting from ring 6, lying just in front of suture, practically touching it. Hind tergal limbus smooth. Epiproct moderately long, slender (Fig. 8), in lateral view rather narrowly, in dorsal view rather broadly rounded, somewhat flattened dorsoventrally. Anal valves practically not margined, rather regularly convex throughout, a little flattened only subventrally. Subanal scale spindle-shaped, normal. Legs rather short and stout, particularly leg-pairs 1 and 2, coxae 3—5 distoventrally particularly well swollen, remaining pregonopodal coxae somewhat less so. Tarsal pads missing; claws long, slightly curved, about 1/3 as long as tarsus.

♂♂: Legs with two-three tarsal and one distal strong seta on preceeding joints. Prefemora peculiar in having swollen (pregonopodal legs) to much



Figs 8—13. *Physobolus pulvinipes* sp. n. 8 = epiproct, lateral view, 9 = right coleopod, caudal view. 10 = left coleopod, frontal view, 11—12 = right phallopod, frontal and caudal view, 13 = end of right phallopod, lateral view. Scales 1.0 mm each

swollen (postgonopodal legs) ventral sides in the form of pads, usually projecting as a distoventral process or tooth. These prefemoral pads with dorsoventral projections in paratype developed only till midbody, further on gradually decreasing in size almost completely to naught toward telson. Segment 7 ventrally with a high, rounded, single ridge, much narrower than in preceeding species. Coxa 2 particularly high, outer sternal lobe straight, slightly rounded.

G o n o p o d s : Anterior gonopods (coleopods, Figs 9—10) with tracheal apodemes (*ta*) completely fused to sternite (*st*), latter distinctly divided medially, holding together on frontal side only due to a membrane. Coxite (*cx*) simple, a little longer than telopodite, plate-like, abruptly attenuating from about midheight towards narrowly rounded apex. Telopodite (*tp*) a little smaller, similarly shaped, apically with a subsecuriform outgrowth (*so*), somewhat concave and directed laterad.

Posterior gonopods (phallopods, Figs 11—13) rather simple, suberect, in caudal view distinctly two-segmented. Tracheal apodemes (*ta*) independent, basal joint (coxite?, coxosternum?, "*cx*") with a rather voluminous hollow (seminal gland?, "*h*"). Distal segment three-lobate, frontal lobe exceeding a little in height both other subequal lobes, at base laterally with a peculiar tooth (*t*) with a good apical fovea (*fa*) terminating a well expressed groove, more distad of "*t*" on inner side of frontal lobe another groove is evident, which leads to a smaller fovea (pseudofovea?, "*pf*") situated at about midheight of second segment. Both grooves seem to make one somewhat basally of "*t*", and proceed further basad towards "*h*". Between "*pf*" and frontal lamellae along the course of the distal groove there is an inconspicuous, short lamina ("*l*").

♀♀: Prefemoral pads missing. Usually only one tarsal seta, preceeding joints likewise. Epiproct somewhat shorter than in males.

R e m a r k s : *Physobolus* was established by ATTEMS (1936) as a monobasic genus for *Ph. olivaceus* from Darjeeling District, India. Later ATTEMS added two new species of *Physobolus* from Vietnam: *P. annulatus* and *striatus* (cf. ATTEMS 1953). However, the latter was shown (HOFFMAN 1969, MAURIÈS 1980) actually to be another junior synonym of the cosmopolitan spirobolellid, *Paraspirobolus dictyonotus* (LATZEL, 1895). Regarding the remaining two species, both need a thorough revision, since many important details in the descriptions by ATTEMS are either entirely missing, or uncertain, or too schematic. However, even with the data already available, *Ph. pulvinipes* sp. n. is certainly particularly closely related to the generotype *Ph. olivaceus.** Indeed, both are quite large species, the telson is similarly shaped, scobina

* The identity of *Ph. annulatus* is less important for a proper allocation of our new species. Furthermore, its description is especially insufficient (ATTEMS 1953), in some points even contradictory.

absent and, what is more important, both coleopods and phallopods have a number of striking similarities. According to HOFFMAN (1969, 1979), the gonopod conformation of *Physobolus*, having the sternum of the coleopods small, transverse, completely fused to the tracheal apodemes and leaving the coxal plates entirely exposed, and the phallopods distinctly two-segmented and supplied with a basal gland, seems to be sufficiently disjunct to warrant a separate subfamilial status for this only genus. From the above diagnosis, despite certain deviations, *Physobolus pulvinipes* sp. n. distinctly falls into the *Physobolinae* of *Spirobolellidae*, although it is easily distinguishable from *Ph. olivaceus* by the ozopores lying on the prozona, the presence of prefemoral pads in the male, medially divided coleopod sternite, the position of "*t*" on the distal phallopod segment, etc. Some of those characters might prove to deserve a supraspecific category to be applied to *Ph. pulvinipes* sp. n., but, prior to a revision of *Physobolus* and some related spirobolellids (HOFFMAN & MAURIÈS, in litt.), it seems premature to allot our new species any higher status.

Trigoniulus lumbricinus (GERSTÄCKER, 1873)

(Figs 14—22)

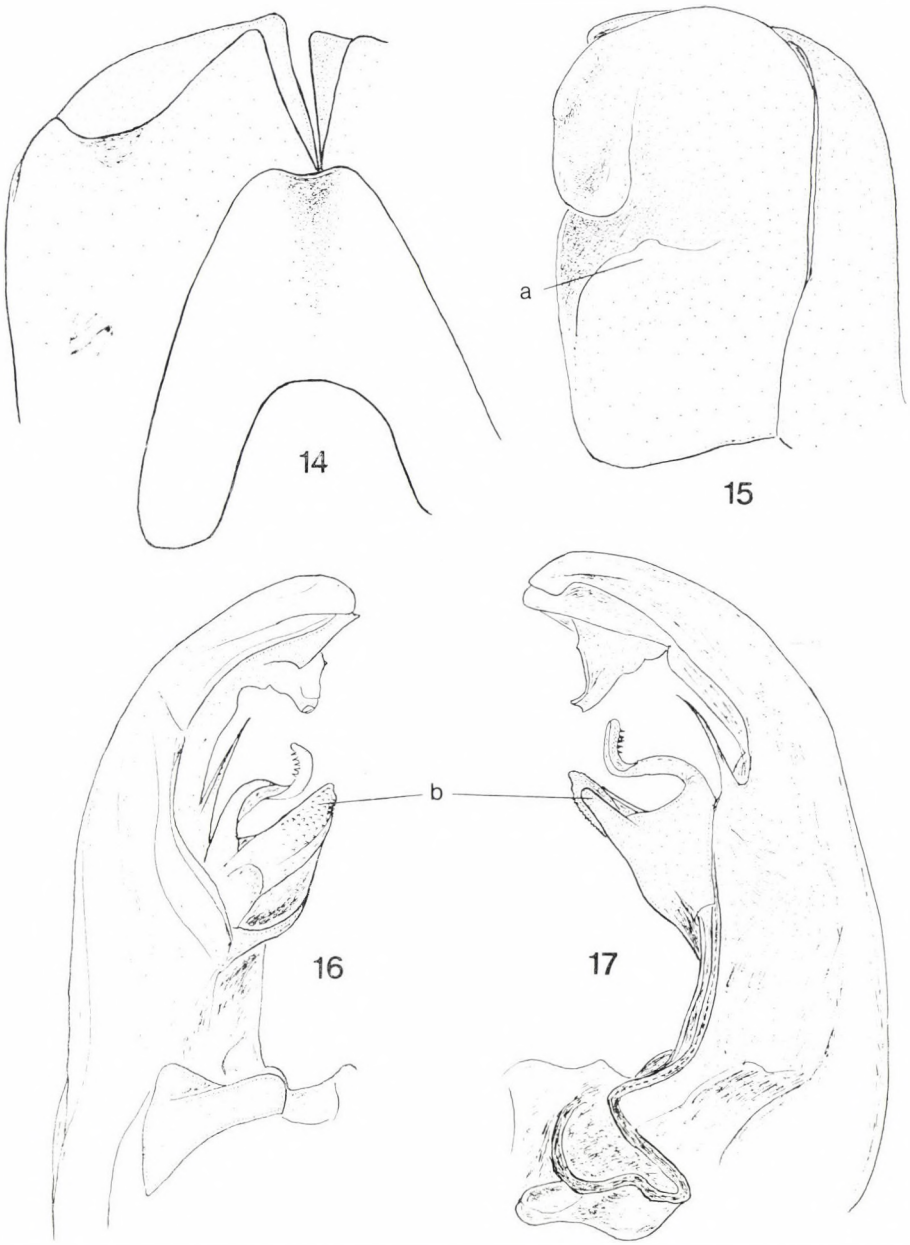
L o c a l i t y : Vietnam, Xuan dinh, NW of Hanoi, singled from under bricks in ruderal area, 26. April 1966, (No. 187), leg. G. Topál, 3 ♂♂ and 3 ♀♀ (HNHM), 1 ♂ and 1 fragment (ZMMU). — Material examined: 8 specimens.

Width of midbody 3.0—3.3 mm in males and considerably wider, ca. 4.5 mm in females; number of segments excluding telson 49, 51 (complete males) and 50 (only complete female).

The Vietnamese material has usually the coloration greyish to greyish-yellowish, sometimes mottled orange, metazona orange, limbus yellowish pink, more seldom somites feebly marble. Head, antennae uniformly pink-yellowish, eyes blackish, rather compact, sometimes faded, about 40 ocelli in an eye. Legs reddish-brown, same as anal valves. Striation of rings rather confused only subventrally or ventrolaterally, gradually coming to naught above pore-level and towards telson. Limbus finely crenulate, pores begin from sixth segment. Anal valves thickly rimmed, epiproct practically wanting.

Gonopods as depicted (Figs 14—17), of particular attention seems to be the small size of the tubercle (*a*) on the shelf of the caudal side of the coleopode telopodite, and also the somewhat less heavily folded midheight outgrowth (*b* = "Innenarm" of ATTEMS 1897) of the phallopod.

R e m a r k s : This pantropical species is known to be very common, sometimes referred to as the generotype *T. goesi* (PORAT, 1876), sometimes as *T. lumbricinus*. A full historical account of its geographical distribution may

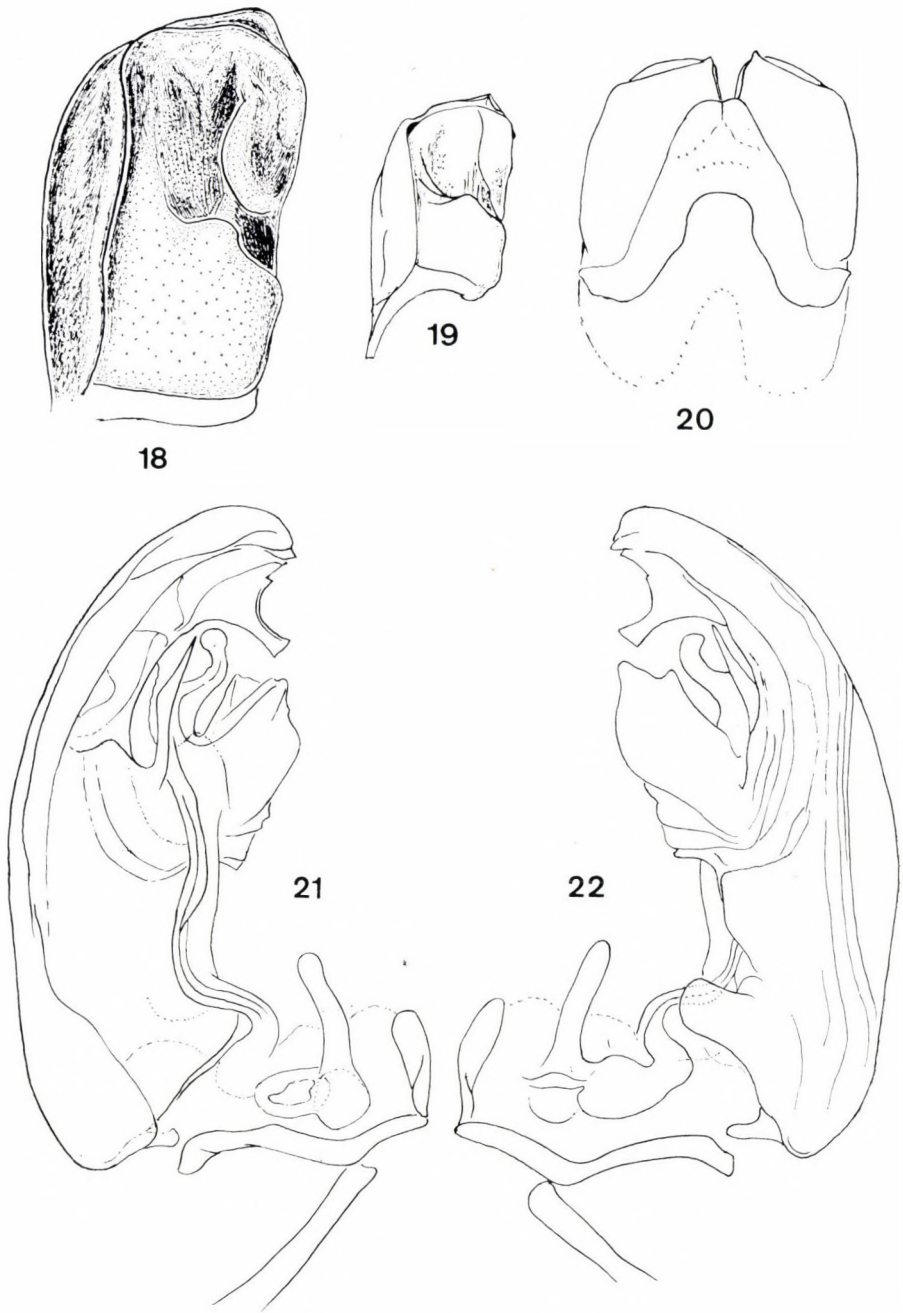


Figs 14—17. *Trigoniulus lumbricinus* (GERSTÄCKER, 1873) from Vietnam, leg. G. TOPÁL: 14—15 = left coleopod, frontal and caudal view, 16—17 = left phallopod, caudal and frontal view. Drawn not to scale

be found in MAURIÈS (1980). One of us (SG) has been privileged to examine for comparative purposes materials of *T. lumbricinus* deriving from Guadeloupe (ded. J.-P. MAURIÈS, Paris), Burma (Rangoon), Thailand (Chiang Mai), Malaysia (Teluk Merbau Malay), Sri Lanka (Colombo), Eastern Samoa (Pago-Pago) (all from the collection of ZMUC), and Western Samoa (Upola, coll. GOLOVATCH). Besides, through the kind assistance and upon permission of DR. MAURIÈS we have been privileged to reproduce here the original sketches of BRÖLEMANN's iconography kept at the MNHN, Paris (Figs 19—22), depicting the gonopods of a male from Parà State, Brasil. As a matter of fact, as regards the gonopod structure, the only reliable feature for a safe identification in almost the entire class Diplopoda, this common species so often referred to in myriapodological literature appears to have been illustrated quite seldom and far from satisfactorily. Thus, the rather small drawing of a phallopod of *T. lumbricinus* given by ATTEMS (1897, Fig. 30) of a specimen from Borneo or Java, as well as VERHOEFF's (1936) drawings of his *Marshallbolus takakuwai* from the Marshall Islands (a junior synonym of *T. lumbricinus*, see e.g. HOFFMAN 1979) are rather schematic and do not give an idea of intraspecific variability.

In this respect, all the materials of *T. lumbricinus* accumulated for the present study seem to be rather important, derive from very remote localities throughout the tropical zone of the globe, and allow certain comments to be made at least on individual variability of the species in question. Such a comparison throughout the range of such a common species (a senior synonym of the generotype !) as *T. lumbricinus* is rather important since *Trigoniulus* is certainly one of the largest spirobolidan genera encompassing at present well over hundred nominal forms seemingly indigenous in the Indo-Australian realm.

Although most of the alcohol specimens were identical or almost so in coloration to the pattern observed in the above Vietnamese samples, certain deviations from it were still traced. Thus, the Rangoon examples were mainly greyish-pink, rather greyish than orange on metazona. Colombo material was very dark brownish-red. In Samoa, Upola samples from a coconut plantation were very dark brown, whereas Pago-Pago specimens quite pale. This means perhaps that coloration of at least preserved material ranges significantly and seems to be variable rather individually than geographically. As regards the gonopod structure, usually the coleopods are provided with a better developed tubercle "*a*" (Figs 18—19), the tip of the coxite sometimes better pointed and varies a bit in height (Figs 14, 20 herein, and also Figs 1—5 in VERHOEFF 1936). The phallopods also display a certain degree of variation concerning the shape, size and armament of the different outgrowths and lamellae (Figs 16—17, 21—22 herein, and also Fig. 30 in ATTEMS 1897, and Figs 7—13 in VERHOEFF 1936).



Figs 18—22. *Trigoniulus lumbricinus* (GERSTÄCKER, 1873): 18 = right coleopod of a specimen from Guadeloupe, caudal view, 19—22: gonopods from a specimen from Parà State, Brasil, reproduced after BRÖLEMANN's unpublished iconography, 19 = right coleopod, caudal view, 20 = both coleopods, frontal view, 21—22 = right phallopod, frontal and caudal view. Drawn not to scale

However, despite its vast pantropical range and certain variability, *T. lumbricinus* is a good, easily recognizable species. At present it is known to occur in Indonesia, Thailand, Burma, India, Sri Lanka, Marshall Islands, Samoa, Seychelles, Zanzibar, Comores, Cape Verde Islands, Antilles, Brasil. In Vietnam, *T. lumbricinus* has been reported by ATTEMS (1953) from the southern part of the country (Cochinchina = Chungbo), our present record concerns the northern part (Tonkin = Nambo), substantiating GOLOVATCH's (1983) data.

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A CHECK-LIST OF THE NEUROPTERA-PLANIPENNIA OF THE USSR FAR EAST, WITH SOME TAXONOMIC REMARKS

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Seventy-seven species of the Far Eastern Neuroptera are listed. *Chrysopa cognata* is considered to be a separate species from *Ch. septempunctata*. *Wesmaelius pseudofurcatus*, *Mantispa kononenkoi*, and *Euroleon sinicus* are synonymized with *W. furcatus*, *M. styriaca*, and *E. coreanus* respectively. *Drepanepteryx pleshanovi* is now considered as a colour form of the *D. punctata*. With 5 figures.

Up to now 67 species of Neuroptera-Planipennia have been recorded from the Far East of the USSR. In this paper I add further 11 species, from which three ones are new to the USSR fauna *(Wesmaelius asiaticus, Dendroleon jezoensis* and *Glenuroides japonicus); Drepaneptepyx pleshanovi* MAKARKIN, 1985 is now considered to be a colour form of *D. punctata* OKAMOTO. Thus 77 species are included in this checklist. Of these 2 species *(Micromus multipunctatus* and *Chrysopa sapporensis)* are unknown to me in nature. The cited literature only include the works contained the records of the USSR Far Eastern Neuroptera. New records are asterisked (*). The USSR Far East regions are shown in Figure 1.

Abbreviations — Am = Amur province, Ch = Chukotka, Kh = Khabarovsk province, Km = Kamchatka, Kr = Kurile islands, Mg = Magadan province, N Kh = North of Khabarovsk province, Pr = Primorje (Maritime province), Sa = Saghalien.

OSMYLIDAE

1. **Osmylus (O.) hyalinatus** MACLACHLAN, 1875 — KUWAYAMA 1936: 109, 1956: 79, 1967: 65 (*Plethosmylus*); MAKARKIN 1985c: 39, figs 8, 17, 25. — Distriburion: Kr (Kunashir Is.), Sa. Japan.

2. **Osmylus (O.) decoratus** NAKAHARA, 1913 — MAKARKIN 1985c: 41, figs 2, 12, 13, 26. *hyalinatus* (nec MACLACHLAN): NAVÁS 1912: 421. — Distribution: Kh, Kr (Kunashir Is.), Pr. Japan.

3. **Osmylus (O.) pryeri** MACLACHLAN, 1875 — MAKARKIN 1985c: 41, figs 11, 15, 23. — Distribution: Kr (Kunashir Is.) Japan.

4. **Osmylus (Plesiosmylus) tessellatus** MACLACHLAN, 1875 — Kuwayama 1936: 108, 1956: 79, 1967: 65; MAKARKIN 1985c: 41, figs 7, 16, 28. — Distribution. Kr (Kunashir Is.) Japan.

5. **Lysmus harmandinus** (NAVÁS, 1910) — KUWAYAMA 1924: 115, 1936: 108 (*Eososmylus*), 1956: 79, 1967: 65; MAKARKIN, 1985c: 45, figs 3, 6, 21, 29. *kurilensis* KUWAYAMA, 1956: 20, fig. 2, 1967: 65. *flavicornis* (nec MACLACHLAN): MATSUMURA 1911: 15 (*Osmylus*); KUWAYAMA 1936: 104 (*Heliosmylus*).

SISYRIDAE

6. **Sisyra terminalis** CURTIS, 1834 — DOROKHOVA 1987: 48. ZAKHARENKO 1988: 766, fig. 23. — Distribution: Kh, Pr. Europe.

7. **Sisyra nikkoana** (NAVÁS, 1910) — KUWAYAMA 1967: 65. ZAKHARENKO 1988: 767, figs 17—21. — Distribution: *Kh (55 km east of Birobidzhan), Kr (*Kunashir, Is. Iturup Is.), Pr, *Sa. Japan.

DILARIDAE

8. **Dilar septentrionalis** NAVÁS, 1912 — NAVÁS 1912: 420; ZAKHARENKO 1988: 764, figs 1—7. — Distribution: Pr. — China.

MANTISPIDAE

9. **Mantispa styriaca** (PODA, 1761) — ZAKHARENKO, 1987a: 622. — *kononenkoi* MAKARKIN, 1985b: 620 figs a—d, **syn. n.** — Distribution: Pr. Europe, Asia Minor, Armenia, North Iran, Middle Asia, Mongolia, China.

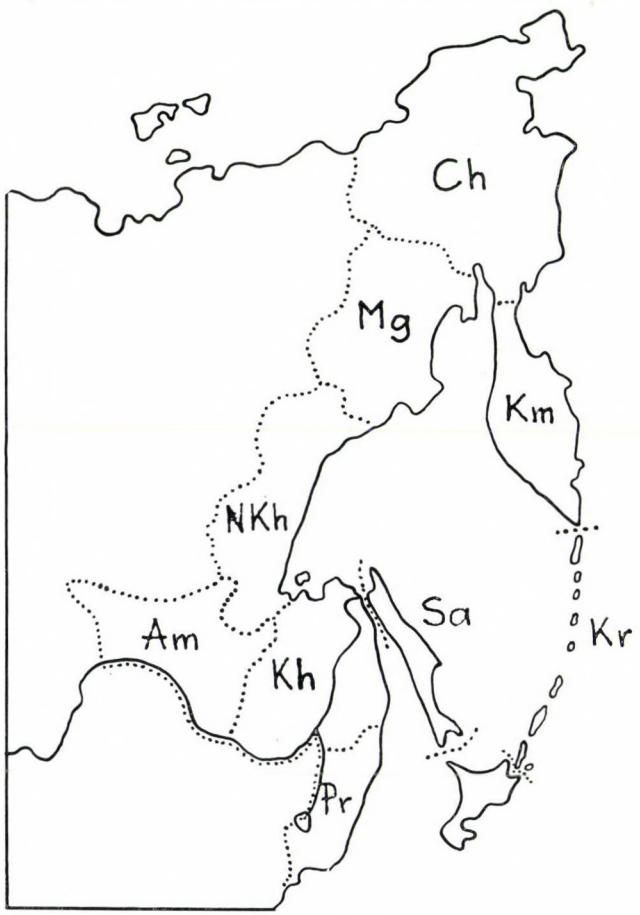


Fig. 1. Far Eastern regions: Am = Amur province, Ch = Chukotka, Kh = Khabarovsk province, Km = Kamchatka, Kr = Kurile Islands, Mg = Magadan province, N Kh = North of Khabarovsk province, Pr = Prymorje, Sa = Saghalien

10. **Mantispa japonica** MACLACHLAN, 1875 — MAKARKIN 1985b: 622, fig. e—f. — Distribution: Pr. Japan, China, Korea. — Remarks: It is possible that this species is a synonym of *M. perla* PALLAS or *M. lobata* NAVÁS.

11. **Eumantispa harmandi** (NAVÁS, 1909) — MAKARKIN 1985b: 622; ZAKHARENKO 1987a: 624, figs 2, 13. — Distribution: Pr. Japan, Korean Peninsula.

CHRYSOPIDAE

12. **Chrysopa (Ch.) perla** (LINNAEUS, 1758) — NAVÁS 1912: 419; PLESHANOV 1974: 189; DOROKHOVA 1980: 21; MAKARKIN 1985f: 57, fig. 4. — Distribution: Kh, *N Kh, Sa. Palaearctic Region.

13. **Chrysopa (Ch.) intima** MACLACHLAN, 1893 — KUWAYAMA 1924: 110, 1936: 108, 1956: 81, 1967: 65; PLESHANOV 1974: 189; DOROKHOVA 1979: 107; MAKARKIN 1985e: 91, 1985f: 57, fig. 5. var. *fracta* NAVÁS, 1912: 419 (*Chrysopa perla*). (?) *perla* (nec LINNAEUS): MATSUMURA, 1911: 14. — Distribution: Am, Kh, Km, Kr (Iturup Is., Kunashir Is.), Pr, Sa. *Jakutia, Siberia, Mongolia, China, Japan, Korea.

14. **Chrysopa (Ch.) formosa** BRAUER, 1850 — PLESHANOV 1974: DOROKHOVA 1979: 107; SHUVAKHINA 1980a: 22; MAKARKIN 1985e: 91, 1985f: 57, fig. 6. — Distribution: Am, Kh, Km, *Kr (Kunashir Is.), Pr, *Sa. Palaearctic Region.

15. **Chrysopa (Ch.) abbreviata** CURTIS, 1854 — Distribution: *N Kh (District of Okhotsk). Europe, Siberia, Middle Asia, Mongolia.

16. **Chrysopa (Ch.) commata** KIS et ÚJHELYI, 1965 — MAKARKIN 1985e: 91, 1985f: 59, figs 1, 9. — Distribution: Am, Kh, Kr (Kunashir Is.), Pr. Europe, Armenia, North Iran, Siberia.

17. **Chrysopa (Ch.) sapporensis** OKAMOTO, 1914 — KUWAYAMA 1956: 81. — *phyllochroma* (nec WESMAEL): KUWAYAMA 1967: 66. — Distribution: Kr (Iturup Is.). Japan. — Remark: *Ch. sapporensis* was considered to be a synonym of *Ch. phyllochroma*. However, TSUKAGUCHI (1985) found that the latter species do not occur in Japan. It is possible that *Ch. sapporensis* and *Ch. commata* refer to the same species.

18. **Chrysopa (Ch.) perplexa** MACLACHLAN, 1887 — DOROKHOVA 1979: 108; MAKARKIN 1985e: 91, 1985f: 60, figs 3, 8. — Distribution: Am, Kh, Pr. East Siberia, China, Japan, Korea.

19. **Chrysopa (Ch.) phyllochroma** WESMAEL, 1841 — (?) PLESHANOV 1974: 188; MAKARKIN 1985f: 61, figs 2, 10. — Distribution: Am, ?Pr. Palaearctic Region.

20. **Chrysopa (Parachrysopa) septempunctata** WESMAEL, 1841 — KUWAYAMA 1924: 111, fig. 3; PLESHANOV 1974: 188 (partim); DOROKHOVA 1979: 111 (partim); SHUVAKHINA 1980b: 23 (partim); MAKARKIN 1985: 58, fig. 7 (partim). — Distribution: Am, Kh, Km, Pr, Sa. Palaearctic Region.

21. **Chrysopa (Parachrysopa) cognata** MACLACHLAN, 1867 — NAVÁS 1912: 419. *septempunctata* (nec WESMAEL): PLESHANOV 1974: 188 (partim); DOROKHOVA 1979: 111 (partim); SHUVAKHINA 1980b: 23 (partim); MAKARKIN 1985e: 91; 1985f: 58, fig. 7 (partim). — Distribution: *Am, *Kh, Pr. China, Korea, Japan, Cambodia. — Remark. This species was described from Cambodia, China and Japan, but for a long time it was considered as a synonym of *Ch. septempuncata*. However, *Ch. cognata* differs from the latter species externally as well as in male genitalia structures as follows:

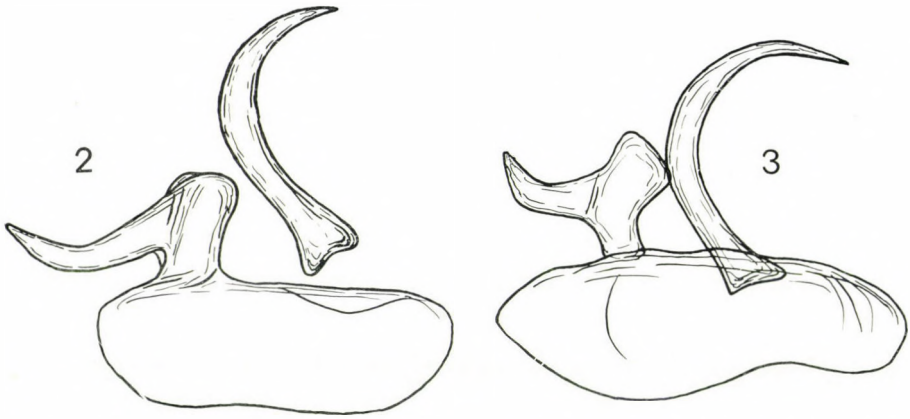
1 (2) Body wholly green; head mainly with 7 spots: on genae (2), on clypeus (2), under antennae (2), and between antennae (1). Entoprocessus long, extending out of hind margin of gonarcus (Fig. 2) **Ch. septempunctata**

2 (1) Body green dorsally with median yellow stripe; head mainly with 4—5 spots: on clypeus (2), under antennae (2), and between antennae (1 or absent). Entoprocessus short and curved (Fig. 3) **Ch. cognata**

22. **Chrysopa (Cunctochrysa) albolineata** KILLINGTON, 1935 — MAKARKIN 1985e: 91, 1985f: 61, fig. 11. — Distribution: Pr. Europe, Anatolia, Armenia, Iran, Afghanistan, Japan, Korea.

23. **Chrysopa (?Aperthochrysa) joannisi** NAVÁS, 1910 — MAKARKIN, 1985d: 48, figs 1—5; 1985f: 61, fig. 12. — Distribution: Pr. China.

24. **Chrysopa (? Chrysoperla) cognatella** OKAMOTO, 1914 — KUWAYAMA 1962: 366; MAKARKIN 1985d: 48, figs 6—8, 1985f: 61, fig. 13. — Distribution: Pr, Sa. Japan, Korea, China (including Taiwan).



Figs 2—3. Male gonarcus and pseudopenis of *Chrysopa septempunctata* WESM. (2) and *Ch. cognata* McL. (3), lateral view

25. **Chrysoperla carnea** (STEPHENS, 183⁶) — PLESHANOV 1974: 187; MAKARKIN 1985f: 61, fig. 14. — Distribution: Am, Kh, Pr. Holarctic Region.

26. **Chrysoperla nipponensis** (OKAMOTO, 1914) — MAKARKIN 1985e: 91, 1985f: 61, fig. 15. *sinica* (? nec TJEDER, 1936): DOROKHOVA 1979: 110 (*Chrysopa*). — Distribution: Kh, Kr (Kunashir Is.), Pr. China, Japan, Korea.

27. **Chrysotropia ciliata** (WESMAEL, 1841) — PLESHANOV 1974: 187; DOROKHOVA 1979: 106; MAKARKIN 1985e: 91, 1985f: 62, fig. 19. — Distribution: Am, Kh, Kr (Kunashir Is.), Pr. Sa. Palaearctic Region.

28. **Mallada prasina** (BURMEISTER, 1839) — KUWAYAMA 1967: 66 (*Chrysopa*); PLESHANOV 1974: 187 (*Chrysopa*); DOROKHOVA 1979: 109, 1981: 5 (*Chrysopa*); MAKARKIN 1985e: 91, 1985f: 61, fig. 16 (*Anisochrysa*). *sachalinensis* MATSUMURA, 1911: 14 (*Chrysopa*); KUWAYAMA 1924: 111, 1956: 82 (*Chrysopa*). — Distribution: Am, Kh, Kr (Kunashir Is.), Shikotan Is.), Pr, Sa. Palaearctic Region.

29. **Mallada laurae** (MAKARKIN, 1985) comb. n. — MAKARKIN 1985d: 49, figs 9—14, 1985f: 62, fig. 17 (*Anisochrysa*). — Distribution: Kh, Kr (Kunashir Is.), Pr, *Sa.

30. **Mallada ussuriensis** (MAKARKIN, 1985) comb. n. — MAKARKIN 1985d: 51, figs 15—20 1985e: 91, 1985f: 62, fig. 18 (*Anisochrysa*). — Distribution: Kh, Pr.

31. **Nineta vittata** (WESMAEL, 1841) — NAVÁS 1925: 1; KUWAYAMA 1924: 109, 1936: 108, 1956: 81 (*Chrysopa*), 1967: 66 (*Chrysopa*); PLESHANOV 1974: 187: DOROKHOVA 1979: 108; MAKARKIN 1985f: 62, fig. 20. *inornata* MATSUMURA 1911: 14 (*Chrysopa*). — Distribution: Kh, Km, Kr (Iturup Is., Kunashir Is., Shikotan Is.), Pr, Sa. Palaearctic Region.

32. **Nineta carinthiaca** (HÖLZEL, 1965) — MAKARKIN 1985d: 52, figs 21—24, 1985e: 91, 1985f: 62, fig. 21. — Distribution: Am, Kh, Pr. Europe, Siberia.

HEMEROBIIDAE

33. **Hemerobius (H.) humulinus** LINNAEUS, 1758 — NAVÁS 1912: 419, 1925: 2; ESBEN-PETERSEN 1921: 40; KUWAYAMA 1936: 109, 1962: 353; MAKARKIN, 1985a: 163, figs 16, 32; 1985e: 91. ? *shikotanus* KUWAYAMA, 1956: 77, fig. 1; 1967: 65. — Distribution: Am, Kh, Km, Kr (Kunashir Is., ? Shikotan Is.), Mg, Pr, Sa. Holarctic Region. — Remarks: An examination of the female holotype of *H. shikotanus* will decide whether is it identical with *H. humilinus* or *H. japonicus*?

34. **Hemerobius (H.) japonicus** NAKAHARA, 1915 — KUWAYAMA 1956: 77, 1967: 65; MAKARKIN 1985a: 164, figs 17, 36; 1985e: 91. — Distribution: Kr (Kunashir Is.), Pr. Japan.

35. **Hemerobius (H.) simulans** WALKER, 1853 — MAKARKIN 1985a: 165, figs 18, 44, 1985e: 91. — *piceus* NAVÁS 1925: 2, fig. 1. — Distribution: Am, Kh, N Kh, Km, Mg, Pr, Sa. Holarctic Region.

36. **Hemerobius (H.) fujimotoi** NAKAHARA, 1960 — Distribution: *Am, *Kh, *Sa. Caucasus, Siberia, Japan.

37. **Hemerobius (H.) fenestratus** TJEDER, 1932. — MAKARKIN, 1985a: 166, figs 12, 33. — Distribution: *Am, *Kh, *Km, Kr (Kunashir Is.), Pr, Sa. Europe, Mongolia, Siberia, ? Japan.

38. **Hemerobius (H.) atrifrons** MACLACHLAN, 1868 — MAKARKIN 1985a: 166, figs 15, 29. — Distribution: Am, Kh, *N Kh, Km, Mg, Sa. Europe, Mongolia, China, Japan.

39. **Hemerobius (H.) nitidulus** FABRICIUS, 1777 — NAVÁS 1925: 2; MAKARKIN, 1985a: 165, figs 11, 31. — Distribution: Km, Kr (Paramushir Is.), Mg. Europe, Caucasus, Siberia, Mongolia.

40. **Hemerobius (H.) stigma** STEPHENS, 1836 — MAKARKIN, 1985a: 166, figs 15, 29. — Ditribution: Am, *N Kh, Km, Mg, *Pr, Sa. Holarctic Region.

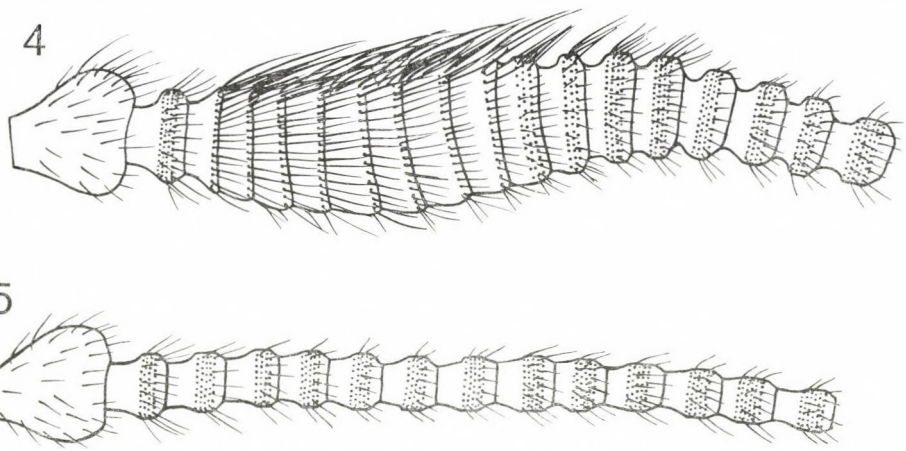
41. **Hemerobius (Brauerobius) marginatus** Stephens, 1836 — ESBEN-PETERSEN 1921: 40; NAVÁS 1925: 2; MAKARKIN 1985a: 167, figs 27, 39. — Distribution: Kh, *N Kh, Km, Mg, Pr, Sa. Palaearctic Region. — Remarks: In the northern part of its range, this species is considerably smaller and darker. Such specimens from Finland were named by MEINANDER (1962) as *H. m. lapponicus*. It occurs also in the Komi ASSR (ZAKHARENKO & SEDYKH 1981), in Jakutia and in the northern part of the Far East and are possibly identical with *H. costalis* CARPENTER distributed in North America (including Alaska).

42. **Hemerobius (Brauerobius) tristriatus** KUWAYAMA, 1954 — KUWAYAMA 1954: 97; MAKARKIN 1985a: 167, figs 26, 37. — Distribution: *Am, Kh, Kr (Kunashir Is., Shikotan Is.), Pr, Sa. Japan.

43. **Hemerobius (Allemerobius) exoterus** NAVÁS, 1936 — MAKARKIN 1985a: 168, figs 24, 45; 1985e: 91. — Distribution: Pr. China. — Remarks: The subgenus *Monorobius* MAKARKIN, 1985 (type-species *H. lutescens*, by original designation) is a junior synonym of *Allemerobius* BANKS, 1940 (type-species *A. flaveolus* BANKS, 1940 by original designation) **syn. n.**). BANKS (1905) designated *H. lutescens* F. as genotype of *Mucropalpus* RAMBUR, 1842. However, *H. lutescens* in sensu RAMBUR, 1842 is identical with *H. humulinus* L., the type species of *Hemerobius* LINNAEUS, 1758 (HAGEN 1866, LERAUT 1980). Therefore, *Mucropalpus* is an objective synonym of *Hemerobius*.

44. **Hemerobius (Allemerobius) poppii** ESBEN-PETERSEN, 1921 — MAKARKIN 1985a: 168, figs 25, 43. — Distribution: *Am, *Km, *N Kh, Mg, *Sa. Siberia, China, Mongolia.

45. **Hemerobius (Allemerobius) subfalcatus** NAKAHARA, 1960 — MAKARKIN 1985a: 168, figs 20, 42. — Distribution: *Kr (Kunashir Is.), *Pr, Sa. Japan.



Figs 4—5. *Wesmaeilus asiaticus* YANG, basal parts of the antennae of male (4) and female (5), lateral view

46. **Wesmaelius (W.) quadrifasciatus** (REUTER, 1894) — NAKAHARA 1956: 182; MAKARKIN 1986: 607, figs 13, 15. — Distribution: Am, Kh, *Km, *N Kh, Kr (Kunashir Is.), Mg, Sa. Palaearctic Region.

47. **Wesmaelius (W.) asiaticus** YANG, 1980. — Distribution: *Kh, *Pr. China. — Remarks: This species was described on the basis of a single female from North China. It is closely related to *W. quadrifasciatus*, but differs from it by the genitalia structures of both males and females as well as by a unusual shape of the male antennae (Figs 4—5).

48. **Wesmaelius (Kimminsia) nervosus** (FABRICIUS, 1793) — HAGEN 1858: 130 (*Hemerobius*); NAVÁS 1925: 3 (*Hemerobius*). *betulinus* STRÖM, 1788; MAKARKIN 1986: 607, figs 3, 17. — Distribution: *Ch. Km, Kr (Kunashir Is.), N Kh, Pr, Sa. Holarctic Region.

49. **Wesmaelius (Kimminsia) furcatus** (BANKS, 1935): = *pseudofurcatus* MAKARKIN, 1986: 608, figs 7, 9, 10, 25 **(syn. n.)**. — Distribution: Mg. Altaj, Buryatia, North America. — Remarks: *W. pseudofurcatus* was based mainly on the subgenitale plate characters, but it is recently showed that this structure is very variable (KLIMASZEWSKI & KEVAN 1987).

50. **Wesmaelius (?Kimminsia) lateralis** (NAVÁS, 1912) — NAVÁS 1912: 419, fig. 4 (*Boriomyia*); MAKARKIN 1986: 611, figs 1, 11, 12, 27. — Distribution: Kh, Mg, Sa. Altaj, Buryatia, Japan.

51. **Neuronema laminata** TJEDER, 1936 — *tjederi* KIMMINS, 1943; MAKARKIN 1986: 613, fig. 34, 44. *albostigma* (nec MATSUMURA): PLESHANOV, 1974: 186. *deltoides* (nec NAVÁS, 1910): NAVÁS 1912: 420 (*Ninga*); (?) KUWAYAMA 1924: 107 (*Ninga*). — Distribution: *Am, *Kh, Pr, Sa. China.

52. **Neuronema albostigma** (MATSUMURA, 1907) — MAKARKIN, 1986: 613, figs 35, 45. — Distribution: Kr (Kunashir Is.). Japan.

53. **Drepanepteryx phalaenoides** (LINNAEUS, 1758) — NAVÁS 1929: 36; KUWAYAMA 1962: 358; MAKARKIN 1985b: 91; 1986: 615, fig. 36. — Distribution: *Kh, *Km, *Kr (Shikotan Is.), Pr, Sa. Palaearctic Region.

54. **Drepanepteryx algida** (ERICHSON, 1851) — MAKARKIN, 1986: 616, fig. 38. — Distribution: Am, *N Kh, *Sa. Europe, Siberia, Mongolia.

55. **Drepanepteryx punctata** (OKAMOTO, 1905) — KUWAYAMA 1962: 357 (*Oedobius*); MAKARKIN 1986: 616, fig. zh. — Distribution: Kr (Kunashir Is.), Pr, Sa. Japan. — Remarks: *D. pleshanovi* differs from *D. punctata* in having a longitudinal brown stripe on the fore wings. However, it does not differ from the latter species by the genitalia structures of both males and females. I believe that *D. pleshanovi* is a colour form of *D. punctata*. This form occurs in the Primorje and Saghalien.

56. **Micromus angulatus** (STEPHENS, 1836) — NAVÁS 1912: 420; KUWAYAMA 1962: 350 (*Eumicromus*); MAKARKIN 1985a: 169, fig. 48, 1985e: 91. *aphidivorus*: NAVÁS 1925: 3. — Distribution: Am, Kh, Km, Mg, Pr, Sa. Holarctic Region.

57. **Micromus paganus** (LINNAEUS, 1767) — NAVÁS 1925: 3; KUWAYAMA 1956: 78 (*Eumicromus*); MAKARKIN 1985a: 169, fig. 46. *alpinus* NAKAHARA, 1915; KUWAYAMA 1956: 78 (*Eumicromus*) — Distribution: Am, Kh, Km, Kr (Kunashir Is., Paramushir Is., Urup Is.), Sa, Pr. Palaearctic Region.

58. **Micromus variegatus** (FABRICIUS, 1793) — MAKARKIN 1985a: 168, fig. 47, 1985e: 91. — Distribution: Pr. Asia Minor, Caucasus, North Iran, South Kazakhstan, Japan.

59. **Micromus multipunctatus** MATSUMURA, 1907 — KUWAYAMA 1962: 348. *novitius* NAVÁS, 1910; KUWAYAMA 1924: 108. — Distribution: ?Sa. Japan, China (including Taiwan Is.). — Remarks: I have not seen any specimens of this species from the USSR. As it may be confused with *Paramicromus dissimilis*, its distribution in our country needs a confirmation.

60. **Paramicromus dissimilis** (NAKAHARA, 1915) — KUWAYAMA 1962: 351; MAKARKIN 1985a: 170, fig. 49. — Distribution: Kr (Iturup Is.), Kunashir Is.), Sa. Japan.

61. **Psectra diptera** (BURMEISTER, 1839) — MAKARKIN 1985e: 91, 1986: 613. — Distribution: Km, Kr (Kunashir Is.), Pr. Holarctic Region.

62. **Sympherobius manchuricus** NAKAHARA, 1960 — MAKARKIN 1985e: 91, 1986: 611, fig. 39. — Distribution: *Am, Pr. China.

63. **Sympherobius fuscescens** (WALLENGREN, 1863) — Distribution: *Kr (Kunashir Is.). Europe, Anatolia, Kazakhstan, Siberia, Japan (Hokkaido). — Remark: Two females were found in the Kunashir Island. They are darker than the European and Siberian specimens. The Hokkaido specimen (a male) is also darker (NAKAHARA 1971).

CONIOPTERYGIDAE

64. **Coniopteryx (C.) pygmaea** ENDERLEIN, 1906 — MEINANDER 1981: 107. — Distribution: Kr (Kunashir Is.), Shikotan Is.), *Pr. Europe.

65. **Conipteryx (C.) parthenia** (NAVÁS et MARCET, 1910) — Distribution: *Kh. Europe, Morocco, Asia Minor, Siberia, Mongolia.

66. **Coniopteryx (C.) aspoecki** KIS, 1967 — Distribution: *Pr. Roumania, Austria, Jakutia.

67. **Coniopteryx (C.) helvola** ZAKHARENKO, 1987 — ZAKHARENKO 1987: 76, figs 1—5. — Distribution: Pr.

68. **Semidalis aleyrodiformis** (STEPHENS, 1836) — Distribution: *Pr. Palaearctic Region, India, Thailand, Malaya, Taiwan Is.

ASCALAPHIDAE

69. **Libelloides sibiricus** (EVERSMANN, 1850) — KOZHANCHIKOV 1953: 432 (*Ascalaphus*); PLESHANOV 1974: 191 (*Ascalaphus*). Distribution: *Am, *Kh, Pr. South Siberian, China, Korea.

MYRMELEONTIDAE

70. **Acanthaclisis japonica** MACLACHLAN, 1875 — MAKARKIN 1984: 38. — Distribution: Pr. China, Japan, Korea.

71. **Myrmeleon (M.) formicarius** LINNAEUS, 1767 — KUWAYAMA 1962: 388; PLESHANOV 1974: 190; MAKARKIN 1984: 39. — Distribution: Kh, Pr., Sa. Palaearctic Region.

72. **Myrmeleon (Morter) bore** (TJEDER, 1941) — KUWAYAMA 1962: 388, 1967: 66 (*Grocus*); PLESHANOV 1974: 191 (*Grocus*); MAKARKIN 1984: 39. *formicarius* (nec LINNAEUS): KUWAYAMA, 1936: 107, 1956: 82. — Distribution: *N Kh (district of Okhotsk), Kr (Kunashir Is.), Pr, Sa. Palaearctic Region.

73. **Deutoleon lineatus** (FABRICIUS, 1798) — NAVÁS 1912: 418 (*Formicaleo*); PLESHANOV 1974: 140 (*Formicaleo*); MAKARKIN 1984: 39. — Distribution: Kh, Pr. East Europe, Kazakhstan, South Siberia, Mongolia, China, Korea.

74. **Euroleon polyspilus** (GERSTAECKER, 1885) — GERSTAECKER 1885: 24 (*Myrmeleon*); MAKARKIN 1984: 39 (*Formicaleo*). Distribution: *Kh (Amgun river), Pr, Sa. Siberia, Mongolia.

75. **Euroleon coreanus** OKAMOTO, 1926 — OKAMOTO 1926: 19, fig. 1. *sinicus* NAVÁS, 1930; HÖLZEL 1970a: 254, fig.13—15, **syn. n.** *nostras* (nec FOURCROY): PLESHANOV 1974: 190. — Distribution: *Pr. Burjatia, Mongolia, China, Korea. — Remark: I have examined two specimens from the Primorje (Novokachalinsk and Novonezhino) and a number of specimens from the Burjatia. The latter specimens were determined by H. HÖLZEL as *E. sinicus*. On the other hand, they agree well with the description of *E. coreanus*. I think that *E. sinicus* is a synonym of *E. coreanus*, although H. HÖLZEL (1970b) proposed the synomymy of *E. coreanus* with *E. polyspilus*. However, the latter species differs in many respects from both *E. coreanus* and *E. sinicus*.

76. **Dendroleon jezoensis** OKAMOTO, 1910 — Distribution: *Pr. Japan, China, Korea. — Remark: I have examined only one male collected by me at Borisovka river 27 July 1987.

77. **Glenuroides japonicus** (MACLACHLAN, 1867) — Distribution: *Pr. Japan, China (including Taiwan Is.), Korea. — Remark: I have studied three specimens collected at Rjazanovka, the extreme South Primorje.

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LAGRIINE BEETLES COLLECTED BY THE POST-WAR ARCHBOLD EXPEDITIONS TO NEW GUINEA (COLEOPTERA, TENEBRIONIDAE: LAGRIINI)*

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Ten lagriine species collected by the Fourth, Fifth and Sixth Archbold Expeditions to New Guinea are listed. Four new species *(Bothrichara argyrostigma, Lagria brassi, Sora pictipennis, Sora yela)* are described. With 15 figures.

The Archbold Expeditions "... represent the most ambitious and well-organized general biological undertakings in New Guinea, and were based on a special unit «Archbold Expeditions» in the American Museum in New York. Archbold was an oil millionaire, an amateur pilot and a mammalogist/associate at that museum. The expeditions grew in size and the third was largest" (FRODIN and GRESSITT 1982). — Seven expeditions were carried out, three before World War II and four after that. FRODIN and GRESSITT (1982) submitted the most important data of these expeditions.

Lagriine beetles were collected during the third (1938—39), the fourth (1953), the fifth (1956) and the sixth (1959) expeditions. Thanks to the activity of two Dutch entomologists L. J. TOXOPEUS and J. OLTHOF, the Third Archbold Expedition resulted in prominently the richest and most diverse collection of lagriines. Presently deposited in the Rijksmuseum van Natuurlijke Historie (Leiden), this material was collected in the western part of New Guinea (now Irian Jaya Province of Indonesia) and thus fairly differs from those collected by the post-war expeditions. An evaluation should therefore be made separately.

This paper is devoted to the lagriines collected by the three above-mentioned post-war expeditions. No more than 18 specimens were captured but, in spite of the small quantity, the material is highly interesting. The material represents 10 species. Four specimens are unique holotypes, two of them (the two *Oreogria*) were described earlier in a generic revision (MERKL 1988a), the other two belong to *Sora* and are described here. One specimen is a member of the paratype series of *Bothrichara wau* described recently (MERKL 1988b). One *Bothrichara* and one *Lagria* are described here but because the specimens of the Archbold Expeditions are females, the holotypes will be designated from the collection of the Bernice P. Bishop Museum (Honolulu). Ten specimens belong to species described long ago by BORCHMANN (1936). Finally, one female *Lagria* has been left undescribed.

The expeditions worked in the eastern part of the New Guinea mainland and in the adjoining south-eastern island groups (d'Entrecasteaux Islands and Louisiade Archipelago) (Fig. 1). At present these territories are parts of Papua New Guinea. The specimens of other collections, which were taken into consideration during the description, had also been collected in this area.

All details of the expeditions in question have thoroughly been summarized by BRASS (1956, 1959, 1964).

* 8th contribution to the knowledge of Lagriini.

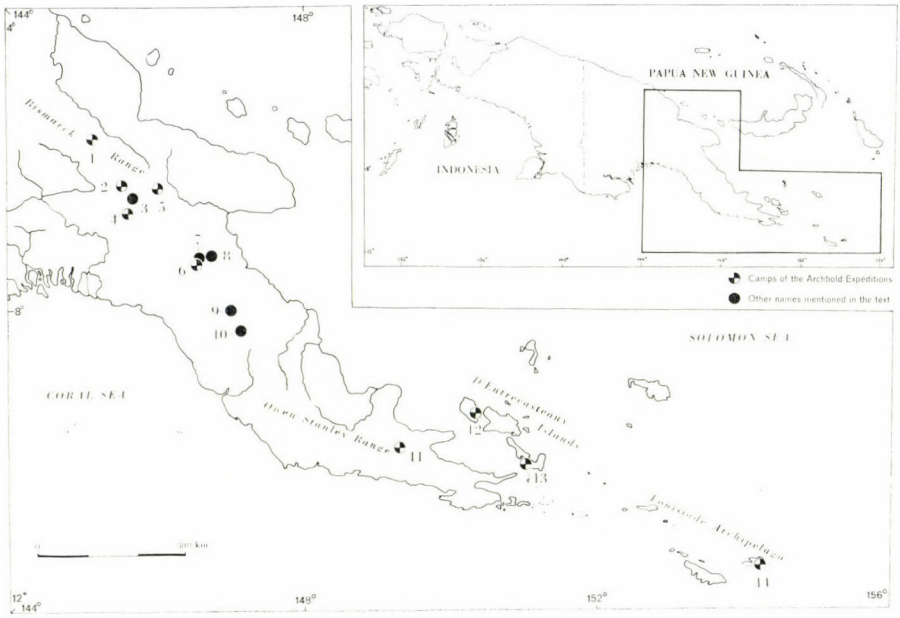

Fig. 1. Map of eastern New Guinea, with the localities mentioned in the text: 1 = Pengagl Camp, Mt. Wilhelm, 2 = Kimi Creek Camp, Mt. Michael, 3 = Okapa, 4 = Purosa Camp, 5 = Arau Camp, Kratke Mts., 6 = Mt. Kaindi, 7 = Edie Creek, 8 = Wau (including Bulldog Road and Ekuti Range), 9 = Mt. St. Mary, 10 = Goilala, 11 = Mt. Dayman, Maneau Range, 12 = Bolu Bolu Camp, Goodenough Island, 13 = Waikaiuna Camp, Normanby Island, 14 = Abaleti Camp, Rossel Island

PRESENTATION OF DATA

In the descriptive part, the labels of holotypes are cited in full, the text of consecutive labels are in quotation-marks. For paratypes and other specimens, the locality, the time of collecting and the name of collector(s) are submitted followed by the number of specimens belonging to the respective sexes and the acronym of depository in parentheses.

Acronyms applied to indicate collections in which the specimens investigated are housed are as follows:

AMNH — American Museum of Natural History, New York, USA.
BMNH — British Museum (Natural History), London, United Kingdom.
BPBM — Bernice Pauahi Bishop Museum, Honolulu, USA.
CNCI — Canadian National Collection of Insects, Ottawa, Canada.
HNHM — Hungarian Natural History Museum, Budapest, Hungary.
RWHO — Richard W. Hornabrook's private collection, Wellington, New Zealand.

Abbreviations of measurements: ED = eye diameter in dorsal view; ID = interocular distance; PL = pronotal length measured along midline; PW = pronotal width measured at broadest point.

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LIST OF THE SPECIES

Lagria brassi sp. n. — One specimen (paratype, ♀, AMNH). See description.

Lagria sp. — One specimen. Milne Bay Province: Goodenough Island, Bolu Bolu Camp, No. 8, 22. IX—4. X. 1953, K. M. WYNN, 4th Archbold Expedition (1 ♀, AMNH). — This specimen apparently represents a new species but its description is postponed until male specimens become available.

Oreogria contraricolor MERKL, 1988 — One specimen. Eastern Highlands Province: Pengagl Camp, No. 6, east slopes Mt. Wilhelm, 2770 m, 7. VII. 1959, L. J. BRASS, 6th Archbold Expedition (holotype, ♀, AMNH).

Oreogria fragilipes MERKL, 1988 — One specimen. Oro (= Northern) Province: Mt. Dayman, Maneau Range, north slope, Camp No. 4, 2230 m, 18.V—19. VI. 1953, G. M. TATE, 4th Archbold Expedition (holotype, ♂, AMNH).

Bothrichara insignis BORCHMANN, 1936 — Nine specimens. Eastern Highlands Province: Pengagl Camp, No. 6, east slopes Mt. Wilhelm, 2770 m, 4. IX. 1959, L. J. Brass, 6th Archbold Expedition (1 ♀, AMNH); Kimi Creek Camp, No. 9, NE slopes Mt. Michael, 1980 m, 29. IX. 1959, L. J. Brass, 6th Archbold Expedition (1 ♀, AMNH); id., 2. IX. 1959 (1 ♂, 1 ♀, AMNH; 1 ♀, HNHM ex AMNH); id., 13. IX. 1959 (2 ♀♀, AMNH); Purosa Camp, No. 10, Okapa area, 1950 m, 25. IX. 1959, L. J. Brass, 6th Archbold Expedition (1 ♀, AMNH). Oro (= Northern) Province: Mt. Dayman, Maneau Range, north slope, Camp No. 5, 1550 m, 5—8. VII. 1953, G. M. Tate, 4th Archbold Expedition (1 ♀, AMNH). — A frequent species in forests of the Central Range in Papua New Guinea.

Bothrichara wau MERKL, 1988 — One specimen. Eastern Highlands Province: Purosa Camp, No. 10, Okapa area, 15 ml SSE Okapa Patrol Post, 1950 m, 21. IX. 1959, L. J. BRASS, 6th Archbold Expedition (paratype, ♀, AMNH).

Bothrichara argyrostigma sp. n. — One specimen (paratype, ♀, AMNH). See description.

Casnonidea intermedia (BORCHMANN, 1936), comb. n. (original combination: *Synatractus intermedius*) — One specimen. Milne Bay Province: Normanby Island, Waikaiuna, Camp No. 1, 0—50 m, 28. IV. 1956, L. J. BRASS, 5th Archbold Expedition (1 ♀, AMNH). — Described from the Fergusson Island, it is apparently endemic to the D'Entrecasteaux Islands.

Sora pictipennis sp. n. — One specimen (holotype, ♀, AMNH). See description.

Sora yela sp. n. — One specimen (holotype, ♀, AMNH). See description.

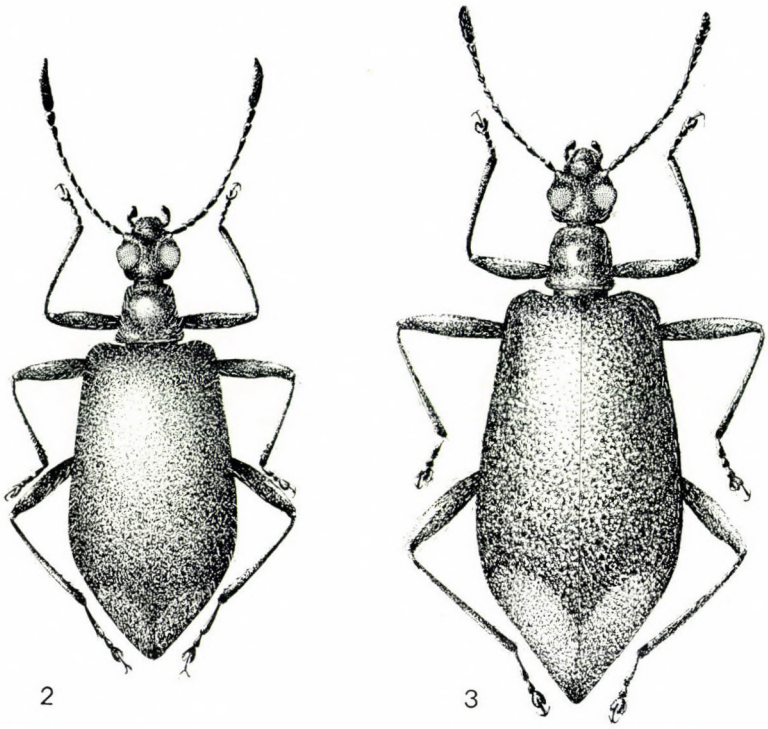
DESCRIPTION OF THE NEW SPECIES

Lagria brassi sp. n.

(Figs 2—3, 4—9)

Form: elongate oval, weakly convex in lateral view. — Size: length of male 8.1—8.8 mm (56 males measured), length of female 9.6—10.8 mm (79 females measured). — Colour: largely black, elytra with expressed greenish tinge and with an ovoid preapical red spot; males usually paler castaneous (see Remarks); pubescence whitish.

Male (Fig. 2) — H e a d : a little broader than pronotum; ED:ID = 2.0; cranium shallowly impressed between eyes; punctation coarse and dense in interocular region, much sparser posteriorad; vested with long, sparse and erected hairs; labrum deeply but narrowly notched; ultimate segment of maxillary palpi broadly triangular; antennae (Fig. 4) with scattered erect hairs among decumbent vestiture; ultimate antennal segment flattened below, feebly assymmetrically acuminate; segment length ratios as follows: 31:15:26: :30:25:25:25:25:23:20:75. — P r o n o t u m : subquadrate (PL:PW = 0.82),

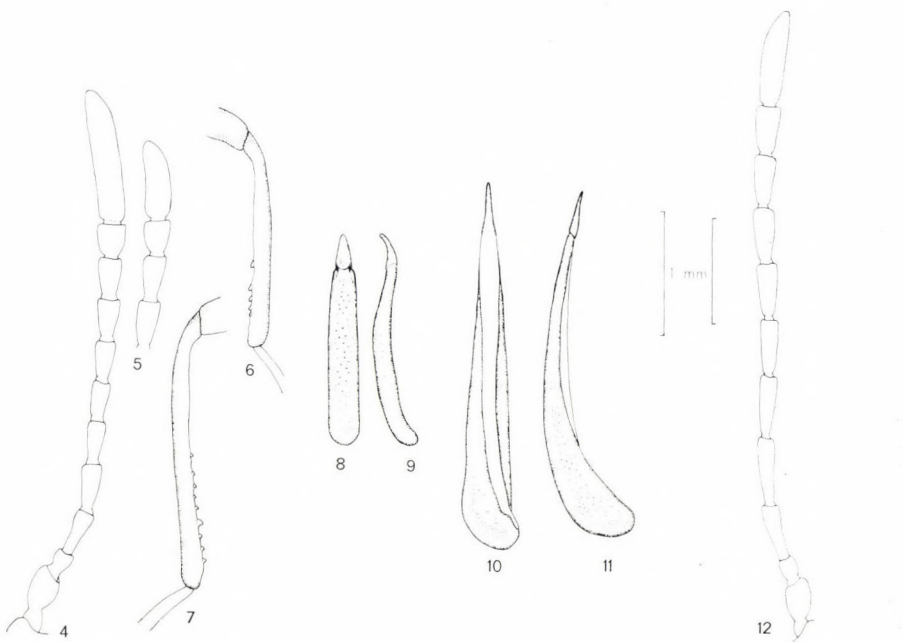


Figs 2—3. *Lagria brassi* sp. n.: 2 = male, 3 = female

broadest at base, feebly attenuating toward apex; prebasal constriction weak; surface hardly convex, uneven, with a transversal preapical and two oblique prebasal impressions; highest point at centre; midlongitudinal elevated region impunctate, lateral regions with broadly separated coarse punctures; with sparse, long, erected hairs. — Scutellum: broadly triangular, finely punctate, with short decumbent hairs. — Elytra: moderately broad, feebly convex; lateral margin straight from broadest point to apex or very weakly sinuate, thus caudate; punctation coarse, well-separated; interspaces irregularly elevated, forming weak, transverse plicae; vesture doubled: sparse reclinate pubescence mixed with scattered, slightly longer, erected hairs. — Ventral surface: finely and very sparsely punctate, with moderately long, semierect hairs; last abdominal sternite rounded at apex. — Legs: moderately long and slender; vested with long, semierect to erect hairs; tibiae nearly straight; distal half of middle and hind tibiae with few small denticles along inner edge (Figs 6—7). — Male genitalia: aedeagus as figured (Figs 8—9); parameres dorsally concave, turning upwards, apex acutely rounded.

Female (Fig. 3) — Broader; ED:ID = 0.97; antennal (Fig. 5) segment length ratios as follows: 28:13:27:28:23:26:26:25:22:20:41; pronotum slightly transverse (PL:PW = 0.76); with a central, finely punctate shallow impression divided by a higher, longitudinal keel; tibial denticulation indistinct.

Holotype, ♂, labelled as follows: "NEW GUINEA: NE Wau, 1150—1250 m 22. II. 1966"; "J. Sedlacek Collector BISHOP MUS.". Deposited in BPBM. — Paratypes (a total of 134 specimens). Morobe Province: Kaindi, Camp No. 4, on Meari Creek, 9.5 mi from Wau, 2050 m, 13. V. 1959, L. J. Brass, 6th Archbold Expedition (1 ♀, AMNH); Mt. Kaindi, 1500—2200 m, 19. VIII. 1965, J. & M. Sedlacek (1 ♀, BPBM); id., 2000—2350 m, 10—11. I. 1965, J. & M. Sedlacek (2 ♂♂, 3 ♀♀, BPBM; 1 ♂, 1 ♀, HNHM); id., 2300 m, 8—9. VI. 1962, J. Sedlacek (1 ♀, BPBM); id., 6. X. 1962, light trap, J. Sedlacek (1 ♂, BPBM); id., 2350 m, 31. XII. 1964, J. Sedlacek (3 ♂♂, BPBM; 1 ♂, HNHM); id., 1. III. 1966, J. L. & M. Gressitt (1 ♂, BPBM); id., 23. III. 1966, J. L. Gressitt (3 ♂♂, 4 ♀♀, BPBM; 2 ♂♂, 2 ♀♀, HNHM); id., 24. III. 1966, J. L. Gressitt (2 ♀♀, BPBM); id., 1. IV. 1966, J. L. Gressitt (3 ♂♂, 2 ♀♀, BPBM; 2 ♂♂, HNHM); id., 1. IV. 1966, J. L. & M. Gressitt (4 ♂♂, 7 ♀♀, BPBM; 3 ♀♀, HNHM); id., 1. IV. 1966, Malaise trap, J. L. & M. Gressitt (1 ♀, BPBM); id., 12. IX. 1966, G. A. Samuelson (1 ♂, 3 ♀♀, BPBM; 1 ♀, HNHM); Mt. Kaindi near Wau, 7500 ft, 25. VI. 1974, H. F. Howden (1 ♀, CNCI); Kaindi-Nami, 1700 m, 22. VIII. 1968, J. Sedlacek (2 ♂♂, BPBM); Edie Creek, 1900 m, 4—10. X. 1961, J. & J. H. Sedlacek (1 ♂, 1 ♀, BPBM); id., 2000 m, 4—10 X. 1961, MV light trap, J. & J. H. Sedlacek (1 ♀, BPBM); id., 2000—2100 m, 5. IV. 1965, J. & M. Sedlacek (2 ♂♂, 1 ♀, BPBM); id., 2050—2300 m, 17—18. VIII. 1965, J. Sedlacek (1 ♂, 3 ♀♀, BPBM); id., 2100—2300 m, 3. X. 1964, J. Sedlacek (4 ♂♂, 5, ♀♀, BPBM; 2 ♂♂, 2 ♀♀, HNHM); id., 2500 m, 22. XI. 1963, J. L. Gressitt (1 ♂, BPBM); id., 2000—2400 m, 12. VIII. 1963, P. Shanahan (1 ♀, BPBM); id., 7000 ft, 17. IX. 1964, M. E. Bacchus (1 ♀, BMNH); Edie Creek, 17.6 km W Wau, 2000 m, 20. VII. 1961, J. & M. Sedlacek (1 ♂, BPBM);



Figs 4—9. *Lagria brassi* sp. n.: 4 = right antenna of male, 5 = last four segments of right antenna of female, 6 = right middle tibia of male, 7 = left hind tibia of male, 8 = aedeagus, dorsal view, 9 = aedeagus, right lateral view. — Figs 10—12. *Bothrichara argyrostigma* sp. n. — 10 = aedeagus, ventral view, 11 = aedeagus, right lateral view, 12 = left antenna of male

id., 2100—2250 m, 2. X. 1964, J. SEDLACEK (1 ♀, BPBM); Bulldog Road, 29—32 km S Wau, 2500—2700 m, 31. V. 1962, J. SEDLACEK (2 ♂♂, 2 ♀♀, BPBM); id., 60 km S Wau, 2070 m, 22—31. V. 1969, J. SEDLACEK (1 ♂, 4 ♀♀, BPBM; 3 ♀♀, HNHM); Ekuti Range, north slope, S Wau, 2200 m, 21. XII. 1977, R. HARMSEN & P. HEBERT (1 ♀, CNCI); Wau, 1150 m, 2. X. 1961, J. SEDLACEK (1 ♀, BPBM); id., 1150—1250 m, 22. II. 1966, J. SEDLACEK (1 ♀, BPBM); id., 1200 m, 11—15. X. 1961, J. SEDLACEK (5 ♂♂, 3 ♀♀, BPBM; 3 ♂♂, 1 ♀, HNHM); id., 1200 m, 23. II. 1966, J. SEDLACEK (1 ♂, 2 ♀♀, BPBM); id., 1250—1700 m, 15—16. VI. 1962, J. SEDLACEK (1 ♀, BPBM); id., 1600—1700 m, 28. XII. 1961, J. & J. H. SEDLACEK, G. MONTEITH (1 ♂, 1 ♀, BPBM); id., 1750 m, 5. II. 1966, J. SEDLACEK (1 ♂, 2 ♀♀, BPBM); id., 1800 m, 14. II. 1966, J. & M. SEDLACEK (2 ♀♀, BPBM); near Wau, 2050 m, 31. III. 1966, J. L. GRESSITT (1 ♂, BPBM); Wau, Nami Creek, 1700—1850 m, 7. II. 1966, J. SEDLACEK (2 ♀♀, BPBM; 1 ♀, HNHM). — Central Province: Mt. St. Mary, 1900 m, 8—14. VII. 1968, Mena (1 ♂, BPBM); id., 15—21. VII. 1968, Mena (1 ♀, BPBM); Owen Stanley Range, Goilala, Bome, 1950 m, 16—30. IV. 1958, W. W. BRANDT (1 ♀, BPBM); Owen Stanley Range, Goilala, Tororo, 1560 m, 15—20. II. 1958, W. W. BRANDT (1 ♀, BPBM).

Distribution: Mountain forests of the Central Divide in Papua New Guinea (Morobe and Central Provinces).

Derivatio nominis: The species is named in honour of MR. LEONARD J. BRASS, an outstanding figure of the Archbold Expeditions. He took part in the first six expeditions as collector of plants and arthropods and he was the leader of the fourth, fifth and sixth.

Remarks: The reddish preapical spot on the elytra combined with the very sparsely and irregularly punctate pronotum separate this species from any hitherto described congeners of New Guinea. Slight sex-linked variation is apparent in the colouration: males usually paler in colour of elytra and venter, and preapical reddish spot is most often scarcely distinguished. In females, however, the contrast between reddish spot and dark remainder of the elytra is much more expressed.

Bothrichara argyrostigma sp. n.

(Figs 10—13)

Form: broadly oval, boldly convex in lateral view. — Size: length of male 10.1—10.3 mm (two males measured), length of female 12.5—13.5 mm (five females measured). — Colour: largely black, elytra with slight bronzy tinge; last two abdominal sterna reddish; pubescence silvery white.

Male (Fig. 13) — Head: a little narrower than pronotum; ED:ID = = 1.33; cranium shallowly impressed between eyes; surface finely and densely punctate, alutaceous; vested with very short, sparse and decumbent hairs; labrum feebly notched; ultimate segment of maxillary palpi broadly triangular; antennae (Fig. 12) long, slender, without any modifications; segment length ratios as follows: 36:16:40:45:40:37:35:35:35:31:64. — Pronotum: transverse (PL:PW = 0.77), broadest just before middle; prebasal constriction moderate; disc weakly convex, with five shallow (two lateral on both sides each and a midbasal) impressions; punctation mesally as fine and dense as on head, laterally transversely rugose; hairs short, completely decumbent; integument well-visible among hairs. — Scutellum: elongate rounded

triangular, finely punctate, pubescent as pronotum. — E l y t r a : broad, convex, not caudate; sides arcuately widened to apical one-third; surface uneven, with a shallow transverse postscutellar depression and further rounded, irregular impressions; punctation much coarser and sparser than on pronotum; interspaces shiny, irregularly elevated on middle of disc; pubescence short, scanty, decumbent; hairs forming small, whitish clusters arranged to loose rows on disc. — V e n t r a l s u r f a c e : very finely and sparsely punctate, with fine, sparse, decumbent hairs; last abdominal sternite rounded at apex. — L e g s : moderately long and slender; vested with scant, decumbent hairs; tibiae nearly straight, unarmed. — M a l e g e n i t a l i a : aedeagus twisted in basal half (Figs 10—11); parameres narrow, subacute, straight in lateral view.

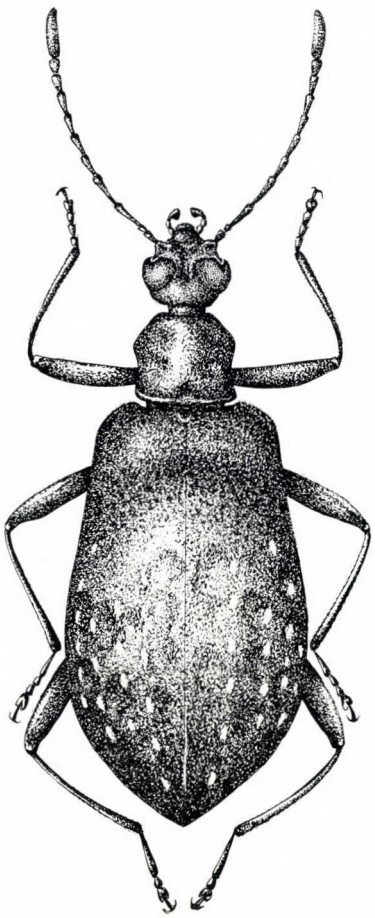


Fig. 13. *Bothrichara argyrostigma* sp. n.: male

Female — Stouter; ED:ID = 0.8; antennal segment length ratios as follows: 40:17:47:48:40:37:37:35:37:33:57; pronotum more transverse (PL: :PW = 0.67), besides the shallow impressions with a finely punctate central pit.

Holotype, ♂, labelled as follows: "New Guinea NE E. Highlands Purosa, 1700 m 17—25. V. 1966"; "Gressitt & Tawi Collectors Bishop". Deposited in BPBM. — Paratypes (6 specimens). Eastern Highlands Province: labelled as holotype (1 ♀, BPBM; 1 ♀, HNHM); Arau, Camp No. 11, Kratke Mts., Valley of upper Wanton River, 1400 m, 7—19. X. 1959, L. J. Brass, 6th Archbold Expedition (1 ♀, AMNH); Okapa, 4. IV. 1964, R. Hornabrook (1 ♀, RWHO); 13 km SE Okapa, 1650—1870 m, 26. VIII. 1964, J. & M. Sedlrcek (1 ♂, BPBM; 1 ♂, HNHM).

Distribution: Eastern Highlands of the Central Divide in Papua New Guinea.

Derivatio nominis: Greek "argyros" (= silver) and "stigma" (= sign), referring to pattern of pubescence on the elytral disc.

Remarks: The distinct silvery guttae of the elytra arranged to rows make this species unmistakable.

Sora pictipennis sp. n.

(Fig. 14)

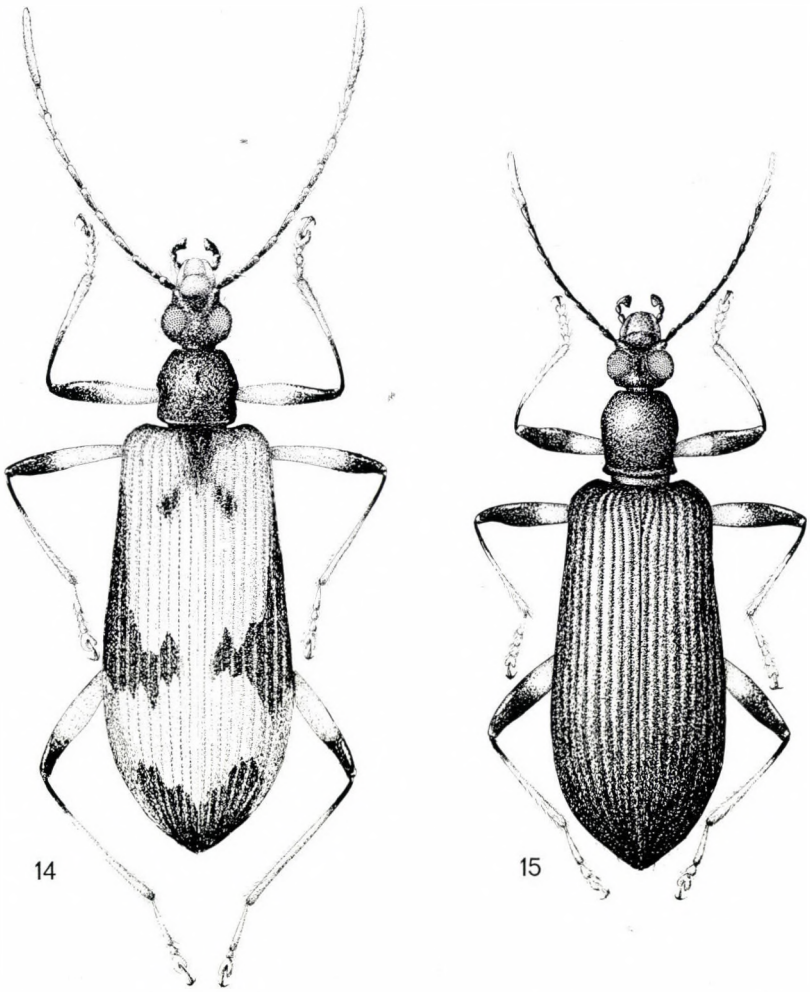
Form: narrowly elongate, with long and slender appendages, feebly convex in lateral view. — Size: length of female holotype 12.5 mm. — Colour: head black, mouthparts testaceous; antennae black in basal segments but gradually paler toward apex; pronotum black; scutellum brown; elytra stramineous with brown markings as in Fig. 14; dark colouration laterally extending over epipleura; ventral surface reddish brown, lateral regions darker (nearly black in meso- and metathorax); legs pale flavous, distal end of femora and proximal part of tibiae darker brown.

Female (Fig. 14) — Head: impunctate, microreticulate, glabrous apart from sensorial setae around mouthparts and on temples, weakly shining with narrow, oblique depressions between eyes; distinctly narrower than pronotum; ED:ID = 1.82; labrum very weakly notched; ultimate segment of maxillary palpi narrowly securiform; antennae long, segment length ratios as follows: 50:20:38:38:38:36:36:35:30:113. — Pronotum: glabrous, barely convex, with shallow depressions and a short midlongitudinal groove in anterior one-third; punctation moderately coarse, sparsest at the middle, much denser on lower sides; interspaces alutaceous; PL:PW = 0.88; broadest point at base; moderately constricted before base. — Scutellum: rounded triangular, impunctate, alutaceous, glabrous. — Elytra: elongate, very weakly widened to apical one-third; surface glabrous, apart from 6 subapical setae; punctural rows weakly impressed, ending in various distance from elytral apex; intervals weakly convex, nearly flat posteriorad. — Ven-

tral surface: impunctate medially; coarsely and sparsely punctate in meso- and metapleural parts, lateral regions of metasternum and abdominal sterna I to II; last abdominal sternite rounded at apex; sternal depressions of abdomen weak but distinct; ventral part of thorax entirely glabrous; abdominal sterna I to IV with a pair of setae each. — Legs: conspicuously long and gracile, without any modifications.

Male unknown.

Holotype, ♀, labelled as follows: "No. 6, Pengagl Camp, east-slopes Mt. Wilhelm, 2770 m. IX—10—1959"; "Morobe Dist. LJ Brass, Coll."; "Sixth Archbold Exped. to Papua New Guinea". Deposited in AMNH. The second label mis-states "Morobe Dist." as the province in which Mt. Wilhelm is found; it is actually in the Eastern Highlands Province.



Figs 14—15. 14 = *Sora pictipennis* sp. n.: female, 15 = *Sora yela* sp. n.: female

Distribution: Eastern Highlands of the Central Divide in Papua New Guinea.

Derivatio nominis: Latin "pictus" (= painted) and "penna" (= wing), referring to the elytral colour pattern.

Remarks: Until now, merely two species of *Sora* have been described from the Papuan-Australian region, namely *Sora biroi* PIC, 1956 (from eastern New Guinea) and *Sora lawrencei* MERKL, 1986 (from northern Queensland). These are smaller species with largely pale brownish colouration. *Sora pictipennis* is much larger and its variegated elytra are very characteristic.

Sora yela sp. n.

(Fig. 15)

Form: elongate, weakly convex in lateral view. — Size: length of female holotype 10.2 mm. — Colour: head black, mouthparts castaneous; antennae largely black, penultimate segment a little brownish, ultimate segment much paler, yellowish white; pronotum black, brownish at base; scutellum brown; elytra concolorous brownish black; ventral surface castaneous, thoracic venter nearly black; legs pale yellow, distal end of femora and proximal one-fifth of tibiae blackish.

Female (Fig. 15) — Head: distinctly narrower than pronotum; ED:ID = 2.22; glabrous, apart from sensorial setae; with a midlongitudinal depression on frons; surface impunctate, alutaceous; labrum deeply notched; ultimate segment of maxillary palpi narrowly securiform; antennae long, segment length ratios as follows: 40:15:33:33:35:35:35:33:33:30:87. — Pronotum: PL:PW = 1.00; broadest point at base; weakly constricted before base; surface glabrous; disc weakly and subevenly convex; punctation moderately coarse, punctures separated by distances at least equal to, or more than puncture diameter at the middle; punctation a little denser in lateral regions; interspaces shiny. — Scutellum: rounded triangular, impunctate, slightly alutaceous, glabrous. — Elytra: elongate, weakly widened to apical one-third; surface largely glabrous, interval III with three setigerous punctures situated in apical one-fourth; subapical area with three further setae; punctural rows deeply impressed, partly confluent before apex; intervals fairly convex. — Ventral surface: impunctate medially; very coarsely and sparsely punctate in meso- and metapleural parts, lateral regions of metasternum and abdominal sterna I to III; sternal depressions of abdomen indistinct; last abdominal sternite rounded at apex; venter glabrous, apart from a pair of setae on abdominal sterna I to IV. — Legs: moderately long and slender; without any modifications.

Male unknown.

Holotype, ♀, labelled as follows: "Abaleti, Rossel Isl. 0—50 m., No. 12 9—29—1956 Papua, New Guinea"; "Fifth Archbold Exped. to New Guinea Collector L. J. Brass". Deposited in AMNH.

Distribution: It is most probably endemic to the Louisiade Archipelago.

Derivatio nominis: According to BRASS (1959: 55), "Yela" is the name of the Rossel Island used by its native people.

Remarks: Unlike the hitherto described Papuan-Australian species of Sora (see Remarks under *Sora pictipennis*), *Sora yela* is dominantly black in dorsal colouration. The conspicuously paler ultimate segment of antenna is also characteristic.

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REVISION OF THE SUBGENUS BIFIDOCEROPALES PRIESNER OF THE GENUS CEROPALES LATREILLE (HYMENOPTERA: CEROPALIDAE)

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Seven taxa, *Ceropales cubensis cooperi* ssp. n. ♀♂ (from Costa Rica, Mexico and Peru), *C. cubensis menkei* ssp. n. ♀♂ (from Costa Rica, Ecuador, Venezuela, Trinidad), *C. cubensis vardyi* ssp. n. ♀♂ (from Ecuador, Peru), *C. grenadensis* sp. n. ♂ (from Grenada), *C. isolde surinamensis* ssp. n. ♀♂ (from Suriname, Guayana, Mexico and Ecuador), *C. luctuosa brasiliensis* ssp. n. ♀♂ (from Brazil) and *C. splendida* sp. n. ♀♂ (from Costa Rica) are described as new. *C. sulciscutis raymondi* nom. n. for the homonym *C. rufiventris* WAHIS and new females of *C. anomalipes* SHUCKARD, *C. s. sulciscutis* CAMERON and *C. luctuosa* SMITH are described for the first time. On the basis of the original material a new synonym *C. mlokosewitzi* RADOSZKOVSKI ♂ jun. syn. = *C. pygmeae* KOHL and two new statuses as *C. cubensis agilis* stat. n. as well as *C. pygmaea lehri* LELEJ stat. n. are established. Lectotypes are designated and holotypes are confirmed. A key, new data on the distribution of the species as well as comments on their individual variation are given.

This study is the terminal part in the series revising the world species of the large genus *Ceropales*, in which a total of 132 (including 41 new) species and subspecies, on the basis of nearly 3200 specimens, are discussed (MÓCZÁR 1978, 1986, 1987, 1988, 1989). The treatment and the detailed descriptions of TOWNES (1957) concerning the North American species made possible to abridge the text and to disregard the accurate descriptions, whereas I intended to enumerate as much literature as possible.

The examination of the original type-material of nearly all species confirmed a large number of holo-, lecto- and paratypes, verified and rectified numerous synonyms, misinterpretations, misidentifications and many erroneous statuses. In this paper a new synonym *C. mlokosewitzi* RADOSZKOWSKI ♂ as a jun. syn. of *C. pygmaea* KOHL, and two new statuses, *C. cubensis agilis* SMITH and *C. pygmaea lehri* LELEJ stat. n. are established. *C. sulciscutis raymondi* nom. n. for the homonym *C. rufiventris* WAHIS is also given.

The treatment of the investigated 637 specimens yielded the following three new species and four subspecies: *C. cubensis cooperi* ♀♂ (from Costa Rica, Mexico and Peru), *C. cubensis menkei* ♀♂ (from Costa Rica, Ecuador, Venezuela and Trinidad), *C. cubensis vardyi* ♀♂ (from Ecuador and Peru), *C. grenadensis* ♂ (from Grenada), *C. luctuosa brasiliensis* ♀♂ (from Brazil), *C. splendida* ♀♂ (from Costa Rica and Mexico) and *C. isolde surinamensis* ♀♂ (from the northern part of South America and Mexico). The females of *C. anomalipes* SHUCKARD,

C. luctuosa SMITH and *C. s. sulciscutis* CAMERON are also new. These are described for the first time.

Since the exact names of collections and museums whose material was studied in this paper were enumerated in my previous revisions (MÓCZÁR 1986a—b, 1987, 1988, 1989), the following list contains only the names of the cities. Some collections not included previously are given in detail: Coll. ARGAMAN = Collection of DR. Q. ARGAMAN, Beit-Dagan, Israel. — Barcelona, Berlin, Budapest, Buenos-Aires, Cambridge (USA), Geneva, Fukuoka. — Habana = Instituto de Zoologia Academia de Ciencias de Cuba, La Habana, Cuba (DR. P. ALAYO). — Lausanne, Leiden, London, New York, Ottawa. — Philadelphia = Academy of Natural Sciences of Philadelphia, Department of Entomology, Philadelphia, USA (DR. D. OTTE and D. AZUMA). — Stockholm, Tervuren, Coll. Townes, Tucuman. — Vladivostok = Institute of Biology and Pedology Far East Science Center USSR, Vladivostok (DR. A. S. LELEJ). — Coll. Wahis, Coll. Wasbauer, Washington, Wien, Zürich.

The majority of the species (including also the subspecies) (29) occurs in America, whereas only a few occur in Eurasia and Africa. The following thirteen taxa are spread in the USA: *C. b. bipunctata*, *b. tibialis*, *e. elegans*, *elegans aquilonia*, *elegans quaintancei*, *femoralis*, *hatoda*, *i. isolde*, *longipes*, *nigripes*, *pacifica*, *r. robinsonii*, *robinsonii stigmatica*. Seven taxa *(azteca, c. cubensis, c. agilis, c. albopicta, c. cooperi, grenadensis, mexicana)*, and 2 partly *(rugata, splendida)* occur in Central America (also partly Mexico), seven *(abdominalis, anomalipes, cubensis menkei, cubensis vardyi, i. surinamensis, luctuosa luctuosa, l. brasiliensis)* in South America. Two taxa, *sulciscutis sulciscutis* and *s. raymondi* were described from Africa; and two species, *levipleuris, seyrigi* from Madagascar. Two species, *pygmaea pygmaea* and *declivis* are widely distributed in the southern part of the Eurasian continent and one subspecies, *pygmaea lehri* was found only in the district of Primorsk.

SUBGENUS BIFIDOCEROPALES PRIESNER

Bifidoceropales (subgen. n.) WOLF, 1965: 38 ♀♂ (without descr.); PRIESNER 1969: 115, 119 ♀♂ (descr.); WOLF 1972: 168 ♀♂; MÓCZÁR 1978: 349, stat. n. as genus ♀♂; WAHIS 1986: 35, 44, as subgenus; MÓCZÁR 1988: 119, as subgenus.

The main characters of *Bifidoceropales* have already been enumerated by MÓCZÁR (1968: 349—350). Some additions necessary to show the substantial differences from the also bifid subgenus *Hemiceropales* are given below. Propodeum more or less smooth, shining, rarely polished at least basally and never coarsely sculptured or rugose as in *Hemiceropales*. When propodeum exceptionally mat with coarser surface, than frons finely granulate, and unpunctured, albeit declivous part of disc often mat, granulated, rarely rugulose or sometimes deeply punctured postero-laterally. Pronotal disc usually

smooth, shining, often with scattered fine, rarely with deep and only exceptionally with dense punctures in front of humps and along posterior margin. In lateral view frons convex or slightly transversally concave with microscopically fine and very dense punctures, weakly shining, mostly with scattered larger shallow, rarely with deep punctures in some species. Fore and middle femora as well as tarsal joints sometimes remarkably short, hind legs always long.

Type-species: *Ceropales pygmaea* KOHL, 1880 ♀♂ (orig. design. by WOLF 1965, monotypic).

KEY TO THE SPECIES (♀♂)

1 Frons, pronotum, mesonotum and partly propodeum with conspicuously dense, close, thimble-like punctures; pronotum also with a row of irregular larger and shallower (♀) or deeper (♂) punctures. Body nearly entirely black, head in front with two lateral white streaks from labrum to ocular sinus (♀), or lower face nearly entirely white (♂), and last tergite with a large white spot (♀♂). Species from Eurasia 2

— Frons, pronotum, mesonotum at most partly with dense but microscopically fine small punctures and often with scattered or denser, larger punctures, body usually with light markings. Spec'es far away from Eurasia, except *declivis* 3

2 Hind femur medially or entirely ferruginous (fore femur often with a white spot apically or brownish black) (♀♂). Pronotum often with a narrow and medially interrupted white streak posteriorly (♀). Mandible nearly entirely white or with a white spot (♂) or black (♀). Labrum with a minute, pale brownish spot apically (♂). Lower side of the last, sometimes also penultimate joint(s) of flagellum infuscate. ♀: 6—9, ♂: 4—8 mm **pygmaea pygmaea** KOHL

— Hind and fore femora, pronotum and mandible entirely black (♀♂). Labrum with a longitudinal pale brownish streak medially (♂). Lower side of the last flagellar joints infuscate apically (♂). ♀: 6.5, ♂: 6.5—8 mm **pygmaea lehri** LELEJ

3 Scutellum and disc of pronotum with rather long, conspicuous reclined hairs. Last abdominal segments (♀) often triangular, rarely elongated with pointed apex in lateral view. Flagellar joint 2 1.2 to 1.6 as long as wide 4

— Scutellum and disc of pronotum at most with short inconspicuous hairs. Last abdominal segments (♀) with a projecting apical part, apex usually evenly rounded in lateral view. Flagelar joint 2 usually (1.5) 1.8 to 2.2 as long as wide 10

4 Abdomen ferruginous red without lateral spots. Legs nearly entirely ferruginous, except coxae being partly ferruginous. Yellow ocular sinus connected by a broad semilunar band transversally 5

— Abdomen black with white lateral spots. Legs at most partly ferruginous. Ocular sinus rarely connected with a twice interrupted band transversally 6

5 Propodeum with coarse, irregular sculpture, only posteriomedially with distinct semicircular wrinkles. Labrum with a longitudinal black streak. Tergite 1 (♀) or 1—2 (♂) largely black, 2 (♀) 3—6 (♂) ferruginous red. Mesonotum with two longitudinal deepening having large and deep punctures. Punctures of pronotal disc denser, partly deeper. Inner eye margin continuously yellow. 6.5 mm **sulciscutis sulciscutis** CAMERON

— Propodeum finely wrinkled. Labrum entirely yellow. Abdomen entirely yellowish red. Mesonotum with finer, and disc with distinctly scattered and only with some deeper punctures. Yellowish line on inner eye margin interrupted. Antenna black, lower side of joints 1—2 yellow, 3—4 partly yellowish red. 6 mm **sulciscutis raymondi** ssp. n.

6 Antennal sockets immediately close to the eye margin. Femora, tibiae and tarsi nearly entirely ferruginous, except the infuscated hind tarsal joint. Abdomen black, tergites 1—5 (♀) or 1—6 (♂) with lateral white spots posteriorly and rather deeply emarginated in front, last tergite nearly entirely white. Propodeum finely rugulose posterio-medially, more so on male and less so on female. 4.7—7 mm **declivis** HAUPT

— Antennal sockets distinctly separated from the eye margin, colour different ... 7

7 Frons with very small punctures and scattered rather conspicuous larger punctures, whose diameters are about two to three times as great as those of the smaller punctures. Scutellum usually entirely black (according to TOWNES 1957) 8

— Frons with dense, moderately small punctures and scattered, inconspicuous larger punctures whose diameters are about 1.2 to 1.5 times as great as those of the smaller punctures. Scutellum usually with a white spot (according to TOWNES) 9

8 Punctures on mesepisternum separated by about 2.5 times their diameter. Last abdominal segments (♀) remarkably elongated. Longer hairs on top of head dark brown, shorter than in *C. rugata*. Flagellar joint 2 about 1.6 as long as wide. Sternite 9 broadly lanceolate, without longitudinal wrinkles beneath. ♀: 3.1—6 mm, ♂: 3.5—4.7 mm
pacifica TOWNES

— Punctures on mesepisternum separated by about 1.2 times their diameter. Last abdominal segments (♀) shorter. Longer hairs on top of head light brown, longer than in *C. pacifica*. Flagellar joint 2 about 1.3 times as long as wide. Sternite 9 with a rounded tip and, when dry, with a pair of subparallel longitudinal wrinkles beneath, that may run separately to the apex or unite into a single longitudinal wrinkle which continues to the apex. ♀: 4.1—5.8, ♂: 3.1—5.8 mm **rugata** TOWNES

9 Hind femur rufous. Last segment (♀) a little longer. Smaller punctures of thorax sharp. Sternite 9 broader, lanceolata, slightly raised medially (distinctly narrower and flat in comparison with *rugata*). ♀: 4.1—4.5, ♂: 3.5—4.7 mm **femoralis** CRESSON

— Hind femur blackish. Last segments a little shorter. Smaller punctures of thorax rather weak. Sternite 9 narrower, more pointed apically. ♀: 4.1—5.4, ♂: 4.8—5.1 mm
hatoda BRIMLEY

10 Mesepisternum smooth, polished and impunctate, at most with some very fine minute punctures. Abdomen ferruginous, sometimes with yellowish white markings. Head and thorax mostly black. Wings largely dark brown or in some males subhyaline . 11

— Mesepisternum with numerous deep or coarse punctures 12

11 Flagellum blackish, often tinged with rufous colour. Abdomen with little or no yellow marking. Lower face entirely yellowish white (♂) or with longitudinal black streak from antennal sockets to nearly lower margin of clypeus. Labrum with a brown spot medially (♀). Mesonotum near tegulae, above scutellum, on scutellum and on mesepisternum on lower corner near the middle coxa and tergites 2—4 laterally with a yellowish spot each. ♀: 7.2—10.9, ♂: 8 mm **robinsonii robinsonii** CRESSON

— Flagellum rufous, blackisch apically. Yellow markings varying from broad subapical transverse bands on tergites 2—5 to median subquadrate spots on apical tergites. Face, except a triangular area below antennae (♀), side of frons, labrum (somewhat fulvous centrally on ♀), and basis of mandible yellow. Thorax with more or less extensive brownish ferruginous areas, these mostly adjacent to its yellow markings. Fore coxa largely brownish ferruginous. Fore wing ♀: 10.5—11, ♂: 8—9 mm (according to TOWNES)
robinsonii stigmatica BANKS

12 Flagellum ferruginous, blackish at apex. Wings pale to dark yellowish brown. Abdomen mostly ferruginous of also blackish with a broad yellowish band 13

— Flagellum blackish. Wings pale to dark brown or subhyaline 15

13 Wings dark brown. The yellow markings may be almost as extensive as in *aquilonia* or more or less restricted, in extreme cases being present only on the head, postscutellum, hind corner of thorax and underside of front coxa. Thorax sometimes with fuscous areas. Fore wing ♀: 11—13, ♂: 9—13 mm (according to TOWNES 1957)
elegans quaintancei VIERECK

— Wings pale brown to medium yellowish brown 14

14 Tergites 2—5 entirely ferruginous, with or without apical yellow bands. In nominate forms head and thorax nearly entirely ferruginous, frons, sometimes occiput, meso- and metanotum partly black. Pronotal disc before the narrow posterior yellow band, always ferruginous. Wings more brownish than in ssp. ♀: 8.6—13.7, ♂: 6.5—10 mm
elegans elegans CRESSON

— Tergites 2—7 basally black with broad apical yellow bands, the latter on 3—7 slightly emarginated sublaterally. Frons and occiput as well as thorax largely black. Pronotal disc black before the broad posterior band. Wings paler than on nominate species. 8.3 mm **elegans aquilonia** TOWNES

15 Wings black. Large, in size 10.2—18.3 mm. In lateral view propodeum conspicuously sharply bent before the middle, at least medially 16

— Wings hyaline or subhyaline. Smaller in size: 9—12 mm. In lateral view propodeum at most normally bent and convex 18

16 Hind femur black. Tergites 1 and 6 black (♀) or 1 with a pair of white spots (♂) and 6—7 with a large medial spoter each. Inner eye margin narrowly (♀) or broadly (♂) yellowish, clypeus yellowish white (♂). Propodeum sharply bent in an abtuse angle at its one-third,

here transversaly wrinkled (♀♂). Frons with fine, pronotum and mesonotum with deep larger punctures. ♀: 11—16, ♂: 10.2—12.8 mm **nigripes** CRESSON

— Hind femur ferruginous, usually black at each end. Tergite 1 entirely black or sometimes with rufous stains 17

17 Fore and middle femora and all tibiae ferruginous, joint regions infuscated. With creamy white, markings as in the nominate species. Wings deep black. Thorax and head sometimes with rufous tinge. Rarely the white and rufous markings extensive. ♀♂: 14.5 mm **bipunctata tibialis** BANKS

— Fore and middle femora and all tibiae black, often fore femur and tibia partly ferruginous inside (♀♂). Entirely black, only inner eye margin, narrow streak on clypeus near the eye, a small streak on outer eye margin above posterior corners of propodeum, pale spot on postscutellum (♀) or besides these whole lower face (except mandible), posterior band of pronotum medially, a minute spot on fore and middle femora apically (♂), yellow. Propodeum remarkably, nearly triangularly bent at its basal one-third. ♀: 15.5—18.3, ♂: 10.8—14 mm **bipunctata bipunctata** SAY

18 Orbital groove distinct. Ocelli in an acute angle. Frons convex. Light colour of body white. Metapleural suture not developed. Propodeum flat in lateral view. Species from Malgasy Republic 19

— Orbital groove lacking. Ocelli usually in a right or obtuse angle. Frons often broken below fore ocellus. Light colour of body white or often yellow. Metapleural suture often developed. Species from America 20

19 Thorax black with white markings: posterior band together with a tubercle (♀) or separated from it (♂), hump (♀♂), lower pointed apex on pronotum (♀), small spot on scutellum (♀), postscutellum, tegula, posterior corners of propodeum and a spot on lower corner of mesepisternum (♀♂). Thorax measured across hump distinctly narrower anteriorly than behind across tubercle. Narrow bands at least on tergites 1—4 partly (2—4) interrupted medially. Hind femora entirely ferruginous, hind tibia at most infuscated. Lower face nearly entirely brownish black, except the narrow white inner eye margin (♂), or largely white (♀). ♀: 5—9, ♂: 4—6 mm **seyrigi** WAHIS

— Only pronotum and partly disc of propodeum black, lateral margin of pronotum and the rest of thorax ferruginous. Tubercle and hump with spots. Thorax in front across hump as broad as posteriorly across tubercle. Tergites 2—5 laterally with large ivory spots having deeply emarginated margin inside. Hind femur, except only basally, tibia, tarsi and middle tarsi, black. Last sternite conspicuously deeply excised medially. Lower face entirely ivory. 4.5—6 mm **levipleuris** WAHIS ♂

20 Scutellum conically, usually highly raised also in front, top pointed. Abdomen largely black with triangular or quadrangular ivory- or lemon-coloured spots laterally, sometimes at least tergite 3 also with a light medial spot. Scape with a raised carina below 21

— Scutellum normal or gradually raised especially in front, top dull. Abdomen often ferruginous or black, mostly with light bands or spots 22

21 Sternites with deeply emarginated ivory streaks. Tergite 1 with quadrangular (♀), or triangular (♂) lateral spots, tergites 2—3 (♀) with oblong spots, 4 with interrupted, 5—6 with continuous ivory bands, 4—5 emarginated sublaterally (♀), or lateral spots triangular and also 5—7 with one or two white medial spots (♂). ♀: 10.4—12, ♂: 8.3—8.6 mm **luctuosa luctuosa** SMITH

— Sternites black. Lateral spot of tergite 1 strongly elongated in front and broadly emarginated inside (♀♂). Tergites 2—5(6) with quadrangular ivory (♀) or yellow (♂) spots. ♀: 7—8.6, ♂: 5.8—8 mm **luctuosa brasiliensis** ssp. n.

22 Abdomen entirely or largely ferruginous, or yellowish ferruginous; when with curved, yellow, lateral streaks or spots, then tergites more or less black; rarely some tergites posteriorly with pale yellowish and laterally broadened bands. Legs at least largely ferruginous 23

— Abdomen largely black with sublaterally deeply notched, partly interrupted yellow or white bands. If abdomen largely ferruginous, then at least last tergites of some more with ivory spots 30

23 Lower face below antenna at least to clypeus yellow or ivory 24

— Lower face with an often interrupted black streak from antenna including labrum medially (♀♂); rarely (♂) only labrum with spot, black streak on lower face absent and propodeum with deep and dense punctures 28

24 Frons flat. Pronotal band broadly interrupted medially. Fore and middle tarsi (♂) distinctly longer than respective tibiae (50 : 40 resp. 60 : 50). Mesonotum with a long longitudinal white streak before scutellum. Labrum usually with a longitudinal brownish

black streak, sometimes entirely black or white. Scutellum gradually elevated in front, top dull. Pronotal deepening deeper, with distinct wrinkles. ♀: 8—13, ♂: 6.5—14 mm **abdominalis** TASCHENBERG

— Frons impressed transversally or more or less concave. Pronotal band emarginated or narrowly interrupted medially (♀♂). Fore and middle tarsal joints remarkably short, as long as, shorter, or just longer than respective tibiae (♂). Mesonotum black, rarely with a yellow streak (♀♂). Labrum yellowish white (♀♂) 25

25 ♂: Last tergite distinctly concave laterally, with a medial torus. Outer and inner claws of middle legs dissimilar. ♀♂: Abdomen light ferruginous of tergites partly black with strongly curved, yellow, lateral streaks. Pronotal deepening laterally shallow, without wrinkles 26

— ♂: Last tergite convex, torus absent. Claws of middle legs normal, bifid. Abdomen ferruginous. red or tergites partly black with small lateral spots. Sternites yellowish ferruginous Pronotal deepening only with short wrinkles. (♀ unknown) 27

26 Abdominal tergites ferruginous without light spots. Propodeum smooth, shining only with microscopically fine punctures. Frons, pronotum with a few distinct punctures. Middle and hind coxae, trochanters and femora entirely ferruginous, except a minute yellow spot on coxae apically. ♀: 10—13, ♂: 10—13.5 mm **anomalipes** SHUCKARD

— Tergites 1—3 (4) (♂) or 1—5 (♀) largely black, with broadly emarginated and curved yellow streaks sublaterally. Propodeum, frons, and pronotum highly polished and shining, without distinct punctures (♂) or frons with some fine punctures (♀). Femora nearly entirely yellow outside, coxae black with large yellowish white streaks, trochanters basally black, partly ferruginous. ♀: 8.3, ♂: 8.6—10 mm **splendida** sp. n.

27 Abdomen dark ferruginous red, only tergite 7 with a minute yellowish spot. Propodeal disc laterally with larger and deep punctures behind spiracle. Hind coxa nearly entirely ferruginous. Fore and middle tarsal joints short, only slightly longer than the length of respective tibiae. 10.7 mm **grenadensis** sp. n. ♂

— Abdomen largely yellowish ferruginous ventrally and laterally, or sometimes darker. Tergites partly black, usually with lemon-coloured spots sublaterally, which are rarely, slightly elongated inside or spots often reduced. Propodeum a little bit punctured laterally. Also hind coxa largely black, only partly ferruginous outside. Fore and middle tarsi distinctly longer, than respective tibiae. 6—9.1 mm **cubensis cooperi** ssp. n. ♂

28 Tergite 1 and basis of 2 largely blackish infuscated; with a small pale yellowish spot tergite 1 laterally and 6 medially each. All coaxe and trochanters partly black. Pronotum polished, disc hardly punctured, lateral deepening with fine wrinkles. Ocelli in an obtuse angle 8.3—9.1 mm **cubensis agilis** SMITH

— Abdomen ferruginous without yellowish spot, except tergite 7 on ♂; at most tergite 1 with a small black spot basally. Middle and hind coxae mostly ferruginous. Pronotal disc with fine and partly deeper punctures, lateral deepening with fine or sharp wrinkles 29

29 Ocelli in an obtuse angle. Basis of mesonotum with scattered punctures. Pronotal disc with fine and some deep punctures, also lateral deepening polished without or with some fine wrinkles. Deeper punctures on propodeum extending over a smaller area laterally. Tergites 1—3 (4) mostly laterally, 2—4 also medially with strongly broadened pale yellowish bands, often most of the tergites partly with only traces of bands, or rarely even, distinct on sternites. Tegula dark red. 8.3—11 mm **isolde isolde** (BANKS) ♀

— Ocelli in a right angle. Basis of mesonotum with remarkably deep and denser punctures. Pronotal disc with deep and mostly with denser punctures, lateral deepening with longer and stronger (♀) or shorter (♂) wrinkles. Propodeal disc with coarse, deep and dense punctures extending over a large area. Pale yellowish bands of tergites 1—2 exceptionally partly and hardly perceptible. ♀: 6.5—10, ♂: 6.5—7 mm **isolde surinamensis** ssp. n.

30 Light markings of tergites ivory (♀♂). Clypeus, often supraclypeal area and labrum with a more or less longitudinal black streak (♀), or lower face (also mandible) entirely ivory (♂). Hind tibia above and tarsal joints often brownish infuscated or all tarsi, middle and hind tibiae largely black 31

— Light markings of tergites (rarely at least in front), often clypeus entirely (♀) or whole lower face (including mandible largely) lemon-yellow, when rarely whitish on tergites (♀), then mesepisternum with a light spot below. Middle tibia, tarsi, hind tibia never black 33

31 Mandible basally with a large, mesonotum posteriorly with a longitudinal white streak. Middle and hind tibiae in front, all tarsi largely black (♀) or hind tibia and tarsi in front black (♂). Punctures of frons medially dense and rather deep (♀), or distinctly shallower

(♂). Body, coxae, trochanters black, with white spots and richly emarginated and interrupted bands. 9.1—10 mm **cubensis vardyi** ssp. n.

— Mandible at most with a minute, light spot, mesonotum black. At most hind tibia and more tarsal joints partly brownish infuscated. Punctures of frons deep but scattered (♀) or finer (♂). Body, coxae partly usually black (♀♂), abdomen often largely ferruginous (♀) 32

32 Fore coxa partly, middle and hind ones largely, legs elsewhere ferruginous, except sometimes the infuscated last tarsal joints and hind tibia in front (♀), or only apically (♂). Abdomen black with white markings (♀♂): lower side sometimes partly ferruginous, spots on tergite 1 reniform, sublateral, subapical stripe on tergites 2—4 with deep sublateral emargination, or broken on each side of 4, median semicircular spot and usually a smaller sublateral one on tergite 5, and a large subcircular spot covering the median portion of tergite 6 (♀); or the streak on tergite 2 (3) interrupted medially, a large spot on tergite 7 also white (♂). ♀: 8.3—11, ♂: 7.2—10 mm **cubensis cubensis** CRESSON

— All coxae, fore trochanter nearly entirely, middle and hind trochanters at least basally black. Legs ferruginous elsewhere, except sometimes the infuscate tarsal joints (♀), or the white streaks especially on fore tibia in front and metatarsus (♂). Abdomen usually ferruginous (♀), tergite 1 infuscated basally tergite 2 (3) laterally, 4—6 medially or only the last tergite (♀) with a reduced yellowish white spot. When abdomen black (♀♂), then tergite 1 with a large sublateral spot, the irregular bands on tergites 2—5 partly with a deep sublateral emargination each or the bands often partly broken into a median and a sublateral pair of marks; tergites 6—7 with a large median subcircular spot each and tergite 7 with a smaller one laterally (♂). ♀: 6.5—12.5, ♂: 5.3—8 mm.
cubensis albopicta CRESSON

33 Mesepisternum with a larger yellowish spot next to coxa. Abdominal bands vivid yellow (♂) or lemon-yellow (♀), on tergites 2—4 interrupted medially, emarginated sublaterally and remarkably broadened laterally. Mesonotum with a small median yellowish spot. Median-posterior part of propodeum with small granular wrinkles. ♀: 8.6—9.1, ♂: 7.2 mm
longipes SMITH

— Mesepisternum black. Abdominal bands on tergites 2—4 continuous, not interrupted medially 34

34 Mandible with a large clypeus often with various amount of black spots (♀), propodeum usually with a small yellowish spot medially (♂). Pronotal deepening laterally only with short and hardly distinct wrinkles. Abdomen usually black, tergites 2—5 (♀) or 2—6 (♂), with partly interrupted and sublaterally deeply notched lemon-coloured bands; bands more extensively whitish posteriorly; sternites ferruginous (♀). Fore coxae ventrally nearly entirely, whereas middle ones basally black; legs elsewhere largely ferruginous. ♀: 7—9.5, ♂: 5.8—6.5 mm **cubensis menkei** ssp. n.

— Mandible (♀) and propodeum black medially (♂). Lateral deepening of propodeum shallow, broad and with wrinkles (♀♂) 35

35 Labrum, supraclypeal area entirely yellowish white or labrum with a black spot medially. All bands of tergites continuous, elongated and shortly narrowed on tergite 1, as well as deeply emarginated inside (♀) or often elongated towards the middle (♂). Scattered punctures of frons shallower. Deep punctures of mesepisternum finer. ♀: 11, ♂: 8.3—9.5 mm **mexicana** CRESSON

— Labrum entirely, supraclypeal area below antenna partly black (♀) or white (♂). Band of tergite 1 broadly interrupted sublaterally to form a medial and two lateral streaks (♀♂), the latter ones strongly elongated in front and deeply emarginated inside. Scattered punctures of frons slightly deeper (♀). Deep punctures of mesepisternum stronger. Last segments narrowly elongated and rounded apically (♀). ♀: 10 (holotype), ♂: 11.5 mm
azteca CAMERON

Ceropales (Bifidoceropales) abdominalis TASCHENBERG

Ceropales abdominalis TASCHENBERG 1869: 73 ♂; DALLA TORRE 1895: 90; DALLA TORRE 1897: 340 ♂.
Ceratopales abdominalis: BANKS 1947: 475, 476 ♀♂.

Specimens examined: 123 ♀, 80♂. BRAZIL = Amaz., Tabatinga 1 ♂ (London); Campina Grande nr. Curitiba 2 ♀, 1 ♂ (Coll. Townes) and 1 ♀ (Budapest); Caruaru 6 ♀, J. Lima 1 ♀, 1 ♂ (Coll. Townes); Itaum M. Grosso 2 ♀, 1♂ (Coll. Townes) and 2 ♀ (Budapest); Jatai Goiás 1 ♀ (Coll. Townes); Nova Teutonia Santa Catarina 5 ♂ (Budapest), 3 ♂ (London),

1 ♀, 6 ♂ (Ottawa), 6 ♀, 4 ♂ (Coll. Townes), 1 ♀, 2 ♂ (Coll. Wasbauer); Pedra Azul 5 ♀, 7 ♂ (Coll. Townes) and 2 ♀, 4 ♂ (Budapest); Pedra 1 ♀ (Coll. Townes), 1 ♀ (Budapest); Rio Grande do Sul 1 ♀ (London); Serra do Caraca S. Barbara 1 ♂ (Coll. Townes); Teodoro Sampaio 1 ♀, 4 ♂ (Coll. Townes), 2 ♂ (Budapest); Varginha 2 ♀ (Coll. Townes and Budapest); Vila Vera 1 ♀ (Budapest); Encruzilhada Bahia 6 ♂ (Coll. Townes). — BOLIVIA = Beni Rio Itenez 1 ♀, 1 ♂ (New York); Beni Rurenabaque 1 ♀ (Budapest); Tarija Jug. Bermejo 1 ♀, 2 ♂ (Tucuman). — SURINAME = 1 ♀ (Berlin). — PARAGUAY = Asunsion Villa Morra 1 ♂ (Berlin); Carumbé 1 ♀ (Coll. Townes); Dto San Pedro 4 ♀ (Tucuman), 4 ♀, 1 ♂ (Budapest) and 4 ♂ (Tucuman); Rio Ypane Cororo 1 ♀ (Budapest); San Pedro Cororo 1 ♀ (Coll. Wasbauer). — PERU = Hareta 1 ♂ (Budapest); Loreto Pucalipa 1 ♀ (London). — ARGENTINA = Buenos Aires 1 ♀ (Buenos Aires); Catamarca: Conception 1 ♂ (Tucuman), – El Rodeo 2 ♀ (Tucuman), 1 ♀ (Budapest), – Summa El Alto 1 ♂ (Tucuman); Cordoba: Giacomelli, D° Punilla 1 ♀, 4 ♂ (Buenos Aires); Corrientes: Pasode la Patria 1 ♀ (Tucuman), Las Marias Ca. Virasoro 1 ♂ (Tucuman); Dique Sierra Cordoba 1 ♂ (Tucuman); Horco Molle 12 ♀ (Tucuman), 1 ♀, 1 ♂ (Budapest) and 1 ♀, 1 ♂ (Coll. Townes); Iguazu Nat. Pk 1 ♂ (London), 1 ♂ (Budapest); Jujuy 1 ♂ (Coll. Townes), Jujuy: Zapala 1 ♀ (Tucuman); Salta Aguas Blancas 3 ♀ 4 ♂ (Buenos Aires), S. Campamento Jakulica 9 ♀, 1 ♂ (Tucuman) and 4 ♀ (Budapest), S. Orán Abra Grande 6 ♀, 5 ♂ (Tucuman), 1 ♀ (Budapest), S. Pocitos 2 ♀ (Coll. Wasbauer), – S. Rio Pescado Dpto Orán 1 ♀ (Budapest), – S. Rosario de Lerma 3 ♀ (Coll. Wasbauer) and 1 ♀, 1 ♂ (Budapest); Santiago del Estero Termas de Rio Hondo 2 ♀ (Tucuman and Budapest), S. d. Est. Colonia Dora 1 ♀ (London); Tucuman: 2 ♀ (Tucuman), Burruyacu 1 ♀ (Tucuman), La Soledad (Canete) 1 ♂ (Budapest), Trancas, San Pedro de Cobboto 2 ♀, 2 ♂ (Tucuman), 11 km O de Las Cejas 3 ♀ (Tucuman), 1 ♀, 1 ♂ (Coll. Townes) and 1 ♀ (Budapest), Los Puestos Dpto, Leales 2 ♀, 1 ♂ (Tucuman), 2 ♀ (Budapest), Quebrada de Lules 3 ♀ (Tucuman); Yuto 1 ♂ (Budapest). — The great majority of collection dates are in November, February, January and October, animals were less frequently collected between March to July and in December.

Distribution. Brazil (Nov. Friburg) (Taschenberg 1867). Bolivia (Banks 1947). Suriname, Peru, Paraguay and Argentina.

Ceropales (Bifidoceropales) anomalipes SHUCKARD, ♀ nova

Ceropales anomalipes SHUCKARD, 1837: 70 ♂; SMITH 1855: 179; Dalla Torre 1897: 341 ♂
Ceropales irregularis SMITH, 1873: 52 ♂; FOX 1892: 61 (as syn.); DALLA TORRE 1895: 91.

Specimens examined: 6 ♀, 8 ♂. — Type material: BRAZIL = "Type H. T." circular label with red margin, "anomalipes Skd.", "Ceropales anomalipes Shk. Braz. (Type)", "type F. Sm. Coll. 79. 22", "B. M. Type. Hym. 19. 776" holotype ♂ (London). — "Type H. T." round label with red margin, "70/16 Para" blue round label, "Ceropales irregularis Smith.", "B. M. Type Hym. 19. 777", "Holotype", "Ceropales (Bifidoceropales) anomalipes Shuck. det. Móczár 1987", 1 ♂ (London). — Non paratypic material: BRAZIL = Pará, Jacareaganga Dec 1968 M. Alvarenga, 1 ♀ (Budapest); Sinop M. Grosso 12° 31′ S 55° 37′ W Oct 1975 and Feb 1976 M. Alvarenga, 2 ♀, 1 ♂ (Coll. Townes) 1 ♀, 1 ♂ (Budapest); Vila Vera W 50°30' S 12°30' Oct 1973 M Alvarenga, 1 ♀ (Coll. Townes). — COLOMBIA = Vaupes, Miraflores 1 ♂ (London). — GUIANA = Essequibo 1 ♂ (London). — SURINAM = 1 ♂ (Berlin); 45 km S Paramaribo 13—19 Oct 1963 D. O. Gejskes, 1 ♀, 1 ♂ (Budapest).

Addition to the description (which was not included in the key): ♂. — Length 10—13.5 mm. Face, propodeum covered with silvery and not golden pubescence. Lateral side of propodeum partly reddish ferruginous. Frons with a feeble sulcus, running, through the depression. Ocelli in a right triangle. Antenna slender, flagellar joints basally three times as long as broad. Head distinctly narrowed behind eyes, temple not thickened. Mesepisternum with a few deeper punctures. Propodeum just a bit convex, deeply and triangularly impressed in front, sulcus reaching nearly the middle of segment. Metapleural suture distinct only posteriorly. Tergite 7 concave in both sides and with a longitudinal torus medially. The fore and middle tarsi about as short as respective tibiae (fore tibia: fore tarsi = 44 : 54, or 44 : 44 without claw; middle tibia: middle tarsi = 55 : 50, without claw). The inner and outer claws of the middle tarsi bifid and different, dissimilar, the outer claw strongly appressed with a remarkably broad basis having shorter, stumpy subapical claws and the inner claw with a longer and a slender, sharply pointed apical claw.

♀. — Length 10—13 mm. Black, mandible (except the ferruginous apex), labrum, lower face entirely, inner and outher eye margin, a spot between antennal sockets, antennal joints 1—2 below, the gradually narrowing streak towards the middle on posterior margin of pronotum, pronotal hump, a spot on tegula, on postscutellum and on lateral corners of propodeum fore coxa below, a small spot on fore trochanter below, middle and hind coxae apically and

fore metatarsus below, white; abdomen and legs ferruginous; hind tibia above and tarsa joints blackish infuscated. Wings as in male, fore claws symmetrical.

Head, ocelli as in male, frons not so deeply impressed transversally as in male, but with deeper longitudinal sulcus, and only with some scattered distinct punctures. Antenna slender, anterior flagellar joints nearly longer double their breadth. Pronotal deepening remarkably narrow, resembling a shallow sulcus, without wrinkles as in male. Punctures on of both sides in the longitudinal deepening mesonotum larger and deeper than in male. Scutellum rather highly raised. Propodeum smooth, shining, without larger punctures, similar to the male. Propodeal sulcus fine, elongated over its entire length of the segment. Last abdominal segments elongated and obliquely truncated. Fore and middle tibiae and tarsal joints not shortened, ratio of the lengths of fore tibia: fore tarsi = 55 : 70, that of the middle tibia: tarsi = 70 : 110.

D i s t r i b u t i o n. Brazil (Shuckard 1837). Brazil and Paraguay (Smith 1855, 1873). Columbia, Guiana and Surinam.

Ceropales (Bifidoceropales) azteca CAMERON

Ceropales azteca CAMERON, 1891: 159 ♀♂ Tab. 10 fig. 2; FOX 1892: 63; DALLA TORRE 1895: 90, DALLA TORRE 1897: 341 ♀; BANKS 1947: 475, 477 ♀♂; DREISBACH 1948: 236 ♂.

Specimens examined: 1 ♀, 1(+8) ♂. T y p e m a t e r i a l: MEXICO = "Lectotype" round label with violet coloured margin, "Amula, Guerrero, 6000 ft. Sept. H. H. Smith", "B. C. A. Hymen. II. Ceropales azteca Cam." "Ceropales aztecus Cam.", "Ceropales azteca Cam. ♀!! figured specimen det. M. C. Day, 1985", lectotype ♀ (not published) (London). Paralectotypes: "Type H. T." round label with red margin, the some two labels with the locality and det. data as before, and "Ceropales azteca Cam. type BCa ii159", "B. M. Type Hym. 19.774" head missing, 1 ♂ (London); "Amula Guerrero 6000 ft Sept. H. H. Smith", "B. C. A. Hymen. II. Ceropales azteca, Cam." 1 ♂, "Atoyac, Vera Cruz, May H. H. S." and the second label as before at "Amula", 4 ♂, "Temax, N. Yucatan (Gaumer)" and the second label as before "B. C. H. . . . " 3 ♂ (all in London).

I can confirm the designation of the lectotype preserved in the British Museum and I designate the male "Type" specimen as paralectotype, as well as the further males as paralectotypes listed by CAMERON in his diagnosis, in spite of the fact, that they proved to be *C. cubensis albopicta* CRESSON (from Amula and Temax) and *C. cubensis cooperi* ssp. n. (from Atoyac).

Some additions to the diagnosis: Supraclypeal area yellow with a black spot below antennal sockets (♀). Trochanter-tarsi largely ferruginous (♂). Head only weakly shining. Ocelli in an obtuse angle (♀). Pronotum only with sparse but slightly deeper punctures, especially on male, compared to *C. mexicana*. Propodeum with larger scattered and shallow (♂) or with deeper and denser (♀) punctures behind spiracle, but interspaces distinctly larger than punctures. Pronotal deepening usually with six longer and distinct wrinkles (♀♂).

D i s t r i b u t i o n. Mexico (CAMERON, 1891) Central America, Colombia (BANKS 1947).

Ceropales (Bifidoceropales) bipunctata bipunctata SAY

Ceropales bipunctata SAY, 1824: 334 ♀♂; SMITH 1855: 180; CONTE 1859: 334; PROVANCHER 1889: 264, 265 ♀; CRESSON 1867: 138 ♀♂, 1872: 208 ♀♂; DALLA TORRE 1895: 90, 1897: 341 ♀♂; BRIMLEY 1936: 111; DREISBACH 1948: 234, 236 ♀♂, 1948: 249, 250; KROMBEIN 1949: 263 (on *Salix)* ♂.

Ceropales bipunctata bipunctata: EVANS 1955: 17 ♀♂ (on *Melilotus*); TOWNES 1957: 240, 260, 262 ♀♂ Fig. 154 (on *Ampelopsis arborea, Euphorbia marginata, Stillingia sylvatica, Polytaenia muttallii, Aster paniculatus, Solidago* sp.); KROMBEIN—HURD—SMITH—BURKS 1979: 1569 ♀♂.

Specimens examined: 9 ♀, 9 ♂. USA = Amer. septentr., 1 ♀ (Wien). — Illinois = 1 ♀ (Budapest); Chicago, 1 ♂ (Budapest). — Louisiana = 2 ♀, 1 ♂ (Geneva), 1 ♂ (Budapest). — Massachusetts = Mt Tom. Geo Dimmock 1 ♀ (Budapest). — New York = Alpine 1 ♂ (Geneva); 1 ♂ (Wien); Ithaca 2 ♀ (Wien); Sandy Hook on *Euthamia graminifolia*, 2 ♂ (Geneva and Budapest). — Oregon = Colombus 1 ♂ (Coll. Wasbauer). — Pennsylvania = Mt Holly Spg. 1 ♂ (Budapest). — Tennessee = 1 ♀ (Geneva) and 1 ♀ (Budapest). — The majority of collection dates are in August, only two ones originate from September.

Distribution. USA (Say 1824). Canada (Cresson 1867). Middle and eastern USA (Townes 1957).

Ceropales (Bifidoceropales) bipunctata tibialis Banks

Ceropales bipunctata var. *tibialis* Banks, 1910: 126 ♀; Dreisbach 1948: 234, 236 ♀♂.
Ceropales bipunctata tibialis: Brimley, 1936, 111 ♂; Townes 1957: 240, 261 Fig. 153 ♀♂ (design. of lectotype ♀); Krombein etc. 1979: 1569.
Ceropales floridensis Dreisbach, 1948: 233, 235 ♂; Townes 1957: 261 (as syn.) ♂.

Distribution. Southern Pines, N. Carolina (Banks 1910). Florida (Dreisbach 1948).

Ceropales (Bifidoceropales) cubensis cubensis Cresson

Ceropales cubensis Cresson, 1865: 132 ♀, 1867: 141 ♀; Gundlach 1886: 120; Fox 1892: 49, 50, 53, 61 ♀♂; Dalla Torre 1895: 91, 1897: 341 ♀♂; Banks 1928: 10; Dreisbach 1948: 236, 237 ♀♂; Alayo 1969: 34 Figs "H, 4F, 5E, 5F, 7A, 7I, 1976: 25; Krombein etc. 1979: 1569."
Ceropales cubensis cubensis: Townes, 1957: 240, 249, 251 ♀♂ (design. of lectotype).

Specimens examined: 7 ♀, 4 ♂. Type material: CUBA = "Cuba", "400/195", "♂", "LectoTYPE 446" red label, "C. cubensis Cres." lectotype ♂ (Philadelphia). — Non-paratypic material: USA = Florida = Monroe Co 1 ♂ (Coll. Wasbauer). — CUBA = Lag Ariguanabo Hab. 1 ♀ and 1 ♂ (Budapest); Cuabitos 1 ♂ (Habana); Santiago de las Vegas 1 ♀ (Habana). — TRINIDAD = St Augustine 1 ♀ (Ottawa); St. George St Augustine 2 ♀ (London) and 1♀ (Budapest). — VENEZUELA = Guerico Hato Masaguaral 1 ♀ (Washington). — The collection dates are between March and May and between September and December.

Addition to the description — Only the two anterior coxae inside (♂) and a small spot outside of middle coxae basally (♀) black and not "the four anterior coxae, ♀ black". Frons with some deeper and well-defined punctures. Ocelli in an obtuse angle. Metapleural suture distinct. Declivous part of scutellum with longitudinal and parallel wrinkles. Fore tarsal joints 2—4 remarkably short. Propodeal disc dark, partly reddish translucent laterally and partly with moderately deep and dense punctures above the metapleural suture. Smaller punctures especially on mesepisternum sharp, surface weakly shining. Fore tibia: tarsi = 30 : 40 (including claws). Sternite 9 with white margin apically.

The area of distribution of the following subspecies will probably be modified with the treatment of the recent collecting data. It would be necessary to explore 1) which subspecies live on the area extending from Colombia to Uruguay, Brazil and to French Guiana; 2) how far the typical populations and those mixed with the other subspecies extend (e.g. the typical populations of *C. cubensis cubensis*, the intergrades and the same of *cubensis menkei* in Venezuela). Only then will be clear how the nominate species is replaced by the subspecies *menkei*.

Distribution. Cuba (Cresson 1865). Jamaica, San Domingo (Fox 1892). West Indies (Townes 1957). USA = Florida, Venezuela.

Ceropales (Bifidoceropales) cubensis agilis SMITH stat. n.

Ceropales agilis SMITH, 1864: 269 ♀; CRESSON 1867: 142 ♀, 1869: 379, 1891: 158 Tab. 10 Fig. 1 ♀; FOX 1892: 50, 56, 60 ♀; DALLA TORRE 1895: 90, 1897: 340 ♀; DREISBACH 1948: 234, 236 ♀♂; TOWNES 1957: 250.

Specimens examined: 3 ♀, 1 ♂. — Type material: MEXICO = "Type H. T." round label with red margin, "Mex." and on lower side "56/143", "C. agilis Sm. Type/Tourn. Ent. II. 269", "B. M. Type Hym. 19. 775", holotype ♀ (London). — Non paratypic material: Mexico = Cordova t.c. C[n] de Saussure, 2 ♀ (Geneva and Budapest).

Addition to the diagnosis: ♀. — Length 8.3 mm (with strongly compressed abdominal segments 4—6). Light colour yellow, and not white. Lower margin of the black labrum brownish yellow. The broad black longitudinal streak continuous between antennal sockets and labrum. Frons rather sharply bent below fore ocellus, here with deep and rather dense punctures. Head narrowed behind eyes. Frontal sulcus rather deep above antennae. Orbital groove present only as a fine shining line. Basis of mesonotum with scattered punctures. Scutellum slightly elevated above the level of notum and postscutellum. Propodeum convex on its one-fourth and flat on its declivous part, the longitudinal sulcus broadened basally into a deeply impressed short triangular and shining area. Basis of propodeum smooth, polished, lateral part of disc partly deeply and densely punctured. Metapleural suture distinct. On the basis of the established differences I suggest the new status.

Distribution. Mexico (SMITH 1864). Guatemala, Nicaragua (Cameron 1891).

Ceropales (Bifidoceropales) cubensis albopicta CRESSON

Ceropales albopicta CRESSON, 1869: 378 ♂; CAMERON 1891: 158; FOX 1892: 50, 54 ♂; DALLA TORRE 1895: 90, 1897: 340 ♂; DREISBACH 1948: 237

Ceropales cubensis albopicta: TOWNES 1957: 240, 250 Fig. 145 ♂ (design. of lectotype); KROMBEIN etc. 1979: 1569 ♂

Specimens examined: 40 ♀, 18 ♂. — Type material: MEXICO = "Mex.", "♂", "LectoTYPE 448" (sic!) red label, "Ceropales albopicta Cres", "ANSP" lectotype ♂ (Philadelphia). — Non paratypic material: MEXICO = Amula Guerrero 1 ♂ (London); Baja Calif. 1 ♀ (Coll. Wasbauer); Cordoba Vera Cruz 1 ♀ (Coll. Wasbauer); 8 m S Elota Sin 1 ♂ (London), 1 ♀ (Budapest); 12 ml N Hermanas Coah 1 ♂ (Budapest); Jelisho 2 ♀, 2 ♂ (Coll. Wasbauer); Sinalos Los Mochis 1 ♂ (Budapest); Sin Mazatlan 1 ♂ (Ottawa); Temax N. Yucatan, 3 ♂ (London); Yucatan Itzimna 2 ♀ (New York and Budapest); Yuc. 30 Ml S Merida 2 ♀ (Coll. Wasbauer and Budapest), 1 ♂ (Budapest). — CUBA = Lag. Ariguanabo Hab. 1 ♀ (Budapest) and 1 ♂ (Budapest); Cuabitas 1 ♂ and Santiago de las Vegas 1 ♀ (Habana). — BRITISH HONDURAS = Beliz = Belize Toledo Punta Gorda 14 ♀, 2 ♂ (London) and 4 ♀ (Budapest). — GUATEMALA = Coll. Ballion 1 ♀ (Tervuren). — EL SALVADOR = Quezaltepeque 1 ♀ (Budapest). — NICARAGUA = Managua 1 ♀ 16 Mi S Rivas 1 ♂ (Washington). — COSTA RICA = Cartago Prov Turrialba 3 ♀ (Coll. Wasbauer); Puntarenas 2 ♀ (Coll. Wasbauer and Budapest); 3 ♀ (London), and 1 ♀ (Budapest); La Caja San José 1 ♂ (Wien). — The great majority of collection dates are in May rarely, in the other months, except October and November.

Addition to the diagnosis — Instead of "head impunctate", frons with some rather shallow larger punctures and with a distinct hollow medially. Pronotal deepening laterally with distinct longitudinal wrinkles. Triangular area of propodeum continuing in a short, but rather broad sulcus, compared to the nominate species, disc deeply and densely punctured laterally above the distinct metapleural suture, and strongly concave medially on the declivous part. Smaller punctures rather weak especially on mesepisternum and more shining than in cubensis cubensis. Sternite 9 with white apical margin.

Interestingly the abdomen is ferruginous in two females (Costa Rica: Golfito), but the typical yellowish white band developed on each tergite. Abdomen and trochanters rarely (Mexico ♂) partly ferruginous. Posterior bands on abdomen broader in specimens from Nicaragua, but frons smooth, without punctures.

Distribution. Mexico (CRESSON 1869), Panama (CAMERON 1891). From Panama to southern Texas (TOWNES 1957). S. Texas to Panama, Baja, California (KROMBEIN etc. 1979). Cuba, Guatemala, Salvador, Honduras, Nicaragua and Costa Rica.

Ceropales (Bifidoceropales) cubensis cooperi ssp. n. ♂

Specimens examined: 16 ♂. — Type material: COSTA RICA = "Costa Rica Santa Rosa N. P. 300 m iii—v. 84 I. Gauld" holotype ♂ (London). — Paratypes: COLOMBIA = "Colombia: Llano Bajo nr. Buanaventura, 28. vii. 1974 M. Cooper B. M. 1974—548" 1 ♂ (London); "Colombia: Valle Anchicaya nr Buenaventura 300 m 13—14. 1. 1972 M. Cooper B. M. 1972—275" 1 ♂ (Hym. Typ. No. 3807 Budapest); "Colombia. Valle Rio Zabaletas ca. Buanaventura 26. VIII. 1975. Col. L. Stange" 1 ♂ (Tucuman). — Non paratypic material: with the same labels as the last male from Valle Rio, 1 ♂ (Budapest). — PERU = Dept. La Libertad Simbal Ca. Trujillo 4—7 Jul 1974 C. Porter and L Stange, 1 ♂ (Tucuman). — MEXICO = Atoyac, Vera Cruz, May, (paralectotype of *C. azteca* CAMERON), 4 ♂ (London); Cordova t.c. C^{n} de Saussure, 3 ♂ (Geneva) and 2 ♂ (Budapest); Guerrero: 46 km N Chilpancingo 4/6 Aug 1977 E. Fisher, P. Sullivan, 1 ♂ (Coll. Wasbauer).

♂. — Length 7.6—9.1 mm. Black, a broad spot on mandible basally, labrum, lower face entirely, including the large spot between antennal sockets and inner eye margin with an oval spot in ocular sinus, outer eye margin with a broader line on its basal half, antennal joints 1—2 broadly and 3 partly also below, posterior band on pronotum, hump, spot on scutellum, post-scutellum and posterior corners of propodeum, lower side of fore and middle coxae largely, two shorter streaks apically on hind coxae, ivory white; fore and middle femora with a longer streak outside, on fore tibia, tarsal joints 1—3 in front, middle tibia basally and apically, together with tarsal joints 1—3, a small and indistinct spot on hing femur apically, hind tibia basally and apically with tarsi, more yellowish white. Lower and lateral side of abdomen, as well as posterior margins of tergites narrowly yellowish ferruginous, tergites 1—6 largely black, 1—4 with broad sublateral, tergite 7 with large medial lemon-coloured spots, 5—6 with broad and sublaterally deeply notched apical bands; spots on tergites 2—4 shortly elongated towards the middle along the posterior margin (holotype). Wings slightly infuscated, veins darker, pterostigma lighter brown. Mesonotum with brownish, whereas propodeum, mesepisternum and ventral side of thorax with silvery pubescence.

Head just broader than long (53 : 50) and gradually narrowed behind eyes. Ocelli in a right angle, POL : OOL = 7 : 10. Frons distinctly bent below fore ocellus and slightly impressed transversally, hardly concave in lateral view, with a fine frontal sulcus, surface with very dense microscopically fine punctures, slightly shining, also with some distinct punctures. Antenna slender, flagellar joints about two and half times as long as broad basally. Pronotal disc smooth, polished, lateral deepening shallower than in *splendida* sp. n., with some fine wrinkles. Mesonotum with deep, partly dense punctures also in front, much denser laterally and scattered on mesepisternum. Propodeum slightly convex basally and flat, nearly concave on declivous part, medial sulcus forming a rather broad triangle basally, not reaching beyond the middle of segment, surface smooth and shining, disc with scattered fine punctures laterally. On metapleural suture a very fine line present. Last tergite convex. Ratio of length of fore tibia: tarsi = 30 : 40, that of hind ones = 40 : 50; claws of the middle legs normal, bifid.

♀. — Unknown.

The colour marking of the abdomen varies greatly. Posterior margins of tergites often ferruginous translucent; lateral spots of last tergites broadened, exceptionally to a deeply notched band sublaterally, one male (not paratype, from Colombia, Zabaletas) similar to the other paratypes, but abdomen entirely reddish ferruginous, without black, only tergites 1—4 with small white spots laterally, tergites 5—7 with larger spots medially; abdomen of some males (from Peru) entirely ferruginous, only tergite 2 basally blackish, tergite 1 with two small lateral, 7 with one larger ivory spot; one male (from Mexico: Guerrero) differs from the typical colouring of this ssp. by its nearly entirely black abdomen having lemon-coloured spots.

The status of this ssp. is unstable. The considerable similarity in the marking (especially on the abdomen) indicates an affinity (? or the parallelism) with *splendida* sp. n. However, the morphological differences between the males of *cooperi* and *splendida* (especially the form of the last tergites and the legs, the polished sculpture of the latter) seem to be more significant to separate them.

Distribution. Mexico, Costa Rica, Colombia and Peru.

Ceropales (Bifidoceropales) cubensis menkei ssp. n.

Specimens examined: 12 ♀, 14 ♂. — Type material: VENEZUELA = "Venezuela: Guarico Hato Masaguaral (44 km S Calabozo) May 11—19 1985 Menke and Carpenter" holotype ♀ (Washington). — Paratypes: with the same data, but "May 20—28" ♂ (allotype) and with "May 11—19" 5 ♀, 2 ♂ (Washington) and 3 ♀, 1 ♂ and 1 ♂ with "May 20—28" (Hym. Typ. No. 3808—3812 Budapest). — TRINIDAD = "Cane Farm Trinidad W. I. 24—2—1961 N. Gopaul Coll." 2 ♂ (Ottawa) and 2 ♂ (Hym. Typ. No. 3813—3814 Budapest); "Orange Grove 6 mi E. of St. Augustine", "Trinidad Oct. 1959" 1 ♂ (Ottawa). — COSTA RICA = "Costa Rica Puntarenas Prov. Golfito VII—4—1976", "Malaise trap 8am—2pm M. Wasbauer Coll." 1 ♀, 1 ♂ (Coll. Wasbauer) and 1 ♀ (Hym. Typ. No. 3815 Budapest). — Non paratypic material: VENEZUELA = Merida 11 Apr 1981 E. E. Grisell, food plant vegetation 1 ♂ (Budapest) and the same locality, date but A. S. Menke, L. Hollenberg Coll. 1 ♂ (Washington). — ECUADOR = Prov. Limoncocha on Rio Napo 9 Jan 1974 B. A. Drummond, 1 ♀ (Coll. Wasbauer).

♀. — Length 8 (holotype), 7—9.5 (paratypes) mm. Black, mandible largely (except the ferruginous apex and a black spot basally), labrum only laterally, clypeus (except the trace of a brownish spot), supraclypeal area (except the basal spot below antennal sockets), a spot between sockets, inner eye margin with an oval spot with pointed apex in ocular sinus, antennal joints 1—2 below, outer eye margin with a broader line on the first half, posterior band on pronotum, hump, a minute spot on tegula, spot on scutellum, on post-scutellum, on propodeum medioposteriorly and on lateral corners, fore coxa below (except the ferruginous oblique streak basally below), smaller spots apically on middle and hind coxae, minute spots of fore and middle femora apically outside and on fore, as well as middle tibia basally and apically, yellowish white; a rectangular, large sublateral spot on tergite 1, in front slightly but posteriorly deeply emarginated, apical bands on tergites 2—4 broader laterally, narrower medially and deeply emarginated sublaterally, two lateral and one medial spot on tergite 5, and a large medial spot on tergite 6, lemon-coloured in front and whitish posteriorly. Abdominal sternites largely, legs nearly entirely ferruginous, except the black fore coxa and the middle area partly basally. Last joint of hind tarsi brownish infuscated. Wings hyaline, slightly infuscated apically, veins brown, pterostigma yellowish brown. Mesonotum with brownish, frons, propodeum and ventral side of thorax with silvery pubescence.

Head broader than long (57 : 48) and gradually narrowed behind eyes. Ocelli in an obtuse angle, POL : OOL = 8 : 10. Frons rather sharply bent below fore ocellus, slightly concave in lateral view, frontal sulcus fine with a deeper medial pit, surface rather mat with very dense and microscopically fine punctures and also with scattered, deep punctures. Vertex with fine scattered punctures. Antenna slender, flagellar joints basally two-and-a-half times longer than their breadth. Pronotal disc with rather dense and distinct punctures, lateral deepening shallow, smooth, polished, with some fine wrinkles and fine punctures. Mesonotum with scattered, laterally partly with denser and deep punctures. Punctures of mesepisternum larger and more scattered. Propodeum convex basally in lateral view, flat and slightly impressed medio-posteriorly, with deep sulcus deep basally and hardly reaching to the middle of segment. Metapleural suture distinct. Last abdominal segments strongly compressed laterally, elongated tip truncated. Claws bifid.

♂. — Length 5.8—6.5 mm. Very similar to the female, but differs from in the following features. Mandible, labrum often entirely yellow. Mesonotum with a longitudinal streak posteriorly. Middle round light spot on propodeum posteriorly sometime absent. Light marking also on tergites entirely lemon-coloured, tergite 7 also with a spot, spots on coxae, on fore and middle femora larger; fore and middle tarsal joints 1—3 largely, fore tibia in front, middle tibia basally and apically lemon-yellow. Middle coxa largely black above. Sternites black. Punctures of frons finer. Antenna slender, flagellar joint 1 distinctly shorter than 2 (9 : 10), the other joints about two-and-a-half times longer than their breadth (10 : 4). Propodeal sulcus deeper. Last tergite convex. Sternite 9 with strongly convergent lateral sides, and rather acutely pointed apex.

The colour and the sculpture vary sometimes. The light bands of abdomen more whitish (partly so on females from Venezuela), than lemon-coloured (on females from Costa Rica). Two males from Merida and Mexico (Vera Cruz) differ from the others by the black and not ferruginous hind coxa. Several females originating from the same population as the holotype differ by the slightly longer and more distinct wrinkles in the pronotal lateral deepening, by the various amount of black spots on clypeus and exceptionally also on labrum.

Distribution. Costa Rica, Venezuela, Trinidad and Ecuador.

Ceropales (Bifidoceropales) cubensis vardyi ssp. n.

Specimens examined: 3 ♀, 5 ♂. — Type material: PERU = "N. W. Peru Trujillo city 30. iv 83 c. and M. Vardy B. M. 1983—217" holotype ♀ (London). — Paratypes: with the same data 1 ♂ (allotype) and 1 ♂ (Hym. Typ. No. 3816 Budapest); "Peru: Lambayeque 1 km S Lambayeque Carattera Panamericana 23. VII. 1975 Col. C. Porter—L. Stange", "Collection Fundación M. Lillo 4000 S. M. Tucumán TUCUMAN AGRENTINA" 1 ♂ (Tucuman) and 1 ♀ (Hym. Typ. No. 3817 Budapest). — URUGUAY = "No 1164-U Montevideo So Amer. Paras. Lab. Date 8—20—44 Host Berry" 1 ♀ (Washington). — Non paratypic material: PERU = Rio Moche 4 km Trujillo 1 Maj 1983 C. and M. Vardy, 1 ♂ (London). — ECUADOR = Guayaquil Jan 1901 Buchwald, 1 ♂ (Budapest).

♀. — Length 9.1 (holotype)—10 mm. Black, a spot on base of mandible, labrum (except central part basally), clypeus (except a longitudinal streak medially), supraclypeal area (except the triangular area below antennal sockets), inner eye margin broadened in ocular sinus and truncated apically, a small spot between antennal sockets, outer eye margin narrowing on the upper half, antennal joints 1—2 below, band and spots on thorax as in nominate species, only mesonotum with a longitudinal streak posteriorly, yellowish white. Sublateral and reniform spot before posterior margin on tergite 1, posterior bands of tergites 2—5, namely on 2 slightly emarginated (holotype) or interrupted (paratype) medially, on 2—3 (4) deeply notched sublaterally, on 5 (or on 4—5) interrupted sublaterally, tergite 6 largely medially, a broad streak on fore coxa in front, smaller spots on middle and hind coxae apically, smaller spots on fore and middle femora apically, fore tibia in front, ivory white. Fermora (except the apical black spot on middle and hind legs), lower side of fore tibia and a narrow streak inside and outside (holotype) or lower side largely (paratype) of the middle tibia ferruginous, elsewhere legs black. Wings, pubescence as in nominate species. Frons medially deeply and very densely punctured, in contrast with the scattered punctures of nominate species. Lateral deepening of pronotum broader, longitudinal wrinkles slightly longer than in c. cubensis Cresson. Sculpture of body sometimes also not differing from the nominate sp.

♂. — Length 6.5—7.2 mm. The yellowish white markings of head and thorax identical with those of the female, but differ from *c. cubensis* by the yellow spots on mandible and on mesonotum posteriorly; sometimes two minute yellow streaks appear also on postscutellum behind the large transversal streak. Also the ivory white bands of tergites similar to those of the female, but the bands usually narrower and often interrupted on tergites 5—6 (7) sublaterally. Also all coxae, trochanters black, but the apical white spot smaller. Compared with the female the black parts reduced, the white and ferruginous colour extended on femora-tarsi, but less light than in nominate species. Fore and middle femora with larger white spots apically in front, also fore tibia outside largely, middle tibia basally and apically, as well as fore and middle tarsal joints 1—3 largely yellowish white, 4—5 ferruginous, only hind tibia black above, and hind tarsal joints brownish infuscated above, and pale ferruginous below. Sculpture similar to female, only the punctures of frons not uniformly deep and dense, but shallower on allotype, distinctly deeper and denser on the specimens from Peru (Lambayeque) and from Ecuador; more scattered on male from Peru (Trujillo city, collected at the same time and in the same biotope as allotype!), or punctures hardly perceptible on male from Peru (Rio Moche, 4 km from Trujillo). Sternite 9 pointed in a slight acute angle apically.

Distribution. Ecuador, Peru and Uruguay.

Ceropales (Bifidoceropales) declivis HAUPT

Ceropales declivis HAUPT, 1934: 11 ♂ Fig. 7, 1938: 10 ♂,
Bifidoceropales declivis: MÓCZÁR 1985: 46 ♀♂

Specimens examined: 2 ♀, 3 ♂. — Type material: CHINA = "Kina N. O. Szechuan", "Sven Hedins Exp. Ctr. Asien Dr. Hummel", "1/6", "Holotype", "declivis Hpt. det. Haupt, 1933" holotype ♂ (Stockholm). — Non paratypic material: S. INDIA = S. Malabar 1 ♂ (Ottawa). — SRI LANKA = 2 ♀ 1 ♂ (Budapest) (further localities: MÓCZÁR 1985). — The collection dates are limited to September and May.

Distribution. N. E. Sechuan, China (HAUPT 1934). S. India, Sri Lanka, Taiwan (MÓCZÁR 1985).

Ceropales (Bifidoceropales) elegans elegans CRESSON

Ceropales elegans CRESSON, 1872: 208 ♀; PATTON 1879: 367 ♂ nov.; FOX 1892: 50, 58, 61 ♀♂; DALLA TORRE 1895: 91, 1897: 342 ♀♂; DREISBACH 1948: 235, 236 ♀♂.
Ceropales Cressoni FOX, 1892: 50, 58, 61 ♀♂; DALLA TORRE 1895: 90; DREISBACH 1948: 235, 236 ♀♂, 1948: 248; TOWNES 1957: 257 ♀♂ (as syn., design. of lectotype ♂).
Ceropales elegans elegans: TOWNES, 1957: 240, 256, 257 Fig. 150 ♀♂; KROMBEIN etc. 1979: 1569 ♀♂.

Specimens examined: 12 ♀, 14 ♂. — Type material: USA = "Texas", "HOLOTYPE 451", "C. elegans Cr.", "ANSP" holotype ♀ (Philadelphia). — Non paratypic material: USA = Arizona = Cochise Co on *Helianthus annus* 3 ♀ (Coll. Wasbauer) and 1 ♀ (Budapest). — California = Artois Glenn on *Foeniculum vulgare* 2 ♀, 8 ♂ (Coll. Wasbauer) and 1 ♀, 3 ♂ (Budapest) Danville 1 ♀ (Coll. Wasbauer); Davis 1 ♂ (Budapest); Payette 1 ♀ (Budapest); Petaluma, Sonoma Co. 1 ♀, 1 ♂ (Budapest); Galt, Sacramento Co. 1 ♀ (Budapest); Imperial Co. 1 ♂ (Budapest). — The collection dates continue from May to August.

Addition to the diagnosis: Length 13.7 mm (holotype). Ocelli in a flat obtuse angle, frons without punctures; scutellum and postscutellum distinctly raised above the level of notum; propodeum strongly curved over its one-third flat on its declivous two-thirds; sulcus forming a rather flat obtuse angle basally. Last abdominal segment with a projected apical part.

Distribution. USA (Texas) (CRESSON 1892). Nebraska, Washington (Fox 1892). Pacific to 100° W in U. Austr. and L. Austr. Zones (KROMBEIN etc. 1979).

Ceropales (Bifidoceropales) elegans aquilonia TOWNES

Ceropales elegans aquilonia TOWNES, 1957: 240, 256 Fig. 257; KROMBEIN etc. 1979: 1569 ♂.

Specimen examined: 1 ♂. — Type material: CANADA = Alberta = "Tilley, Alta 9 VII. 1941 J. L. Carr.", "Ceropales elegans aquilonia Tow. Type" with Townes's writing, "Type No. ♂ 61800 U. S. N. M." red label, holotype ♂ (Washington).

Addition to the diagnosis: ♂. — Length 8.3 mm. Narrow streak on metapleural suture, small spots on anterior corners of mesonotum near to tegulae, yellow. Basis of abdomen black, declivous part of tergite 1 ferruginous, disc yellow. Pronotum, mesonotum, mesepisternum with deep and rather dense punctures. Metapleural suture hardly distinct. Propodeum laterally with scattered punctures, sternite 9 rounded and slightly emarginated apically.

♀. — Unknown.

Distribution. Canada = Alberta. USA = Minnesota (TOWNES 1957).

Ceropales (Bifidoceropales) elegans quaintancei VIERECK

Ceropales quaintancei VIERECK, 1902: 275 ♂ Fig. 151. — *Ceropales quaintencii* (sic !): DREISBACH 1948: 236
Ceropales elegans quaintancei: TOWNES 1957: 240, 258 ♀♂. Fig. 151 (on *Melilotus alba*); KROMBEIN etc. 1979: 1569 ♀.

Distribution. Maryland (VIERECK 1902). Middle and eastern USA (Carolinan and Austroriparian faunas, TOWNES 1957). Middle USA to Florida, Illinois, Kansas (KROMBEIN etc. 1979).

Ceropales (Bifidoceropales) femoralis CRESSON

Ceropales femoralis CRESSON, 1869: 378 ♂; CAMERON 1891: 159; FOX 1892: 50, 55 ♀♂; DALLA TORRE 1895: 91, 1897: 342 ♀♂; DREISBACH 1948: 235, 236 ♀♂; KROMBEIN 1951: 142 (on *Tourmeyella liliodendri*); EVANS 1955: 17 ♂ (on *Cassia*); TOWNES 1957: 241, 266 Fig. 157 ♀♂; KROMBEIN etc. 1979: 1569 ♀♂
Ceropales foxii ROHWER, 1916: 369 ♂ (as syn. by TOWNES 1957); DREISBACH 1948: 235, 238 ♀♂; TOWNES 1957: 266 ♂.

Specimens examined: 29 ♀, 11 ♂. USA = Arizona = Portal Cochise Co. 2 ♀, 2 ♂ (New York). — California = Opelousas 1 ♂ (Budapest) Siskiyou 1 ♀ (Coll. Wasbauer). — Florida = Alachua 4 ♀ (Coll. Wasbauer) 1 ♀ (Budapest); Gainesville 4 ♀ (Coll. Wasbauer),

1 ♀ (Budapest). — Missouri = Columbia 2 ♀, 3 ♂ (Coll. Wasbauer) and 1 ♀ (Budapest). — New Mexico = Hidalgo Co. 1 ♀ (New York). — Texas = McKittrich Canyon Culberson Co. 1 ♀ (Budapest); Uvalde Co. 1 ♀ (Coll. Wasbauer). — MEXICO = Jalisco Chamela 1 ♂ (Coll. Wasbauer). — COSTA RICA = Puntarenas Prov. Golfito 2 ♀, 1 ♂ (Coll. Wasbauer); S. Isidoro 1 ♀ (Wien); S. Rosa Park 2 ♀, 1 ♂ (Budapest), 2 ♀ (Coll. Townes), 3 ♀, 2 ♂ (London). — Most of the specimens were captured in September, July and May; no dates were found between February and April and in June.

Distribution. Mexico, Orizaba (CRESSON 1869). Colorado, Wash. (Fox 1892). From Virginia to Kansas and southward to Panama (Townes 1957). Costa Rica.

Ceropales (Bifidoceropales) grenadensis sp. n.

Specimens examined: 1 ♀. — Type material: GRENADA = "Nouvelle Grenade Etat Cundinamarca Cananche M. de Mathan 1er Sem. 1900" holotype ♂ (Hym. Typ. No. 3818 Budapest).

♂. — Length 10.7 mm. Black, mandible with a large spot, labrum, lower face entirely, inner eye margin and ocular sinus with pointed apex, outer eye margin with a broader streak below, a large spot between antennal sockets, antennal joints 1—3 below, medially, slightly emarginated posterior band of pronotum hump, small spot on scutellum, transversal line on postscutellum, lateral corners of propodeum, a small spot on tergite 7 medially, tergite 1 with a very narrow and medially broadly interrupted line, as a trace of a possible band, fore coxa largely below, middle coxa with a lateral streak, hind coxa with an apical spot, fore trochanter, femur, tibia and tarsi outside largely, middle femur and tibia apically, metatarsus outside, yellowish white. Abdomen ferruginous red, tergite 2 partly irregularly blackish. Legs largely ferruginous including hind coxa, except the small basal black spot, tarsal joints 2—4 of the hind leg basally and 5 largely brownish infuscated. Wings slightly infuscated, veins brown, pterostigma lighter brown. Propodeal disc, mesepisternum with silvery pubescence; lateral deepening before hind wings and postscutellum with silvery hairs.

Head broader than long (75 : 65, without labrum), rounded and gradually narrowed behind eyes. Ocelli in an acute angle, POL : OOL = 10: 12. Frons slightly impressed transversally below fore ocellus; between the yellowish white spots of ocular sinus with very dense and microscopically fine, as well as with few deeper punctures; frontal sulcus hardly developed. Flagellum slender, basal flagellar joints three times as long as their breadth. Pronotal disc smooth, shinning, with some scattered fine punctures, lateral deepening rather narrow, but with some distinct longitudinal wrinkles. Mesonotum with scattered deeper and in lateral and longitudinal deepening with denser punctures. Propodeum convex basally in lateral view, rather shining and with rather dense and deep punctures laterally, behind spiracle; medial sulcus deep, forming a triangle basally and reaching nearly the middle of segment; declivous part with some fine semicircular wrinkles. Metapleural suture developed only on its two-thirds posteriorly. Mesepisternum with scattered deeper punctures. Fore and middle tarsal joints relatively short, slightly longer together than the length of respective tibiae; fore tarsi: tibia = 50 : 45, middle tibia: tarsi = 70 : 60. Claws of the middle legs normal bifid.

♀. — Unknown.

Distribution. Grenada.

Ceropales (Bifidoceropales) hatoda BRIMLEY

Ceropales hatoda BRIMLEY, 1928: 201 ♂, 1936: 111 ♂; DREISBACH 1948: 238; TOWNES 1957: 241, 267 Figs 158 ♀♂; KROMBEIN 1958: 51 ♀♂, 1963: 271 (probably soc. parasite of *Ageniella (A.) partita* BANKS) ♀♂, KROMBEIN etc. 1979: 1569 ♂.

Specimens examined: 2 ♀, 2 ♂. USA = Kentucky = Golden Pond 1 ♂ (Budapest). — New York = Ulster Co. 1 ♀, 1 ♂ (New York). — All specimens were captured in August and September.

Distribution. N. Carolina (BRIMLEY 1928). New York — North Carolina, Minnesota (TOWNES 1957).

Ceropales (Bifidoceropales) isolde isolde (BANKS) ♀

Ceratopales isolde BANKS, 1945: 110 ♀, 1947: 465, 477

Specimens examined: 9 ♀. — Type material: COLOMBIA = "Muzo Dept. Boyaca alt. 900 M.", "Colombia VII 1936 J. Bequaert Collector", "M. C. Z. Type 26594" red label, holotype ♀ (Cambridge). — Non paratypic material: MEXICO = Sin. 20 mi E. Concordia 2 ♀ (Ottawa and Budapest) — COSTA RICA = Santa Rosa Nat. Pk. 1 ♀ (London). — COLOMBIA = Llano Bajo nr. Buenaventura 1 ♀ (London) — VENEZUELA = Guarico Hato Masaguaral 1 ♀ (Budapest); Zulia Rosario 1 ♀ (Washington). — ECUADOR = San Lorenzo 2 ♀ (Coll. Townes and Budapest). — The collection dates originate from May to August, mainly from June.

Additions and some corrections to the diagnosis: The light colour yellowish white. Instead of "No pale marks on the rufous abdomen": tergites 1—2 with distinct pale yellowish bands strongly broadened laterally and on tergite 2 also medially, partly indistinct on 2 laterally, distinct on tergite 3 laterally and with a trace on the posterior margins of the further tergites, also partly of sternites. Only fore coxa largely black, with a narrow ferruginous streak along white spot below; lower side of the middle and hind coxae largely ferruginous. POL : OOL = 8 : 12. Propodeal disc laterally with rather deep but less dense punctures than in ssp. *surinamensis*. Mesonotum smooth basally. Lower part of mesepisternum with remarkably scattered punctures compared to ssp. (holotype). — All coxae of the specimens with the same colour as holotype, whereas all coxae, fore and middle trochanters largely black (in specimens from Ecuador, Costa Rica, Mexico, Colombia) and hind coxa partly ferruginous (in specimens from Mexico and Colombia).

Distributio n. Colombia (BANKS 1945). Ecuador, Venezuela Costa Rica and Mexico.

Ceropales (Bifidoceropales) isolde surinamensis ssp. n.

Specimens examined: 12 ♀, 2 ♂. — Type material: SURINAME = "Suriname Paramaribo Ma Retraite Swamp forest 18—23 Febr. 1964 D. C. Geijskes", "Malaise trap" holotype ♀ (Leiden). — Paratypes: "Suriname, Kwatta Road to sea Mangrove forest 5—8 Febr. 1964 D. C. Geijskes", "Malaise trap" 1 ♂ (allotype) (Leiden); the same data as allotype with date "18—24 Febr" 1 ♀ (Leiden); with "13—16 mrt" 1 ♀ (Hym. Typ. No. 3826 Budapest); "Suriname Paramaribo Ma Retraite 27 Feb-1 mrt 1964 D. C. Geijskes", "Malaise trap" 1 ♀ (Hym. Typ. No. 3827 Budapest); the same data only with date "4—8 mrt" and "Geijskes" 1 ♀ (Leiden); with "13—15 mrt" 1 ♀ (Hym. Typ. No. 3828 Budapest); with "16—19 mrt" 1 ♀ (Leiden) and with "20—23 mrt" 2 ♀ (Leiden); "Republic Suriname, 45 km S Paramaribo Nov 1 1963 D. C. Geijskes" 1 ♀ (Coll. Townes). — BRIT. GUIANA = "Brit Guiana: Issororo", "June 1916", 1 ♂ (Hym. Typ. No. 3829 Budapest). — ECUADOR = "Ecuador Guayaqil 3. 1901 Buchwald" 1 ♀ (Wien). — MEXICO = "Mex. Itzimna Yucatan IX—5—1964" "Collectors: J. C. and Pallister" 1 ♀ (New York).

♀. — Length 10 mm (holotype). Black, clypeus (except a broad streak medially), lower half of supraclypeal area, inner eye margin with a larger spot in ocular sinus with truncate apex, outer eye margin, a spot between antennal sockets, antennal joints 1—2 below, hump, narrow band on pronotum posteriorly, a minute spot on scutellum, a transverse streak on postscutellum, posterior corners of propodeum, lower side of fore coxa largely, small streaks on middle coxa apically, on trochanter apically, as well as fore and middle femora only apically outside, yellowish white; abdomen and legs ferruginous, only fore coxa largely and middle coxa basally black, hind tarsal joints brownish infuscated. Lower margin of labrum narrowly and tegula brownish. Wings slightly infuscated, veins brown, pterostigma light brown. Mesonotum with brownish, body otherwise with silvery pubescence.

Head broader than long (68 : 58), strongly narrowed behind eyes. Ocelli in a right angle. POL : OOL = 8 : 12. Frons with larger deep and dense (in smaller specimens less dense) punctures, with fine frontal sulcus and with a small pit medially, surface slightly impressed transversally and also with very dense, fine punctures. Vertex with finer, scattered, between ocelli with denser punctures. Antenna slender, flagellar joints basally about two-and-a-half times as long as broad (17 : 7). Pronotal disc partly with finer, partly with deeper punctures, lateral deepening broadly concave with distinct longitudinal wrinkles. Middle and lateral third of mesonotum raised longitudinally, with dense punctures than being distinctly larger and deeper on frons, similarly to mesepisternum. Scutellum raised above the level of mesonotum-postscutellum, in lateral view. Propodeum slightly convex basally, shining, with microscopically fine and very dense punctures; sulcus not reaching the middle of segment, surface

with remarkably deep, dense and large punctures also inside of spiracles. Metapleural suture well developed. Last segment compressed laterally, elongated and rounded apically. Legs normal, claws bifid.

♂. — Length 6.8 mm (allotype). Similar to the female, but differs as follows: mandible with an oblique yellowish streak, labrum, lower face entirely, a spot on lower side of antenne, joint 3 basally, a large spot on tergite 7, a trace of a very narrow streak on tergite 1 posteriorly, anterior tibia, metatarsus outside and middle metatarsus yellowish white. Sculpture similar to the female, only POL : OOL = 7 : 9. Tergite 7 convex, apex of sternite 9 pointed nearly in a right angle.

On some paratypes the black spot on supraclypeal area connected with the clypeal longitudinal streak or sometimes there are two small yellowish white spots on labrum laterally; exceptionally tergite 1 (2) with a trace of a very narrow pale yellowish band.

Distribution. Suriname, British Guiana and Ecuador.

Ceropales (Bifidoceropales) levipleuris Wahis ♂

Ceropales (Bifidoceropales) levipleuris Wahis, 1987: 216 Fig 3

Specimen examined: 1 ♂. — Type material: MALGASY REP. = "Madagascar: Tul Berenty 12 km N. W. Amboasary", "J. S. Noyes, M. C. Day 5—15. v. 1983. B. M. 1983—201", "R. Wahis dt. 84 HOLOTYPE Ceropales levipleuris mihi ♂" holotype ♂ (London).

Distribution. Malgasy Rep. (Wahis 1988).

Ceropales (Bifidoceropales) longipes Smith

Ceropales fasciata Say, 1824: 333 (nec Fabricius, syn. by Cresson 1867); Conte 1859: 333.
Ceropales longipes Smith, 1855: 179 ♀; Cresson 1867: 139 ♀; Walsh 1869: 163 ♀♂ (on *Umbelliferae)*; Provancher 1883: 810 ♀, 1889: 264; Fox 1892: 49, 50, 55, 61 ♀♂; Dalla Torre 1895: 91, 1897: 342 ♀♂; Brimley 1936: 111, 112 ♂; Dreisbach 1948: 235, 238, 249 ♀♂; Townes 1957: 240, 252 Fig. 146 ♀♂, 1963: 115; Krombein etc. 1979: 1569 ♀.

Specimens examined: 4 ♀, 2 ♂. — Type material: USA = "Georgia", "Type H. T." round label with red margin, "longipes Sm. type", "B. M. Type Hym. 19. 773" holotype ♀ (London). — Non paratypic material: USA = Illinois = 1 ♂ (Geneva). — Kentucky = Golden Pond 1 ♀ Budapest. — Missouri = Columbia 2 ♀ (Coll. Wasbauer and Budapest). — North Carolina = Crabtree Mds Yancey 1 ♂ (Budapest). — The specimens were captured in August and June.

Addition to the diagnosis: ♀. Length 9.1 mm (holotype). Lower face entirely lemon-yellow (♂) (except a black spot with W-formed lower margin below antennae ♀). Posterior yellow margin of pronotum emarginated in front medially. Breadth and length of head = 64 : 56. Ocelli in an obtuse angle. Temple narrow. Lateral deepening of pronotum shallow, with some fine (♀) or sharp (♂) wrinkles. Disc of propodeum with deep punctures posterolaterally. Metapleural suture distinct (♀) or rather deep (♂).

Distribution. USA, Georgia (Smith 1855). Florida, Illinois (Cresson 1867). Toronto (Provancher 1883). USA, Kentucky, New Jersey west to Missouri (Townes 1957).

Ceropales (Bifidoceropales) luctuosa luctuosa Smith, ♀ nova

Ceropales luctuosus Smith, 1864: 269 ♂; Fox 1892: 61; Dalla Torre 1895: 91, 1897: 343 ♂.
Ceropales pedestris Smith, 1873: 52 ♂ (syn. by Day, person. commun.), Dalla Torre 1895: 92, 1897: 346 ♂.

Specimens examined: 7 ♀, 7 ♂. — Type material: BRAZIL: "Ega 58/6", "Type H. T." round label with red margin, "C. luctuosus Type Sm. Tourn. Ent. II. 269", "B. M. Type Hym. 19.779" holotype ♂ (London). — Non paratypic material: SURINAME = Phedra 28 Nov—7 Dec 1964 D. C. Geijskes 1 ♀ (Leiden). — PERU = Oxapampa, 1 ♀ (Budapest). — BRAZIL = Pará, Icareacanga Dec 1968 M. Alvarenga, 1 ♂ (Coll. Townes); Sinop. M. Grosso Oct 1974 M. Alvarenga, 3 ♀ (Coll. Townes), 1 ♀, 1 ♂ (Budapest), Oct 1975 2 ♂ (Coll. Townes), Feb. 1976 1 ♀, 1 ♂ (Coll. Townes) and 1 ♂ (Budapest).

Additions to the diagnosis (♂): Length 8.3 mm (holotype). Veins of wings brown, not black. Basis of mandible black with an ivory spot. Posterior margin of

pronotum white (with four minute white spots on holotype). Disc of propodeum with metallic blue tint. Middle and hind femora, and hind tibia-tarsi black. Frons very densely punctured and with some larger, shallower punctures. Ocelli in a right angle. Pronotum laterally with a more or less Y-shaped, deep and sharply defined furrow. Scutellum conspicuously conically elevated having a pointed top. Postscutellum only normally elevated. Propodeum nearly flat, only slightly convex on its one-third, with a short and broad obtuse angularly formed deepening basally continuing in a short sulcus; disc with larger and shallower punctures posteriolaterally. Metapleural suture well developed. Tergite 7 convex, sternite 9 pointed apically and concave ventrally.

♀. — Length 10.4—12 mm. Similar to male. Labrum with an apical triangular spot. Pronotal band sometimes interrupted sublaterally, or the spots lacking on hump, on top of scutellum, postscutellum or on mesepisternum. Bands broader on tergites 4—5 and mostly not interrupted medially but deeply emarginated sublaterally. Lateral streaks elongated on sternites touching nearly the middle and also deeply emarginated sublaterally. Fore and middle tibiae and tarsi richly coloured with ivory streaks.

Frons moderately broken below fore ocellus and flat, the scattered and shallow punctures mostly hardly discernible, with a feeble torus nearly parallel with the eye margin above. Lateral deepening of pronotum shallower, broader and with longitudinal wrinkles; pronotal disc, mesonotum, mesepisternum usually with finer punctures or punctures rarely as deep as in male (both of them collected in the same locality only in two consecutive years). Last abdominal segment strongly compressed laterally, with slightly truncated apex, lower margin hardly curved, in lateral view.

Distribution. Brazil (SMITH 1864), Suriname and Peru.

Ceropales (Bifidoceropales) luctuosa brasiliensis ssp. n.

Specimens examined: 18 ♀, 5 ♂. — Type material: BRAZIL = "Sinop, M. Grosso 12° 31′ S 55° 37′ W Oct 1975 Brazil M. Alvarenga" holotype ♀ (Coll. Townes). — Paratypes: with the same data: 6 ♀ 3 ♂ (also allotype) (Coll. Townes) and 2 ♀, 2 ♂ (Hym. Typ. No. 3819—3822 Budapest); with the same locality and collector only the date "X. 1974" 6 ♀ (Coll. Townes) and 1 ♀ (Hym. Typ. No. 3823 Budapest); with date "II. 1976" 1 ♀ (Coll. Townes); and "Vilhena, Rond. XI. 73 Brazil M. Alvarenga" 1 ♀ (Coll. Townes).

♀. — Length 8.3 mm (holotype). Mandible, labrum, lower face entirely, including the spot between antennal sockets and inner eye margin, antennal joints 1—2 below, pronotal hump largely, posterior margin only partly and narrowly, small spots on scutellum, postscutellum, posteriolateral corners of propodeum, lateral spots on tergites 1—2 (larger, elongated and medially emarginated inside on 1), 3—4 with two smaller spots medially and two larger, also separated spots laterally, on 5 a sublaterally, deeply noched broad band, tergite 6 nearly entirely, fore and middle coxae largely below, hind coxa with a V-shaped broad line apically, broad streak on fore femur in front, fore and middle tibiae, tarsal joint entirely, 2—5 in front, ivory. Fore tibia, tarsi inside brownish. Abdomen black ventrally, brownish red translucent partly laterally. Wings and pubescence similar to the other species.

Head hardly broader than long (45 : 43), strongly narrowed behind eyes. Ocelli in an acute, nearly right angle, POL : OOL = 6 : 7. Frons moderately bent below fore ocellus. Frons, also thorax only slightly shining owing to the microscopically fine and very dense minute punctures. Frons also with scattered shallower punctures, frontal sulcus fine, more distinct only medially and anteriorly. Antenna slender, basal flagellar joints hardly longer than three times of its breadth (13 : 4). Pronotum more finely and deeply, but more sparsely punctured than mesonotum, lateral deepening hardly deeper and narrower behind hump, than in nominate species and whit some distinctly shorter longitudinal wrinkles. Mesonotum with deep and dense, mesepisternum with larger, scattered punctures. Scutellum hardly less raised than in *l. luctuosa*. In lateral view disc of propodeum with blue metallic tint, only quadrangularly convex, its shallow and scattered punctures behind spiracle, fine sulcus reaching about the middle of segment. Metapleural suture distinct.

♂. — Length 5.8—6 mm. Similar to the female, but light colour lemon-yellow and more extensive on thorax. Posterior bands of tergites usually fall to two smaller spots medially and two larger ones laterally on tergites 1, 3, spots on 1 strongly elongated in front, on 2 only two spots laterally on 4—7 deeply notched or partly interrupted spots sublaterally. All coxae basally and trochanters black with lemon-coloured spots, legs largely ferruginous, the last tarsal joints of fore and middle legs, also ferruginous, tarsal joints 3—5 of hind lef brownish infuscated, elsewhere the light spots of legs situated as in female.

Head as broad as long (38 : 38). POL : OOL = 4 : 5. Length (and breadth) of flagellar joint 1 = 9 (3). Sculpture identical with the female, only the larger punctures on frons and on propodeum finer, hardly discernible. Tergite 7 and sternite 9 as in *l. luctuosa.*

Distribution. Brazil.

Ceropales (Bifidoceropales) mexicana Cresson

Ceropales mexicana Cresson, 1869: 377 ♀♂; Cameron 1891: 159; Fox 1892: 50, 54 ♀♂; Dalla Torre 1895: 91, 1897: 344 ♀♂; Dreisbach 1948: 236, 237 ♀♂; Townes 1957: 263.

Specimens examined: 1 ♀, 7 ♂. — Type material: MEXICO = "Mex.", "Lectotype 447" red label, "Ceropales mexicana Cres." lectotype ♀ (Philadelphia). — Non paratypic material: MEXICO = Cordova 1 ♂ (Geneva); Orizaba 2 ♂ (Wien and Budapest); Puebla 1 ♂ (Coll. Wasbauer). — GUATEMALA = Coll. Ballion 2 ♂ (Tervuren) and 1 ♂ (Budapest). — The specimens were collected in September and May.

Addition to the diagnosis — ♀: Length 11 mm. Ocelli in an obtuse angle. Orbital groove not developed. Lateral deepening of pronotum with about three long and distinc wrinkles behind tubercle. Frontal sulcus very weak. Basis of propodeum moderately convex on its one-fourth, and flat on the declivous part; triangular area broad with arcuate wrinkles, sulcus short and shallow; lateral part of disc with shallow larger punctures. Metapleural suture distinct. Labrum with a black spot medially (♀) or entirely yellow (♂).

Distribution. Mexico (Cresson, 1869), Guatemala.

Ceropales (Bifidoceropales) nigripes Cresson

Ceropales nigripes Cresson, 1867: 139 ♀, 1872: 208 ♀; Fox 1892: 49, 57, 62 ♀; Dalla Torre 1895: 91; Banks 1919: 248 *(Ceratopales);* Dreisbach 1948: 234, 236 ♀♂, 249; Townes 1957: 240, 259 Fig. 152 ♀♂; Krombein etc. 1979: 1570 ♀♂ (on *Tamarix gallica, Melilotus alba, Sphaeraclea angustifolia, Erigonum* sp., *Asclepias verticillata* and *Asclepias sp.*).

Ceropales texana Cresson, 1872: 208 ♂ (as syn. by Townes 1957); Patton 1879: 351 ♂; Fox 1892: 50, 51, 62 ♂; Dalla Torre 1897: 345

Specimens examined: 6 ♀, 3 ♂. USA = Colorado = Turkey creek 1 ♀ (Budapest). — Illinois = Danville 1 ♀ (Coll. Wasbauer). — Kansas = Morton Co 1 ♀ (Budapest); Peka 1 ♀ (Coll. Wasbauer). — Nevada = Nixon Washoe Co 1 ♂ (Coll. Wasbauer) and 1 ♂ (Budapest). — Texas = Belfrage, 1 ♂ (Budapest); Dalhart Rita Blanca 1 ♀ (New York); 10 mi N Pecoa on *Robina*, Wasbauer, 1 ♀ (Coll. Wasbauer). — The collection dates are between June and October, most of them in June.

Distribution. USA, Dakota (Cresson 1867); Texas (Cresson 1872); Western U. S., Washington, Kansas (Fox 1892); Upper and Lower Sonoran fauna Middle and West USA (Townes 1957).

Ceropales (Bifidoceropales) pacifica Townes

Ceropales pacifica Townes, 1957: 240, 264 ♀♂ Fig. 264; Krombein etc. 1979: 1570 ♀♂.

Specimens examined: 20 ♀, 14 ♂. USA = California = Davis 1 ♀, 1 ♂ (det. Townes) (Budapest) and 1 ♂ (Budapest); Fresno Co San Joaquin 2 ♀, 3 ♂ (Coll. Wasbauer) and 1 ♂ (Budapest); Humbolt Co. Elk Ridge 2 ♀ (Coll. Wasbauer) and 1 ♀ (Budapest); Jnyo Co. Kearsarge Pass. Rd. on *Erigonum wrightii* var. *subscaposum*, 1 ♀ (Budapest); and 1 ♂ (Coll. Wasbauer); Lassen Co. Susanville 1 ♂ (Coll. Wasbauer); Oakland Camp, Tuolumne Co. 1 ♀ (Coll. Wasbauer); Placer Co. Dollar Point 1 ♂ (Coll. Wasbauer); Plumas Co. Little Long Valley Creek 2 ♀ (Coll. Wasbauer) and 2 ♀ (Budapest); Sacramento River Levec 1 ♂ (Budapest); San Benito Co. 1 ♀ (Coll. Wasbauer); San Bdno Co. 1 ♀ (Coll. Wasbauer); Siskiyou Co. Fort Johnes 2 ♀, 1 ♂ (Coll. Wasbauer); Standford U. Santa Clara Co. 1 ♀ (Budapest); Watts Valley Fresno Co. 1 ♂ (Coll. Wasbauer). — Idaho = Gooding Co. Wood R. 2 ♀ (Coll. Wasbauer), 1 ♂ (Budapest). — Nevada = New Year Lake Washoe Co. 1 ♂ (Coll. Wasbauer). — MEXICO = Baja Calif. 1 ♀ (Coll. Wasbauer). — The majority of collection dates are in August, the other specimen were collected (less frequently) in June and July, sparsely in September, October and in April.

Distribution. USA: Oregon, California (Townes, 1957). Idago, Nevada; Mexico.

Ceropales (Bifidoceropales) pygmaea pygmaea KOHL

Ceropales pygmaea KOHL, 1880: 402 ♂; DALLA TORRE 1895: 92, 1897: 345 ♂; HAUPT 1927: 296, 297; BERNARD 1936: 166 ♀♂, 287 ♀♂; PILLICH 1937: 171 (on *Euphorbia gerardiana*); ŠUSTERA 1938: 222 ♂; BEAUMONT 1947: 506, 511—513 ♀♂ Figs 3, 9, 10, 13; MÓCZÁR 1954: 147; VOGRIN 1955: 30; YASUMATSU and ISHIKAWA 1955: 47 ♀; CEBALLOS 1956: 355; MÓCZÁR 1956: 75 ♀♂; BOUČEK and ŠUSTERA 1986: 360; WOLF 1960: 11 ♀, 1971: 60 ♀♂.

Ceropales (Bifidoceropales) pygmaeus: WOLF 1965: 38 ♀♂, 1970: 410 ♂, 1972: 166, 168 Fig. 474; PRIESNER 1969: 115, 118—119; TOBIAS 1978: 146; WAHIS 1986: 35; MÓCZÁR 1978: 350 ♀♂.

Ceropales Mlokosewitzi Radoszkowski, 1888: 491 ♂ syn. n.; FOX 1892: 62; DALLA TORRE 1895: 91, 1897: 344 ♂; GUSSAKOVSKIJ 1931: 24 ♂.

Ceropales unicolor Gussakovskij, 1931: 2, 9 ♀♂ (syn. n. by YASUMATSU 1955); BEAUMONT 1946: 512 (? as syn.); MÓCZÁR 1978: 350—351 ♀ (design. of lectotype, as syn.); WAHIS 1986: 35 (as syn.).

Ceropales appendiculatus YASUMATSU, 1939: 10 (as syn. YASUMATSU 1955).

Specimens examined: 2 ♀, 4 ♂. — Type material: USSR = "e Siberie orient.", "Mlokosewits" (probably author's writing), "Zool. Mus. Berlin", "Mlokosewitzii", holotype ♂ (Berlin). — Kazah SSR = "Semipalatinsk" etc. (Móczár 1978: 350) lectotype ♀ of *unicolor* Gussakovskij (Leningrad). — Kirgiz SSR = "Perovsk . . . " (1. c.) paralectotype of *unicolor* ♀ (Budapest). — Non paratypic material: SPAIN = S. Est. Palaut 1 ♀ (Barcelona). — FRANCE = St. Aygulf 1 ♀ (Budapest). — ITALY = Ascona turin 1 ♂ (Lausanne). — The specimens were collected in September and August.

RADOSZKOWSKI's description corresponds with the single male labelled "Siberie orient." and published by the author "Envoyés par M. Mlokosewitz de Lagodechi (Caucase)", consequently, it must represent to holotype, which is really a male *C. pygmaea* KOHL ♀ specimen with black (and not red) hind femora. It is to be noted, that the hind femora also black in *C. unicolor* GUSSAKOVSKIJ (from Perovsk).

Distribution. Switzerland (KOHL 1880). France (BERNARD 1936). Hungary (PILLICH, 1937). Czechoslovakia (ŠUSTERA 1938). Austria (PRIESNER 1969). Turkmen SSR (WOLF 1971). From South and East Europe to Japan (WOLF 1972). Egypt, Uzbek SSR, Kirgiz SSR, Kazakh SSR, China (MÓCZÁR 1978). East Siberia, Manchuria, Japan (YASUMATSU and ISHIKAWA 1955).

Ceropales (Bifidoceropales) pygmaea lehri (LELEJ) stat. n.

Bifidoceropales lehri LELEJ, 1985: 73 Figs 1—5 ♂.

Specimens examined: 1 ♀, 1 ♂. SSR = Primorsky kray, Zap. kedrovaya pad' 1 ♂ (Budapest); Okr. Habarovska 1 ♀ (Vladivostok). — Both specimens were collected in August.

Only colour differences are listed in the key comparing the male European *pygmaea* and *lehri* (det. Lelej). They proved to be identical morphologically as well, except the hypopygium figured by LELEJ (1985: Figs 1—2): rounded in *lehri*, and emarginated in *pygmaea*. The length proportions of the fore tarsal joints 1—5 of *lehri* (and of *pygmaea*) are: 30 (30): 8 (8): 7 (6): 4 (4): 16 (16); that of the middle tarsal joints 1—5 are: 45 (45): 11 (12): 7 (8): 4 (4): 15 (15): and that of the hind tarsal joints are: 45 (44): 18 (18): 17 (16): 12 (11): 15 (14). They indicate no differences whatever. Concerning the females (also det. LELEJ, not yet published) the differences are at most of subspecific value. Owing to the large geographical distribution of *pygmaea* it is not by accident to have a number of synonyms: *C. mlokosewitzi* RADOSZKOWSKI, *C. unicolor* GUSSAKOVSKIJ and *C. appendiculatus* YASUMATSU.

Distribution. USSR = far East Asia (Primorsky kray) (LELEJ 1985). Habarovsk.

Ceropales (Bifidoceropales) robinsonii robinsonii CRESSON

Ceropales Robinsonii CRESSON, 1867: 140 Fig. 15 ♂; FOX 1892: 50, 57, 62 ♀♂; DALLA TORRE 1895: 92, 1897: 345 ♀♂; ROHWER 1916: 369; DREISBACH 1948: 234, 236 ♀♂, 249, 250; TOWNES 1957: 240, 253—254 Fig. 147 ♀♂.

Ceropales robinsonii robinsonii: KROMBEIN etc. 1979: 1570 ♀♂ (host: *Phanagenia bombycina* CR.).

Ceropales rufiventris WALSH et RILEY, 1869: 163 ♀♂, FOX 1892:62 (as syn. by FOX); TOWNES 1957: 238, 253, 255 ♀♂.

Ceropales superba PROVANCHER, 1883: 810 ♀; 1889: 264; FOX 1892: 57, 62 (as syn. by FOX); ROHWER 1916: 369 (as syn. by ROHWER).

Specimens examined: 4 ♀, 1 ♂. — Type material: USA = Virginia = "Va.", "Holotype 450" red label, "♂", "C. Robinsoni Cress." holotype ♂ (Philadelphia). — Non paratypic material: Etat. Uni. 2 ♀ (Geneva). — Pennsylvania = "Lniglestown" (correctly Linglestown) 9 Apr 1909 P. R. Myers, (bred Spem 10 May 1909), 1 ♀ (Budapest). — Tennessee = 1 ♀ (Budapest).

Addition to the description: ♂. — Length 8 mm. Ocelli in a somewhat obtuse angle. Orbital groove lacking. Frontal sulcus short and distinct only medially. Propodeum sharply bent on its one-third and flat on declivous part, here medially with distinct longitudinal wrinkles, elsewhere smooth and shining, medial sulcus forming a short triangle basally and becoming deep longitudinally, reaching only the declivous part. Metapleural suture hardly perceptible. Sternite 9 yellow, triangular, with slightly curved lateral margins, surface concave ventrally.

Distribution. West Virginia (CRESSON 1867). Toronto (PROVANCHER 1883). Washington, Illinois, Massachusetts (FOX 1892). Michigan (DREISBACH 1948). Florida, Pennsylvania (TOWNES 1957). From Quebec to Florida, Ontario, Ohio (KROMBEIN 1979). Tennessee.

Ceropales (Bifidoceropales) robinsonii stigmatica BANKS

Ceropales robinsoni var. *stigmatica* BANKS, 1910: 126 ♀; DREISBACH 1948: 234 ♀.
Ceropales robinsonii stigmatica: TOWNES, 1957: 240, 255 Fig. 148 (design. of lectotype); KROMBEIN 1979: 1570 ♀.

Distribution. Texas (BANKS 1910); Kansas (TOWNES 1957).

Ceropales (Bifidoceropales) rugata TOWNES

Ceropales rugata TOWNES, 1957: 241, 264 Fig. 156 ♀♂; Krombein etc. 1979: 1570 ♀♂.

Specimens examined: 30 ♀, 27 ♂. — Type material: Paratypes: USA = North Carolina = "Wake Co. NC IX. 9 1951 H., M. Townes". "Paratype Ceropales rugata Townes" blue label, 1 ♀ (Hym. Typ. No. 3830 Budapest). — Oregon = "Corvallis. Ore. Sep. 1925", "D. A. Wilbur Col.", "Paratype Ceropales rugata Townes" blue label, 1 ♀ (Hym. Typ. No. 3831 Budapest). — Non paratypic material: Arizona = Cochise Co. 2 ♀ 1 ♂ (Coll. Wasbauer), 1 ♂ (Budapest) and 1 ♀, 1 ♂ (New York). — California = Davis 1 ♂ (Budapest); San Bdno Co Mid Hills on *Asclepiae erosa* 2 ♂ (Coll. Wasbauer); S. Diego Co. Warner Spring 1 ♀ (Budapest). — Missouri = Williamswille 1 ♀ (Ottawa). — Nevada = Gerlach Washoe Co. 1 ♀, 1 ♂ (Coll. Wasbauer). — New Mexico = Hidalgo Co. on *Asclepias* 1 ♀, 1 ♂ (New York). — Utah = Emery Co. Dogout Spr 1 ♂ (Coll. Wasbauer) and 1 ♀ (Budapest); Emery Co. Green River 9 ♀, 8 ♂ (Coll. Wasbauer), 2 ♂ (Budapest); Garfield Co. 1 ♀, 2 ♂ (Coll. Wasbauer); Grand Co. Sal Vly 1 ♀ (Budapest); Wayne Co. 1 ♀ (Coll. Wasbauer). — MEXICO = Baja Calif. 2 ♀, 1 ♂ (Coll. Wasbauer), 1 ♂ (Budapest) and Baja El Pescadero 2 ♀ (Coll. Wasbauer), B. El Salto ♂ (Coll. Wasbauer and Budapest), B Sur Rancho Tablon area 1 ♀ (Budapest); Jalisco Guadalajara 1 ♀ (Coll. Wasbauer); Sin. Mazatlan 1 ♂ (Ottawa). — COSTA RICA = Cartago Prov. Turrialba 1 ♀, 1 ♂ and Puntarenas Pro. Golfito 1 ♀ (Coll. Wasbauer). — The great majority collection dates are in July, the other specimens were captured in August, April, June and October.

Distribution. USA = Oregon, California, Wyoming, Utah, the Gulf and South Atlantic States, Mexico (TOWNES 1957). Arizona, Missouri, Costa Rica.

Ceropales (Bifidoceropales) seyrigi WAHIS

Ceropales (Bifidoceropales) seyrigi WAHIS, 1987: Figs 5c, 6c, 7c ♀ ♂ 217.

Specimens examined: 2 ♀, 1 ♂. Type material: Paratypes: "Madagascar: Tul Beroboka 60 km N. E. Morondava", "J. S. Noyes, M. C. Day 18—23. v. 1983. B. M. 1983—201", R. Wahis dt. 84 "PARATYPE Ceropales seyrigi mihi ♀" 1 ♀ (Hym. Typ. No. 3832 Budapest); "Madagascar Bekily Reg. Sud de l'île", "Museum Paris VI. 36 A. Seyrig" blue label, "R. Wahis dt. 77. PARATYPE ♀ Ceropales seyrigi mihi" 1 ♀ (Hym. Typ. No. 3833 Budapest), and the same data, only with "VI. 37" 1 ♂ (Hym. Typ. No. 3834 Budapest).

Distribution. Malgasy Rep. (WAHIS 1988).

Ceropales (Bifidoceropales) splendida sp. n.

Specimens examined: 3 ♂, 2 ♀. — Type material: COSTA RICA = "Costa Rica: Heredia: Finca La Selva, 3 km. S Pto. Viejo 23/25 July 1976 E. M. Fisher, coll" holotype ♂ (Coll. Wasbauer). — Paratypes: the same data 2 ♂ (Coll. Wasbauer) and (Hym. Typ. No. 3824 Budapest); "Costa Rica S. Carlos 1912" 1 ♀ (head missing) (Hym. Typ. No. 3825 Budapest). — MEXICO = "Mex. Ver. 1100 ft Ca — temaco 16—18. VI. Malaise Trap 1969" 1 ♀ (allotype) (Ottawa).

♂. — Length 8.6—10 mm. Black, mandible nearly entirely (except the ferruginous apex), labrum, lower face (except two very small black spots below antennal sockets, holotype), inner eye margin including the large spot with truncate apex in ocular sinus, two minute spots between antennal sockets, antennal joints 1—2 below, narrow streak on outer eye margin, narrow and medially rather broadly interrupted band on pronotum posteriorly, hump, a longitudinal streak on mesonotum before scutellum, a spot on postscutellum and lateral corner of propodeum, fore and middle coxae largely below, a V-shaped streak on hind coxa, fore and middle femora outside largely, hind femour outside partly indistinctly (holotype) or largely (paratypes), broader streak on fore tibia, metatarsus and on middle metatarsus outside, a spot on middle tibia apically, a streak on upper side of hind tibia, yellowish white; upper side and partly inside of all femora and middle tibia above, tarsal joints 3—5 of hind legs largely brownish black; legs elsewhere, abdomen largely ferruginous; disc and partly lateral side of tergites 1—4, largely blackish; tergites 1—6 before posterior margin with yellow streaks, towards the middle strongly narrowed and curved. Wings light brownish infuscated, veins brown, pterostigma rather dark brown. Mesonotum with brownish pubescence, lateral deepening before hind wings, on postscutellum and on propodeum, especially ventral side of thorax, on coxae and between fore and middle coxae with short silvery hairs.

Head distinctly broader than long (71 : 58), strongly narrowed behind eyes. Ocelli in a right angle. Frons transversally impressed, like a semilunar shallow line and with a shallow frontal sulcus medially with a minute pit. Antenna slender, flagellar joints basally three times as long as broad. Frons, pronotum and propodeum smooth, polished, without distinct punctures on propodeum laterally at most some hardly perceptible, fine punctures surface howewer, with microscopically fine and very dense punctures, perceptible only at high magnification. Lateral deepening of pronotum narrow, without wrinkles. Mesonotum polished only in the lateral deepening with scattered deeper, posteriorly with denser punctures. Mesepisternum with some scattered larger and deep punctures. Propodeum slightly convex basally, in lateral view. Propodeal sulcus forming a flat but deep triangle basally and elongated in a fine shallow deepening over the entire length of segment. Metapleural suture shallow. Abdominal tergite 7 slightly impressed and concave on both sides and with a longitudinal, raised torus medially. Fore and middle tibiae and tarsi remarkably short, nearly of equal length, fore tibia: tarsi = 48 : 48, middle tibia = tarsi 65 : 61; the outer and inner claws of middle legs dissimilar.

♀. — Length 8.3 mm. Very similar to male both in colour and in sculpture, but differs from it as follows: mandible entirely white, pronotal band not interrupted, only narrowed medially, yellow spot on hind femur indistinct outside, middle and hind femora inside, as well as upper side of middle tibia brownish black; hind tibia and all tarsal joints yellowish pale ferruginous (except the brownish infuscated hind 3—4 tarsal joints). Tergites 1—5 with yellow, curved and inside narrowed sublateral spots. The last tergite not concave laterally, but last segment compressed laterally, the elongated apex rounded. Fore and middle tibiae and tarsi of normal length, not so short as in male, claws of the middle legs not dissimilar. Wings hyaline, not infuscated. Breadth: length of head = 58 : 48. Transversal, impressed line of frons shallower but frons with denser fine punctures than in male. Propodeal sulcus shorter, hardly reaching beyond the middle of the segment. Metapleural suture not developed.

Distribution. Mexico, Costa Rica.

Ceropales (Bifidoceropales) sulciscutis sulciscutis CAMERON ♀ n.

Ceropales sulciscutis CAMERON, 1910: 261 "♀" = ♂; ARNOLD, 1937: 89 (nec CAMERON; misident.).

Specimens examined: 1 ♂, 1 ♀. — Type material: TANZANIA = "Kilimandj. Sjöstedt", "Kibonoto Kulturz.", "Ceropales sulciscutis Cam. type", "209184" red label, "Riksmuseum Stockholm" green label, holotype ♂ (Stockholm). — Not paratypic material: REP. S. AFRICA = van Stadens Pass E. Cape, 1 ♀ (Budapest).

The single specimen designated by CAMERON as "type" represents really the holotype, it was given howewer by the author as ♀, not ♂. ARNOLD (1937: 89) synonymized this species

with *Ceropales kriechbaumeri* MAGRETTI. It is possible, that ARNOLD has not seen either the type of this species or that of *sulciscutis* CAMERON. Also, the original description of *kriechbaumeri* MAGRETTI cited by him does not agree with the holotype of the *sulciscutis*, therefore, the suggested synonymy can no longer be upheld.

Some small corrections and additions to the description: Instead of "Hinder ocelli separated from the eye by about the same distance as they are from each other", really OOL : POL = 15 : 10. The longitudinal furrow of propodeum only partly smooth, at the base transversally rugulose, similar to the sides. Mandibles black basally and dark red beyond the middle. There is no reference to the colour of the abdomen: it is dark red, tergites 1—2 largely blackish red, only posterior margins with traces of light bands. Frons gradually bent and propodeum remarkably flat lateral view, slightly convex only basally. Claws missing.

♀. — Length 6.5 mm. Very similar to the male holotype both in colour and in sculpture. The small differences are as follows: supraclypeal area with black spot below antennal sockets; the yellowish lunate band above antennal sockets continuous, including also the medial spot between them; scutellum with a longitudinal yellow streak medially and not only with a trace of a small spot; postscutellum with two minute spots.

Frons slightly and evenly bent below fore ocellus, surface silky shining owing to the very dense and microscopically fine punctures, otherwise, with very shallow and rather fine punctures. Propodeal sulcus shorter and narrower. Middle and hind coxae largely red, only with a small lateral yellow spot (on the male: middle coxa with a large white spot, hind one largely black).

Distribution. Tanzania, Kibonoto (CAMERON 1910); Rep. of South Africa.

Ceropales (Bifidoceropales) sulciscutis raymondi ssp. n.

Ceropales (Bifidoceropales) rufiventris WAHIS, 1984: 560 ♀

Specimens examined: 2 ♀. — Type material: ZAIRE = "Coll. Mus. Congo Rwankwi 31—III—1946 J. V. Leroy", "Type" red label, "R. Wahis dt. 78 HOLOTYPE Ceropales rufiventris mihi" holotype ♀ (Tervuren); "Congo Belge: P. N; V. Munoi, bif. Lupiala (890 m.) 22—24—VI—1948 Mis. G. F. de Witte 1734a", "Paratype" red label, "R. Wahis dt. 78, Paratype Ceropales rufiventris mihi ♀" yellow label, 1 ♀ paratype (Coll. Wahis).

This subspecies is very similar to the inadequately described and known only by one ♀ and one ♂ specimens of *sulciscutis* CAMERON. On the basis of the fine differences given in the key, I suggest to regard *rufiventris* WAHIS as a subspecies of *sulciscutis*. Since WAHIS's name is preoccupied by *Ceropales rufiventris* WALSH et RILEY, 1869, I propose a new name: "raymondi" (= Raymond Wahis) for this subspecies.

Distribution. Zaire (WAHIS 1984).

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BRACONIDAE (HYMENOPTERA) FROM KOREA, XII.*

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Fifty-four Braconid species belonging to the subfamily Microgastrinae are reported from Korea. Seven species, *Cotesia gabera* sp. n., *C. honora* sp. n., *C. ogara* sp. n., *C. thapinthotha* sp. n., *Glyptapanteles bimus* sp. n., *G. distatus* sp. n. and *Iconella repleta* sp. n., are described as new to science. A new synonym was established: *Deuterixys condarensis* (TOBIAS, 1960) sen. name = *D. nixoni* (PAPP, 1971) jun. name. Thirty-three species are new to the fauna of Korea. Checklist of the eastern Palaearctic species of *Apanteles* s. l. (in Appendix). Most of the Braconid material serving for the present elaboration is deposited in the Hungarian Natural History Museum, Budapest. With 84 figures.

1. List of the species

Fifty-four species of Braconidae belonging to the subfamily Microgastrinae are listed from the Korean Peninsula (i.e. from the Democratic People's Republic of Korea). The genera are interpreted and discussed on the basis of MASON's new microgastrine taxonomic, systematic and phylogenetic/cladistic conceptions (MASON 1981, see also PAPP 1988). In the subsequent faunistic enumeration the genera as well as the species are listed in alphabetical order, and the number of the respective species within the genera are indicated in brackets: *Apanteles* FOERSTER (4 species), *Choeras* MASON (1 species), *Cotesia* CAMERON (23 species), *Deuterixys* MASON (1 species), *Distatrix* MASON (1 species), *Glyptapanteles* ASHMEAD (12 species), *Iconella* MASON (1 species), *Illidops* MASON (3 species), *Pholetesor* MASON (5 species) and *Protapanteles* ASHMEAD (3 species). Detailed collecting data are given for every species in an abbreviated form, i.e. only the collecting numbers ("No.") are indicated after the species names, the full collecting data (name of the localities, dates, etc.) are listed separately before the faunistic enumeration. Where necessary the faunistic contributions are completed with taxonomic as well as zoogeographic notes. The Braconid material was collected by the staff-members of the Hungarian Natural History Museum (Budapest) during the collecting trips to North Korea between 1970—1985. The names of the persons are listed according to the years when they were participants in the respective collecting trips (furthermore, the first and last collecting numbers of each trip are given

* Zoological Collectings by the Hungarian Natural History Museum in Korea, No. 94.

in brackets): 1970 — Dr. S. Mahunka and Dr. H. Steinmann (Nos 1—135); 1971 — Dr. S. Horvatovich and Dr. J. Papp (Nos 136—263); 1975 — Dr. J. Papp and Dr. A. Vojnits (Nos 264—331); 1977 — Dr. O. Gy. Dely and Dr. Á. Draskovits (Nos 332—386); 1978 — Dr. A. Vojnits and L. Zombori (Nos 387—519); 1979 — Dr. H. Steinmann and Dr. T. Vásárhelyi (Nos 520—611); 1980 — Dr. L. Forró and Dr. Gy. Topál (Nos 612—732); 1982 — Dr. L. Forró and Dr. L. Ronkay (Nos 733—908); 1985 — Dr. A. Vojnits and L. Zombori (Nos 909—1017). The collecting numbers mentioned above were published by the participants in their respective itineraries (see Folia ent. hung. 1971—1987 vols 24—28) as follows:

No. 52. Prov. Kanwon: Kum-gang san, environs of Hotel Go-song; 29 May 1970 — Netted in the vegetation along a brook.
No. 60. Prov. Kanwon: Kum-gang san, Sam-il po, look-out above lakeshore; 29 May 1970 — Singled material.
No. 87. Prov. Kanwon: Kum-gang san, Sam-il po; 1 June 1970 — Singled from lakeshore vegetation.
No. 100. Prov. Kengi: Bagyon san, Bagyon popo, about 27 km SW of Kaesong; 7 June 1970 — Singled from riverside vegetation.
No. 153. Prov. South Pyongan: Desang san, 12 km NE of Pyongyan, 8 August 1971 — Netted in the grass and shrub levels of a mixed deciduous-coniferous forest.
No. 160. Prov. South Pyongan: Lyong-ak san, 14 km W of Pyongyan, 11 August 1971 — Netted in a mixed coniferous-deciduous forest.
No. 164. Prov. South Pyongan: Sa-gam, 45 km N of Pyongyan, 12 August 1971 — Netted on shrubs, weeds and grass on a riverside.
No. 166. Prov. South Pyongan: Pyongyan, Pyongyan Hotel garden, 12 August 1971 — Caught in Malaise-trap.
No. 175. Prov. South Pyongan: Pyongyan, Nung-ra do (an island in the river Te-dong), 14 August 1971 — Netted in the grass of the park.
No. 176. Prov. South Pyongan: Pyongyan, Pyongyan Hotel garden, 14 August 1971 — Caught in Malaise-trap.
No. 177. Same as No. 176, 15 August 1971.
No. 185. Prov. South Pyongyan: Pyongyan, Pyongyan Hotel garden, 17 August 1971 — Singled material at lamp.
No. 188. Same as No. 176, 18 August 1971.
No. 193. Prov. Ryang-gang: Hyesan Hotel garden, 23 August 1971 — Caught in Malaise-trap.
No. 217. Prov. Ryang-gang: Mt. Pektusan, 1900 m, 28 August 1971 — Netted material in clearings with Aconitum flowers in Larix-Betula forest near the upper forest zone.
No. 225. Same as No. 176, 31 August 1971.
No. 227. Prov. South Pyongan: Pyongyan, city park between river Te-dong and Pyongyan Hotel, 1 Sept. 1971 — Netted in grass and bushes of the park.
No. 229. Same as No. 176, 1 Sept. 1971.
No. 231. Prov. South Pyongyan: Za-mo san, 60 km NE of Pyongyan, 2 Sept. 1971 — Netted in sweet chestnut *(Castanea crenata)* forest in a nature conservancy field.
No. 237. Same as No. 176, 4 Sept. 1971.
No. 238. Prov. South Pyongan: Nam-po, Mts. Guk-san-bong, 10 km NE of the town Nam-po, 5 Sept. 1971 — Netted in the grass and bushes of *Castanea-Pinus* wood with oak bushes.
No. 243. Same as No. 176, 6—7 Sept. 1971.
No. 266. Prov. South Pyongan: Pyongyan, garden of the Embassy of the Hungarian People's Republic, 16—18 July 1975 — Caught in Malaise-trap.
No. 273. Prov. South Pyongan: Nam-po, 19 July 1975, 11—13,30^{h} — Netted in the shrub level of a *Robinia-Castanea* wood.
No. 274. Same as No. 266, 18—20 July 1975.
No. 281. Prov. Ryang-gang: Chann-pay plateau, 24 km NW of Sam-zi-yan along the road to Mt. Pektusan, 2000 m, 24 July 1975 — Netted in more or less devastated clearings of a *Larix-Betula* forest.

No. 282. Prov. Ryang-gang: Chann-pay plateau, Sam-zi-yan, 1700 m, 24 July 1975, 16—18, 30^h, sunny weather with cloudy sky, 22—24 °C. — Netted in shrubby and grass vegetation of *Larix-Betula* forest.
No. 285. Same as No. 282, cloudy weather with full moonlight — Singled material at MV lamp.
No. 288. Prov. Ryang-gang: Chann-pay plateau, Mt. Pektusən, Mu-do-bong, 2100—2200 m, 25 July 1975 10—13^h — Netted in upper forest zone from shrubby and grass vegetation.
No. 293. Prov. Ryang-gang: Hyesan, Mt. Ze-dong, 1150 m, 26 July 1975, 10—13, 30^h, sunny weather with cloudy sky, 28 °C. — Netted material from the shrub level at the edge of a *Larix* wood.
No. 296. Prov. Ryang-gang: river Karim, 10 km NE of Bochonbo, 1100 m, 27 July 1975, 12,30—$16,30^h$, sunny and warm weather, 32 °C. — Netted material in the shrubby vegetation along the river in a deep valley.
No. 297. Same as No. 296, caught in Malaise-trap.
No. 300. Prov. South Pyongan: Lyong-ak san, 14 km W of Pyongyan, 30 July 1975, 11—15,30^h, sunny weather with clouds, 32 °C — Netted material in a mixed coniferous-deciduous wood in a cirque.
No. 301. Same as No. 300, caught in Malaise-trap.
No. 315. Prov. Gang-von: district On-dzong, Kum-gang san, near Hotel Go-song, 250 m, 4 August 1975, 20—$0,30^h$, 26 °C. — Collected at MV lamp in a mixed coniferous-locust wood.
No. 318. Same as No. 315, 5 August 1975, 18—$19,30^h$, 23 °C. — Netted in a mixed coniferous-locust tree wood on shrubby and herbaceous vegetation.
No. 319. Same as No. 315, 5 August 1975, 20—$0,1^h$, 22 °C — Collected at MV lamp in a mixed coniferous-locust tree wood.
No. 320. Same as No. 315, 4—6 August 1975 — Caught in Malaise-trap.
No. 322. Same as No. 315, 6 August 1975, 20—$4,30^h$ — Collected at MV lamp in a mixed coniferous-locust tree wood.
No. 324. Prov. Gang-von: district On-dzong, Kum-gang san, along Ok-ru dong, 250—300 m, 7 August 1975, 15,30—17^h, cloudy weather with some sunshine, 22 °C. — Netted material from a rich herbaceous and shrubby vegetation of a coniferous forest.
No. 325. Same as No. 315, 7 August 1975, rainy weather, 20—$2,30^h$ — Collected at MV lamp in a mixed coniferous-locust tree wood.
No. 326. Same as No. 315, 6—8 August 1975 — Caught in Malaise-trap.
No. 331. Prov. Pyong-sung: Bek-sung-li, Za-mo san, 60 km NE of Pyongyan, 1—10 August 1975 — Caught in pitfall traps baited with salty beer in a sweet chesnut wood in a nature conservancy field.
No. 332. De Sang-san, 10 km NE of Pyongyan, 1 July 1977 — Confined, rather stony area. Coniferous wood *(Pinus densifolia)* mixed with some *Acer* sp., undergrowth very sparse.
No. 333. Same as No. 332, caught in Malaise-trap, erected about 30—40 m off the stony area on the left side of the road leading into the wood.
No. 339. Nampo, Vando, about 60 km SW of Pyongyan, 3 July 1977 — Netted in grass vegetation of a gallery forest.
No. 343. Tesson, water basin, about 35 km SW of Pyongyan, 4 July 1977 — In the neighbourhood of a coniferous wood mixed with *Robinia* trees; netted in the grass and shrub levels of the wood.
No. 346. Sa Gam, water basin and inundation area of a river, about 30—40 km N of Pyongyan, 5 July 1977 — In the neighbourhood of a mixed coniferous-*Robinia* wood. Netted in the grass and shrubby vegetation *(Salix)* on the bank of the river.
No. 347. Same as No. 346, netted in the grass vegetation of a wood.
No. 371. Mt. Pektusan: wooded environs of the Sam-zi-yan Hotel, 18 July 1977 — Caught in Malaise-trap erected about 2 km N of the hotel on the left of the road to Explosion Lake.
No. 372. Same No. 371, netted in the grass vegetation of the road indicated.
No. 374. Mt. Pektusan: wooded environs of the Sam-zi-yan Hotel, 19 July 1977 — Netted in shrubby and grass vegetation about 16 km E of the hotel, at the edge of a coniferous wood growing on the left side of the road to Musan.
No. 376. Same as No. 374, netted in the grass vegetation of the wooded environs of Sam-zi-yan Hotel.
No. 384. Same as No. 346.
No. 396. South Pyongan Prov.: Ryong-ak san, 20 km W of Pyongyang, 24 Sept. 1978 — Material swept from vegetation.

No. 403. Pyongyang City: Garden of Hotel Pyongyang, 25 Sept. 1978 — Material collected by beating the foliage of a climber trained over a trellis near lampshades just before a torrential rain (23^h).
No. 406. South Pyongan Prov.: Lake Taesong-ho, 26 Sept. 1978 — Swept with a net from various vegetation.
No. 423. North Hwanghe Prov.: Sariwon, 28 Sept. 1978 — Collected at mixed light in a window of the hotel ($20-22^h$).
No. 449. Ryanggang Prov.: Sam-zi-yon, 3 Oct. 1978 — Swept from various dry vegetation mixed profusely with a *Rhododendron* sp. (30 cm high).
No. 525. South Pyongan Prov.: Lake Taesong-ho, 13 Sept. 1979 — Singled and netted in a mixed coniferous-deciduous forest (*Pinus*, *Juniperus*, *Castanea*, *Salix*, *Populus*, etc. and ruderals).
No. 540. South Hwangae Prov.: Songhwa (50 m above sea level), 17 Sept. 1979 — Netted and singled on some hills near Hotel Songhwa, with mixed forest, grass and marshy meadow.
No. 550. Pyongyang City, 19 Sept. 1979 — At the light of 160 W MV bulb in the window of Hotel Tae Dong.
No. 562. South Pyongan Prov.: Nampo, Wauto, 22 Sept. 1979 — Netted on bulrush and reed on a small spot inundated by brackish water.
No. 605. Kangwon Prov.: Kum-gang san, under Mumpil bong, 29 Sept. 1979 — Netted and singled in the undergrowth of the coniferous forest.
No. 624. Pyongyang City, 9 Sept. 1980 — At the light of a 160 W MV bulb on the terrace of Hotel Tsang-kan san.
No. 633. Pyongyang City, 10 Sept. 1980 — Same as No. 624.
No. 698. Kangwon Prov.: Kum-gang san, 18 Sept. 1980 — Netted around the parking lot at the trail to Kuryong Falls.
No. 705. Kangwon Prov.: Kum-gang san, environs of Hotel, 18 Sept. 1980 — At the light of a 160 W MV lamp on the terrace of the hotel.
No. 729. Kangwon Prov.: Wonsan, 20 Sept. 1980 — Netted in the park Songdowon, mainly around a small pond.
No. 783. North Pyongan Prov.: Myoh-yang san, Hotel Myoh-yang, 13 July 1982 — Collected from white sheet illuminated by mixed light of the hotel balcony.
No. 793. Same as No. 783, 14 July 1982 — Collected from white sheet illuminated by mixed light and, in another site, by two black lamps ($20,30-0,4,30^h$).
No. 940. North Pyongan Prov.: Myoh-yang san, 23 May 1985 — Warm, sunny forenoon. Specimens collected mainly by singling, also sweeping the sparse vegetation in mixed wood around the hotel.
No. 961. Pyongyang City, 30 May 1985 — Warm, stuffy forenoon, temperature about 24 °C. Collected in the Botonggang Park by sweeping the much degraded vegetation.
No. 962. Pyongyang City: Lyong-ak san, 30 May 1985 — Pleasent night. Collected at a blended light (250 W) fed by a Honda generator.
No. 970. Pyongyang City: Daesong san, 1 June 1985 — Overcast sky, temperature about 20 °C, with a slight wind. Collected by sweeping the vegetation in a mixed forest (*Pinus*, *Quercus*, *Ulmus*, *Fraxinus*).
No. 976. Ryanggang Prov.: Sam-ji-yon, 3 June 1985 — Warm, windy forenoon with occasional showers. Collected by sweeping the very low vegetation in a *Larix* wood with greybeard lichen (*Usnea* sp.).
No. 980. Same as No. 976, clear day, on the way back from Paekdu san. Collected in an old *Picea* stand by using sweeping net, altitude about 2100 m.
No. 986. Same as No. 976, 4 June 1985 — Warm, sunny forenoon, temperature about 22 °C. Swept mostly in *Larix* forest around the hotel.
No. 992. Same as No. 976, 4 June 1985 — Warm afternoon, temperature about 22 °C. Singled and swept along the foot-path in a *Larix* forest, some 300 m from the hotel.
No. 1000. Same as No. 976, 5 June 1985 — Warm, sunny afternoon, temperature about 26 °C. Swept the vegetation, mostly shrubs and some grass along the road-side near the hotel.

* * *

Thanks to the kindness of Dr. P. BERON, the Braconid material collected by the Bulgarian entomologists Drs P. BERON and A. POPOV (Zoological Institute, Bulgarian Academy of Sciences, Sofia) in North Korea was also at my disposal for elaboration; their collecting localities are specified below:

No. 1. Pyongyang City, Pyongyang, 8 August 1982.
Nos 3—4. North Pyongan Prov.: Myohyang san, 18 August 1982.
No. 8. Kaesong, 28 August 1982.
No. 9. Prov. Kangwon, Kumgang san 400 m, Kuryong Falls, sifted litter, 28 VIII 1982.
No. 11. North Pyongan Prov.: Myohyang san, 14 August 1982.
No. 12. Kanwon Prov.: Kum-gang san, environs of Hotel, 20 August 1982.

* * *

The Braconid wasps collected by the staff-members of the Zoological Institute, Polish Academy of Sciences (Warsaw) were also given to me through the kindness of Dr. E. KIERYCH (member of the institute). The locality data of the material, however, are not listed here because of the small quantity of the wasps, and because the localities were not numbered.

* * *

MICROGASTRINAE

Apanteles firmus TELENGA, 1949 — Widely distributed in the USSR (Soviet Middle Asia, Kazakhstan, Azerbaidzhan, Armenia, European part), reported from Mongolia, Hungary and France. Recently TOBIAS (1986: 416) placed this name in synonymy with *A. metacarpalis* THOMSON, 1895 (sen. name). New to the fauna of Korea.
Locality — 1 ♀: No. 175.

Apanteles ingenuoides PAPP, 1971 — Described by me from Mongolia and later reported from a few countries of Europe. New to the fauna of Korea.
Locality — 1 ♀: No. 296.

Apanteles lenea NIXON, 1976 — Frequent in Europe, reported from the Far East Maritime Territory of the USSR (PAPP 1980: 254, TOBIAS 1986: 451). New to the fauna of Korea.
Locality — 1 ♀: No. 281.

Apanteles metacarpalis THOMSON, 1895 — Supposedly a Palaearctic species, in its eastern half reported from Mongolia nearest to Korea. New to the fauna of Korea.
Locality — 1 ♀: No. 961.

Choeras tedellae (NIXON, 1961) — Sporadic to frequent in Europe. New to the fauna of Korea.
Localities — 1 ♀: No. 282, 1 ♀: 325, 1 ♂: No. 376 and 1 ♀: No. 962.

Cotesia affinis (NEES, 1834) — A Palaearctic species. New to the fauna of Korea.
Localities — 1 ♀: No. 164, 1 ♂: No. 176, 1 ♀: No. 185 and 1 ♀: No. 188.

Cotesia brevicornis (WESMAEL, 1837) — Reported recently from Korea by me (PAPP 1987: 437).
Locality — 1 ♀: No. 992.

Cotesia ferruginea (MARSHALL, 1885) — The single Korean female represents a light form: body reddish yellow; flagellum, polished field of axille, metanotum and propodeum darkening. (Nominate form: body reddish yellow with more dark colour; head, metanotum, propodeum, lower part of mesopleuron and metapleuron blackish to black.) — Distributed in Europe and Turkey. New to the fauna of Korea.
Locality — 1 ♀: No. 562.

Cotesia gabera sp. n.: see p. 95.

Cotesia geryonis (MARSHALL, 1885) — Known from six countries of Europe. New to the fauna of Korea.
Localities — 1 ♀: No. 315, 1 ♂: No. 605 and 1 ♂: No. 970.

Cotesia honora sp. n.: see p. 97.

Cotesia kariyai (WATANABE, 1937) (= *Apanteles purgatus* TELENGA, 1955) — Reported from Korea by me under the name *Apanteles kariyai* WATANABE (PAPP 1987).
Localities — 1 ♀ (in Warsaw, Zool. Inst.): Korea, Dinyr ad Chongjin, 24 August 1959, leg. B. Pisarski et J. Prószyński. 1 ♀ (in Warsaw, Zool. Inst.): Korea, Mts Rjongak, ad Phjongjang, 24 May 1965, leg. M. Mroczkowski et A. Riedel.

Cotesia miyoshii (WATANABE, 1932) — Third tergite one-fifth as long as second tergite (in the original description and figure tergites 2—3 equal in length). Tegula pale yellow. Inner spur of hind tibia just (or indistinctly) longer than half basitarsus. Mesonotum with fine though discrete punctation, interspaces glistening. — So far known only from Japan. New to the fauna of Korea.

Locality — 1 ♀: No. 225.

Cotesia nigritibialis (TOBIAS, 1986) — The species was recently described from the USSR (Krasnodarskij district: Sochi) (TOBIAS 1986: 398) on the basis of the single female holotype specimen which I examined and arranged in my key to the European species of the *glomeratus*-group of *Apanteles* s.l. (= genus *Cotesia* CAMERON, 1891). The present faunistical date is the second contribution on its distribution. New to the fauna of Korea.

Localities — 1 ♂: No. 266 and 2 ♂: No. 374.

Cotesia nothus (MARSHALL, 1885) — Up to now reported from England, Germany and Hungary. Colour of legs variable, hind (and middle + fore) femur (femora) entirely reddish yellow to almost fully blackish. Length and form of tergites 1—2 also variable. Considering these features it is easy to misidentify this species. Supposedly much more distributed in the Palaearctic Region then to our present knowledge shows. New to the fauna of Korea.

Localities — 1 ♂: No. 274, 1 ♀ + 1 ♂: No. 339, 1 ♂: No. 343, 1 ♂: No. 346, 1 ♂: No. 374 and 3 ♂: No. 384.

Cotesia ogara sp. n.: see p. 100.

Cotesia ordinaria (RATZEBURG, 1844) (= *Apanteles dendrolimi* MATSUMURA, 1926) — Localities: 1 ♂: No. 293 and 1 ♀: No. 324.

Cotesia orestes (NIXON, 1974) — Reported sporadically in Europe. New to the fauna of Korea.

Localities — 1 ♂: No. 193, 1 ♂: No. 318, 1 ♀: No. 322, 1 ♂: No. 331 and 1 ♂: No. 605.

Cotesia plutellae (KURDJUMOV, 1912) — Localities: 1 ♂: No. 166, 1 ♀: No. 177, 1 ♂: No. 193, 1 ♀: No. 225, 1 ♀: No. 227 2 ♂: No. 266, 1 ♂: 274 and 2 ♂: No. 347. — 1 ♂: No. 8.

Cotesia rubripes (HALIDAY, 1834) — Distributed in Europe, from the USSR not reported so far. In the eastern Palaearctic Region listed in Japan and Mongolia. New to the fauna of Korea.

Localities — 1 ♀+1 ♂ No. 100, 1 ♀ +1♂: No. 315, 2♀: No. 319, 1♀: No. 322, 1 ♀: No. 325 and 1 ♀: No. 705. — 2 ♀: No. 12.

Cotesia ruficrus (HALIDAY, 1834) — Localities: 2 ♀: No. 266, 3 ♀ + 2 ♂: No. 274, 1 ♂: No. 293, 1 ♀: 297, 1 ♀: No. 300, 1 ♀: No. 320, 1 ♀ + 2 ♂: No. 331, 1 ♂: No. 343, 1 ♂: No. 346, 1 ♂: No. 347, 2 ♀ + 1 ♂: No. 374, 3 ♀: No. 384, 1 ♂: No. 386, 2 ♂: No. 396, 2 ♀: No. 403, 1 ♀: No. 406, 2 ♀: No. 423, 1 ♀: No. 525, 2 ♀: No. 550, 3 ♀: No. 624, 2 ♀: No. 633, 1 ♀: No. 698 and 1 ♂: No. 729. — 3 ♀: No. 1, 1 ♀: No. 8, 1 ♀: No. 9 and 3 ♀: No. 12.

Cotesia salebrosa (MARSHALL, 1885) (= *Apanteles callunae* NIXON, 1974) — My specimens from Korea are identical with those of Europe. Known from Europe as far eastwards as Leningrad. New to the fauna of Korea.

Localities — 1 ♀: No. 281, 1 ♀: No. 282, 1 ♀: No. 288, 1 ♂: No. 371, 1 ♂: 376, 1 ♂: No. 976, 1 ♀ + 5 ♂: No. 986, 3 ♂: No. 992 and 2 ♂: No. 1000.

Cotesia sasakii (WATANABE, 1932) — In the original description WATANABE (1932: 91—92) placed this species in relation with *Apanteles* (now *Dolichogenidea*) *ultor* (REINHARD). Based on its generic features (rugose propodeum, well sclerotized hypopygium, short ovipositor seath, tergites 2—3 about equal in length, tergite 1 usually broadening posteriorly) it represents the genus *Cotesia* CAMERON. Within *Cotesia* it belongs to the species-group *acuminata* owing to its strong and pointed hypopygium. Light colour of hind leg and metasoma variable. My specimens were compared with specimens identified and thus authenticated by Prof. CH. WATANABE. — Since its description known only from Japan. New to the fauna of Korea.

Localities — 1 ♀: No. 52, 2 ♀: No. 185, 1 ♀: No. 225, 1 ♀: No. 227, 1 ♀: No. 238, 1 ♀: 243, 1 ♀: No. 266 and 1 ♀: No. 326.

Cotesia scabriculus (REINHARD, 1880) (? = *Apanteles eguchii* WATANABE, 1935) — In dorsal view temple strongly rounded. Third tergite basally with distinct (2 ♀) as well as with weak sculpture (1 ♂). Penultimate joint of antenna 1.4 times (2 ♀) as well as 3 times (1 ♂) as long as broad. Tergites usually black, coxae 1—2 blackish brown, coxa 3 black; 1 ♀ (loc. No. 384) with testaceous tergites 2—4 (medially blackish) and coxae also testaceous with blackish base. Mesonotum shiny with posteriorly weakening punctation. — The name *A. eguchii* seems to refer to the species *C. scabriculus* sen. name (see also PAPP 1987: 219, 7th footnote); the

type-specimens of *A. eguchii* originate from the Korean Peninsula ("Moppo"). Frequent in the western Palaearctic Region.

Localities — 1 ♀: No. 52, 1 ♀: No. 384 and 1 ♂: No. 986.

Cotesia spurius (WESMAEL, 1837) — Frequent to common in the Palaearctic Region. New to the fauna of Korea.

Locality — 1 ♂: No. 331.

Cotesia tenebrosa (WESMAEL, 1837) — Frequent to common in Europe. New to the fauna of Korea.

Localities — 1 ♀: No. 293, 1 ♂: No. 372 and 3 ♀: No. 374.

Cotesia thapinthotha sp. n.: see p. 103.

Cotesia zygaenarum (MARSHALL, 1885) — Frequent in Europe, reported from Japan and "Siberia" (USSR). New to the fauna of Korea.

Locality — 1 ♀: No. 281.

Deuterixys condarensis (TOBIAS, 1960)* — The species was reported from Korea by me under the name *D. nixoni* (PAPP 1987).

Locality — 1 ♂: No. 940.

Distatrix formosa (WESMAEL, 1837) — Reported from Korea by me (PAPP 1987).

Locality — 1 ♀: No. 962.

Glyptapanteles aletta (NIXON, 1973) — The Korean specimen is quite similar to the European (i.e. Slovakian) representative of this species. Fifth joint of fore tarsus with a very fine and hardly distinct spinule, opposite to spinule tarsal joint not emarginate. — A rare species, known from Finland, Czechoslovakia and Byelorussia (USSR). New to the fauna of Korea.

Locality — 1 ♀: No. 285.

Glyptapanteles bimus sp. n.: see p. 106.

Glyptapanteles distatus sp. n.: see p. 109.

Glyptapanteles femoratus ASHMEAD, 1906 — Closely related to *G. octonarius* (RATZEBURG, 1852), their specific distinction is tabulated below:

G. femoratus	*G. octonarius*
1. Second tergite transverse, 2.5—3 times as wide behind as long medially (Fig. 9).	1. Second tergite less transverse, 1.7—2 times as wide behind as long medially (Fig. 12).
2. Hind femur 3.2—3.4 times as long as broad (Fig. 10).	2. Hind femur 3.75—4 times as lomg as broad (Fig. 13).
3. Proximal half to three-fourths of first tergite rusty or yellow, otherwise tergite black.	3. First tergite entirely black.
4. *rl* + *cuqul* not evenly curved (Fig. 11).	4. *rl* + *cuqul* evenly curved (Fig. 14).
5. Hind coxa less large, as long as metasomal segments 1—2.	5. Hind coxa large, as long as metasomal segments 1—3.

Localities — 1 ♀: No. 237, 1 ♀: No. 324. — 1 ♀: No. 12.

Glytapanteles fulvipes (HALIDAY, 1834) — Locality: 1 ♀: Korea, Myogyang san, 1300—1500 m, 7 August 1959, leg. B. PISARSKI et J. PRÓSZYŃSKI.

Glyptapanteles liparidis (BOUCHÉ, 1834) — Localities: 1 ♀: No. 783, 1 ♀: No. 793. — 1 ♀: No. 3, 1 ♀: No. 11.

* Reexamining my material identified as *D. condarensis* and *D. nixoni* I had to establish that they represent the same species, consequently my name *nixoni* is a junior synonym of *condarensis:*

Apanteles condarensis TOBIAS, 1960: Izv. Akad. N. Tadzh. SSR (Otdel. Sel'skokh. Biol. N.) 2 (3): 87—88 ♀♂, type locality: "Kondara" (USSR: Tadzhikistan), holotype (♀) (and 3 ♀ + 1 ♂ paratypes) in the Zoological Institute, Leningrad.

Apanteles nixoni PAPP, 1971: Annls hist.-nat. Mus. natn. hung. 63: 321—322 ♀, type locality: "Suchebaator aimak: 44 km SSW from Baruum urt, 1050 m" (Mongolia), holotype in Természettudományi Múzeum, Budapest; **syn. n.**

Glyptapanteles luciana (NIXON, 1973) — Sporadic to frequent in Europe, distributed in the USSR as far eastwards as Armenia. New to the fauna of Korea.
Locality — 1 ♂: No. 540.

Glyptapanteles minor ASHMEAD, 1906 — Within the genus it belongs to the *liparidis* species-group. Reported from Japan and Taiwan. New to the fauna of Korea.
Locality — 1 ♀: No. 11.

Glyptapanteles mygdonia (NIXON, 1973) — Listed in several countries of Europe, recently discovered in the Baykal region (TOBIAS 1986: 383). New to the fauna of Korea.
Localities — 1 ♂: No. 231, 1 ♀: No. 273, 1 ♀: No. 285, 1 ♂: No. 315, 1 ♀: No. 374, 1 ♀ + 1 ♂: No. 449, 1 ♂: No. 698.

Glyptapanteles pallipes (REINHARD, 1880) — Localities: 1 ♀ (in Warsaw, Zool. Inst.): Korea, Onpho ad Chongjin, 16 August 1959, leg. B. PISARSKI et J. PRÓSZYŃSKI. 1 ♂: (in Warsaw, Zool. Inst.): Korea, Myohyang san, vall. fluv. Hyangsan-čhon, prope vall., Manphoktong, distr. Hyangsan, 19 June 1965, leg. M. MROCZKOWSKI et A. RIEDEL.

Glyptapanteles porthetriae (MUESEBECK, 1928) — Widely distributed in the Palaearctic Region. Listed from SE Siberia (USSR) by TOBIAS (1986: 381). New to the fauna of Korea.
Locality — 1 ♀ (in Warsaw, Zool. Inst.): Korea, Myohyang san, 5 August 1959, leg. B. PISARSKI et J. PRÓSZYŃSKI.

Glyptapanteles ripus (PAPP, 1983) — So far known only from Europe (Germany, Czechoslovakia, Poland, Hungary, USSR: Kalinin district). New to the fauna of Korea.
Locality — 1 ♂: No. 217.

Iconella repleta sp. n.: see p. 113.

Illidops cloelia (NIXON, 1965) — Sporadic in Europe (Switzerland, Austria, Yugoslavia, USSR: northern Caucasus Mts). New to the fauna of Korea.
Locality — 1 ♀: No. 331.

Illidops naso (MARSHALL, 1885) — Reported from Korea by me under the name *Apanteles contortus* TOBIAS (PAPP 1974).
Localities — 1 ♂: No. 166, 1 ♂: No. 274, 1 ♂: No. 301, 3 ♂: No. 332 and 4 ♂: No. 333. — 1 ♂ (in Warsaw, Zool. Inst.): Korea, Myohyang san, 3 August 1959, leg. B. PISARSKI et J. PRÓSZYŃSKI. 1 ♂: Korea, prov. Phyŏngyang-si, Sŏngmun-ri, distr. Samsok, 22 May 1965, leg. M. MROCZKOWSKI et A. RIEDEL.

Illidops suevus (REINHARD, 1880) — Sporadic to frequent in the western Palaearctic Region. New to the fauna of Korea.
Locality — 1 ♀: No. 333.

Pholetesor circumscriptus (NEES, 1834) — Localities: 1 ♂: No. 60, 1 ♂: No. 87 and 1 ♂: No. 273.

Pholetesor elpis (NIXON, 1973) — Listed in several countries of Europe as far eastwards as Azerbaidzhan in the USSR and Mongolia (PAPP 1977). New to the fauna of Korea.
Locality — 1 ♂: No. 374.

Pholetesor exiguus (HALIDAY, 1834) — Listed in several countries of Europe as far eastwards as Russia in the USSR. New to the fauna of Korea.
Localities — 1 ♂: No. 281, 1 ♂: No. 374 and 1 ♂: No. 384.

Pholetesor moldavicus (TOBIAS, 1975) — The single Korean female specimen agrees with the type-series except its colour. Yellow pattern reduced: Basal four joints of antenna ventrally yellow, fumous yellow dorsally, further four joints darkening blackish to black so that distal half of antenna blackish. Basal three-fourths of first tergite yellow, otherwise metasoma black. (Type series: 1. proximal half of antenna yellow, distally darkening, 2. anterior half of metasoma yellow.) — Distribution: European part of the USSR. New to the fauna of Korea.
Locality — 1 ♀: No. 315.

Pholetesor phaetusa (NIXON, 1973) — Reported from several countries of Europe (England, The Nederland, Germany, Hungary, Romania, Bulgaria) and Mongolia. New to the fauna of Korea.
Localities — 1 ♀: No. 153, 1 ♀: No. 273, 1 ♂: No. 281, 1 ♂: No. 282 and 1 ♂: No. 324.

Protapanteles anchisiades (NIXON, 1973) — Known in Europe in a few countries; I have specimens from Mongolia too. New to the fauna of Korea.
Localities — 2 ♂: No. 282, 1 ♀: No. 376, 1 ♀: No. 980 and 1 ♀: No. 986.

Protapanteles enephes (NIXON, 1965) — Second tergite unusually large, half as long as first tergite (in European forms about one-third long). Third tergite uneven and dull, second

tergite rugulose. — Reported from England, Sweden, Germany, Czechoslovakia, Hungary, Bulgaria and the European part of the USSR. New to the fauna of Korea.

Locality — 1 ♀: No. 12.

Protapanteles immunis (HALIDAY, 1834) — One female (loc. No. 325) deviating from the normal colour: tergites 3—5 reddish yellow, fore half of third tergite blackish, otherwise tergites black; further five females with fully black tergites. — Frequent in the western Palaearctic Region, distributed eastwards in "West Siberia" (TOBIAS 1986: 375). New to the fauna of Korea.

Localities — 1 ♀: No. 160, 1 ♀: No. 166, 1 ♀: No. 177, 1 ♀: No. 229, 1 ♀: No. 237, 1 ♀: No. 325 and 1 ♀: No. 962.

2. Description of the new species

Cotesia gabera sp. n. ♀

(Figs 1—4)

Description of the holotype ♀ — Body 2.3 mm long. Head in dorsal view 1.9 times as broad as long, eye somewhat longer than temple, latter rounded, occiput weakly excavated. Eye in lateral view slightly more than twice as high as wide, somewhat wider than temple, latter hardly narrowing ventrally. Ocelli round, diameter of an ocellus 1.25 times greater than distance between fore and a hind ocelli, hind imaginary tangent to fore ocellus touching hind pair of ocelli, POL twice as long as diameter of an ocelli, POL twice as long as diameter of an ocellus, OOL just shorter than POL. Face 1.2 times as wide above clypeus as high medially, inner margin of eyes subparallel, i.e. indistinctly converging ventrally. Clypeus four times as wide below as high medially. Tentorial pits distinctly four times as far from each other as distance between a pit and lowest marginal point of eye. Malar space about as long as basal width of mandible. Face with rather dense and laterally slightly weaking punctation, shiny. Frons and vertex polished, punctation of temple similar to that of face. — Antenna somewhat longer than body. First flagellar joint 2.66 times as long as broad, further joints gradually shortening and attenuating so that penultimate joint twice as long as broad.

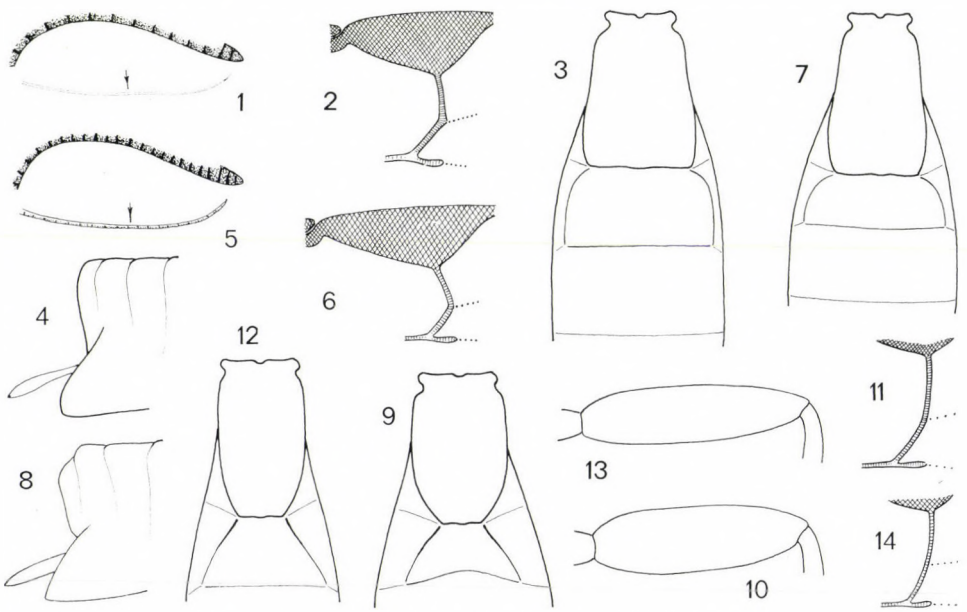
Mesosoma in lateral view 1.33 times as long as high. Mesonotum between tegulae as broad as head, with dense and discrete punctation, interspaces dull to subshiny and much shorter than punctures, notaulix indicated by rugosity. Prescutellar furrow deep, crenulated. Scutellum punctate, interspaces shiny and about as great as punctures. Polished field of axille reaching halfway of scutellum, phragma (Fig. 1, see arrow) very narrow and hardly visible. Propodeum rugose, with a weak medio-longitudinal keel. Mesopleuron anteriorly densely punctate, posteriorly polished. — Outer side of hind coxa finely punctate, interspaces shiny and greater than punctures, coxa ventrally rugulose. Hind femur three times as long as broad. Pair of spurs of

hing tibia unequal in length, inner spur distinctly whereas outer spur just longer than half basitarsus. Hind tarsus somewhat longer than hind tibia; hind basitarsus just longer than tarsal joints 2—3.

F o r e w i n g about as long as body. Pterostigma (Fig. 2) 2.5 times as long as wide, metacarp one-fifth longer than pterostigma and 3.3 times as long as distance between its distal end and tip of radial cell; pterostigma issuing radial vein distally from its middle, *r1* shorter than width of pterostigma and as long as *cuqu1*. *D* 1.33 times as wide as high, *d2* 1.66 times as long as *d1*. Nervellus clearly incurved.

M e t a s o m a shorter than mesosoma. First tergite (Fig. 3) broadening posteriorly, 1.32 times as long as broad before its hind end, i.e. hind end rounded. Second tergite less transverse, 1.88 times as wide behind as long medially, third tergite slightly longer than second tergite. Tergites 1—2 rugose, further tergites polished. — In lateral view h y p o p y g i u m (Fig. 4) usual in size, its hind margin S-like. Ovipositor sheath as long as outer spur of hind tibia.

Body black. Palpi straw yellow. Antenna blackish, flagellum below brownish. Sternites 1—3 pale yellow. Hypopygium dark brown. Legs reddish



Figs 1—4. *Cotesia gabera* sp. n.: 1 = axille with phragma (↓), 2 = pterostigma, *r1* + *cuqu1* and *cu3* of right fore wing, 3 = tergites 1—3, 4 = posterior end of metasoma with hypopygium and ovipositor sheath. — Figs 5—8. *C. geryonis* (MARSHALL): 5 = axille with phragma (↓), 6 = pterostigma, *r1* + *cuqu1* and *cu3* of right fore wing, 7 = tergites 1—3, 8 = posterior end of metasoma with hypopygium and ovipositor sheath. — Figs 9—11. *Glyptapanteles femoratus* ASHMEAD: 9 = tergites 1—2, 10 = hind femur, 11 = *r1* + *cuqu1* and *cu3* of right fore wing. — Figs 12—14. *G. octonarius* (RATZEBURG): 12 = tergites 1—2, 13 = hind femur, 14 = *r1* + *cuqu1* and *cu3* of right fore wing

yellow, coxae 1—2 brownish black, coxa 3 black. Distal third of hind femur blackish, hind tibia apically and hind tarsus entirely dark brownish. Wings hyaline; pterostigma, metacarp, *r1* + *cuqu1* brownish, other veins opaque yellowish.

Male and host unknown.

Locality — Holotype ♀: "Korea, Prov. Ryang-gang: Chann-Pay plateau, Sam-zi-yan, 1700 m" (first label), "No. 289, 24—25 July 1975, leg. J. PAPP et A. VOJNITS" (second label).

Holotype is deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. No. 7216.

The new species, *Cotesia gabera* sp. n., is very near to *C. geryonis* (MARSHALL, 1885) considering their features in common as follows: 1) inner spur of hind tibia distinctly longer than half basitarsus, 2) scutellum and outer side of hind coxa with distinct punctation, 3) first tergite longer than broad at hind, 4) legs reddish yellow. The distinctive features of the two species are given below in a tabular form:

C. gabera sp. n.	*C. geryonis* (MARSHALL)
1. Second tergite less transverse, 1.88 times as wide at hind as long medially; first tergite 1.32 times as long as broad at hind (Fig. 3).	1. Second tergite transverse, 2.3—2.7 times as wide behind as long medially; first tergite 1.5—1.6 times as long as broad at hind (Fig. 7).
2. In dorsal view head as broad as mesonotum between tegulae.	2. In dorsal view head somewhat though clearly broader than mesonotum between tegulae.
3. Phragma of polished field of axille very narrow, hardly visible (Fig. 1 ↓).	3. Phragma of polished field of axille less narrow, visible (Fig. 5 ↓).
4. *r1* perpendicular to fore margin of pterostigma (Fig. 2).	4. *r1* oblique to fore margin of pterostigma (Fig. 6).
5. Hind margin of hypopygium S-like, apically blunt (Fig. 4).	5. Hind margin of hypopygium truncate, apically less blunt (Fig. 8).
6. Every tergite black.	6. Tergite(s) 3(—4) usually with reddish yellow mark postero-laterally, otherwise tergite(s) black.

Cotesia honora sp. n. ♀♂

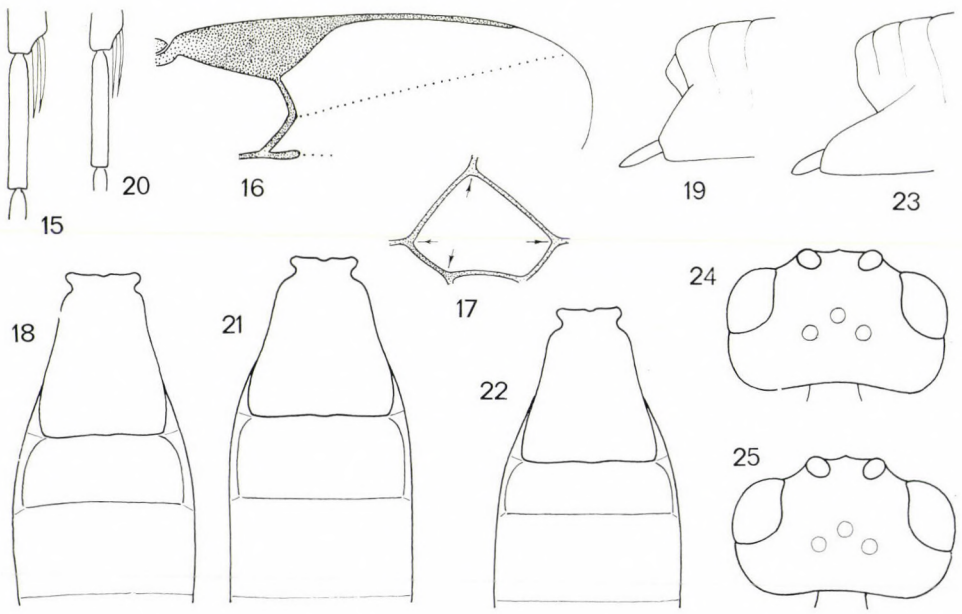
(Figs 15—19)

Description of the holotype ♀ — Body somewhat elongate, 3 mm long. Head in dorsal view less transverse, 1.73 times as broad as long, eye 1.3 times as long as temple, latter rounded, occiput moderately excavated. Eye in lateral view twice as high as wide, inner margin of eyes at face parallel. Ocelli round, distance between fore and a hind ocelli just shorter than diameter of an ocellus; hind imaginary tangent to fore ocellus slightly before hind pair of ocelli. Face 1.5 times wider than high. Clypeus clearly three times wider below than high medially. Tentorial pits far from each other, distance between them three times as long as distance between

a pit and lowest marginal point of eye. Malar space slightly longer than basal width of mandible. Head shiny to polished, face with shallow and fine punctation. — Antenna shorter than body, as long as head, mesosoma and two-thirds of metasoma. First flagellar joint twice as long as broad, further joints gradually shortening and indistinctly attenuating so that penultimate joint 1.5 times as long as broad.

Mesosoma in lateral view 1.5 times longer than high. Mesonotum between tegulae one-fifth less broad than head, strongly punctate, interspaces very short; notaulix distinct anteriorly by crowded and confluent punctation, whereas posteriorly by rugosity. Scutellum punctate, interspaces distinctly greater than those of mesonotum, shiny. Propodeum rugose, roughly rugose with a few scrobiculate elements. Mesopleuron with more or less confluent punctation, postero-medially polished. — Outer side of hind coxa rugulo-rugose. Hind femur 3.3 times as long as broad, hind tibia just shorter than hind tarsus; pair of spurs of hind tibia slightly unequal in length, inner spur as long as and outer spur somewhat shorter than half basitarsus.

Fore wing somewhat shorter than body. Pterostigma (Fig. 16) 2.5 times as long as wide, issuing radial vein distally from its middle, metacarp



Figs 15—19. *Cotesia honora* sp. n.: 15 = hind tibia with spurs and basitarsus, 16 = distal part of right fore wing, 17 = discoidal cell, 18 = tergites 1—3, 19 = posterior end of metasoma with hypopygium and ovipositor sheath. — Figs 20—21. *C. ruficrus* (Haliday): 20 = hind tibia with spurs and basitarsus, 21 = tergites 1—3. — Figs 22—23. *C. melitaearum* (Wilkinson): 22 = tergites 1—3, 23 = posterior end of metasoma with hypopygium and ovipositor sheath. — Fig. 24. *C. ogara* sp. n.: head in dorsal view. — Fig. 25. *C. orestes* (Nixon): head in dorsal view

1.4 times as long as pterostigma, length of metacarp 3.57 times greater than distance between its distal end and tip of radial cell. *r1* shorter than width of pterostigma and oblique to its fore margin, *cuqu1* just longer than *r1*. *D* relatively wide, 1.28 times as wide as high, *d2* twice as long as *d1* (Fig. 17, see arrows).

M e t a s o m a cylindrical, 1.4 times as long as mesosoma or about as long as head + mesosoma together. First tergite (Fig. 18) broadening posteriorly, 1.22 times as long as broad at hind, twice as broad behind as basally. Second tergite transverse, 2.28 times as wide behind as long medially, third tergite 1.42 times as long as second tergite. Tergites 1—2 rugose, further tergites polished. — H y p o p y g i u m apically blunt (Fig. 19); ovipositor sheath short, as long as third tarsal joint of hind leg.

Body black, metasoma yellow except black tergites 1—2, last two segments faintly brown. Antenna brownish, ventrally brownish yellowish. Palpi (as well as oral parts) straw yellow. Tegula yellow. Legs yellow; hind coxa black, apically yellow. Hind femur dorso-apically blackish. Wings hyaline. Pterostigma light brownish, basally yellowish. Veins light brownish.

D e s c r i p t i o n o f p a r a t y p e s (2 ♀ + 4 ♂) — Females: Similar to holotype. Penultimate joint of antenna 1.4 times (1 ♀) and 1.5 times (1 ♀) as long as broad, *cuqu1* 1.4—1.5 times as long as *r1*. First tergite 1.33—1.34 times as long as broad at hind; third tergite 1.4—1.5 times as long as second tergite. Third tergite antero-medially with a brown small spot. — Males: Similar to females. Antenna longer than body, flagellum slightly more attenuating distally, every flagellar joint three times as long as broad. Last 2—3 segments of metasoma blackish or dark brown.

Host unknown.

Localities — 1.) Holotype ♀: "Korea, Prov. South Pyongan, Pyongyan, city park, 4 August 1971" (first label), "No. 137, leg. S. HORVATOVICH et J. PAPP" (second label). — 2.) 1 ♀ paratype (named by me as *Apanteles melitaearum* WILKINSON, PAPP 1974): locality and collectors as for holotype, 1 Sept. 1971, No. 227. — 3.) 2 ♂ paratypes (named by me as *Apanteles melitaearum* WILKINSON, PAPP 1974): "Korea, Prov. South Pyongan, Pyongyan, Hotel garden, 1 Sept. 1971" (first label) "No. 229, leg. S. HORVATOVICH et J. PAPP" (second label). — 4.) 1 ♂ paratype: locality and collectors as for No. 3.) (or No 229), 4 Sept. 1971, No. 237. — 5.) 1 ♀ + 1 ♂ paratypes: "Korea, Prov. Pyong-sung, Bek-sung-li, Za-mo san, 60 km NE from Pyongyan" (first label), "No. 331, leg. S. HORVATOVICH et J. PAPP" (second label).

Holotype and 6 paratypes (2 ♀ + 4 ♂) are deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. Nos 7194 (holotype) and 7195—7200 (paratypes).

The new species, *Cotesia honora* sp. n., is closely related to *C. ruficrus* (HALIDAY, 1834) (Cosmopolitan) by their features in common as (1) rugose hind coxa, (2) punctate to strongly punctate scutellum, (3) notaulix indicated by crowded sculpture and (4) first tergite distinctly broadening posteriorly. The two species are distinguished by hardly discernible features though they are of specific value:

C. honora sp. n.	*C. ruficrus* (HALIDAY)
1. Metasoma cylindrical, about as long as head + metasoma together.	1. Metasoma not cylindrical.
2. Antenna shorter than body, flagellar joints somewhat more shortening so that penultimate joint 1.4—1.5 times as long as broad.	2. Antenna about as long as body, flagellar joints somewhat less shortening so that penultimate joint 1.8—2 times as long as broad.
3. First tergite 1.2—1.3 times as long as broad at hind; its two sides slightly less broadening posteriorly; second tergite 2.2—2.3 times as wide behind as long medially, third tergite distinctly, i.e. 1.4—1.5 times as long as second tergite (Fig. 18).	3. First tergite 1.1(—1.2) times as long as broad at hind; its two sides slightly more broadening posteriorly; second tergite (1.7—)2 times as wide behind as long medially, third tergite less distinctly, i.e. 1.1(—1.2) times as long as second tergite (Fig. 21).
4. Pair of spurs of hind tibia slightly unequal in length, inner spur as long as half basitarsus (Fig. 15).	4. Pair of spurs of hind tibia equal in length, somewhat though distinctly shorter than half basitarsus (Fig. 20).
5. Metasoma yellow except black tergites 1—2.	5. Metasoma black, tergites 3—4 usually and tergites 5(—6) exceptionally with reddish yellow to yellow pattern.

In a few respects the new species reminds of *Cotesia melitaearum* (WILKINSON, 1937) (western Palaearctic Region), however, they are separated by the following features:

C. honora sp. n.	*C. melitaearum* (WILKINSON)
1. Hypopygium less large, not surpassing beyond last metasomal segment (Fig. 19).	1. Hypopygium large, distinctly surpassing last metasomal segment (Fig. 23).
2. Penultimate joint of antenna 1.4—1.5 times as long as broad.	2. Penultimate joint of antenna (1.8—)2 times as long as broad.
3. Second tergite less transverse, 2.2—2.3 times as wide behind as long medially (Fig. 18).	3. Second tergite more transverse, 2.7—3 times as wide behind as long medially (Fig. 22).
4. Tegula yellow.	4. Tegula brown to yellowish brown.
5. Metasoma yellow, tergites 1—2 black.	5. Metasoma black, tergite 3 behind sometimes with rusty to reddish yellow pattern.

Cotesia ogara sp. n. ♀♂
(Figs 24, 26—29)

Description of the holotype ♀ — Body 2.5 mm long. Head in dorsal view (Fig. 24) 1.86 times as broad as long, eye 1.2 times as long as temple, latter rounded, occiput weakly excavated. Eye in lateral view twice as high as wide, temple somewhat less wide than eye and slightly narrowing ventrally. Ocelli round, distance between fore and a hind ocelli just shorter than diameter of an ocellus; hind imaginary tangent to fore ocellus touching hind pair of ocelli. Face 1.26 times as wide as high. Clypeus four times as wide below as high medially. Tentorial pits three times as far from each other as distance between a pit and lowest marginal point of eye. Malar space about as long as basal width of mandible. Face with fine punctation,

shiny, otherwise head smooth, shiny to polished. — Antenna 1.4 times as long as body. First flaggellar joint four times as long as broad, further joints gradually shortening and slightly attenuating so that penultimate joint three times as long as broad.

Mesosoma in lateral view stout, hardly longer than high. Head somewhat broader than mesonotum between tegulae. Mesonotum with relatively strong to coarse punctation, interspaces much shorter than diameter of punctures, shiny. Prescutellar furrow crenulated. Scutellum with disperse and small punctation, interspaces shiny and much greater than punctures. Phragma of polished field of scutellum distinct, not narrow (cf. Fig. 5) in comparison to *C. orestes* (cf. Fig. 1). Propodeum rugose-scrobiculate, without a medio-longitudinal keel, latero-posteriorly with small shiny fields. Punctation of mesopleuron anteriorly similar to that of mesonotum but interspaces a bit greater, posteriorly polished. — Outer side of hind coxa with rather fine punctation, interspaces about equal with punctures. Hind femur 3.3 times as long as broad. Inner spur of middle tibia almost as long as basitarsus; that of hind tibia longer than half basitarsus and inner spur of hind tibia as long as half basitarsus. Hind tarsus somewhat longer than hind tibia, basitarsus as long as tarsal joints 2—3 + proximal half of 4th joint.

Fore wing as long as body. Pterostigma (Fig. 26) 2.6 times as long as wide, issuing radial vein distinctly distally from its middle, metacarp somewhat longer than pterostigma and clearly four times as long as distance between its distal end and tip of radial cell. *r1* shorter than width of pterostigma and as long as *cuqu1*. *D* 1.23 times as wide as high, *d2* 1.68 times as long as *d1*. Nervellus deeply incurved (Fig. 27).

Metasoma as long as head and mesosoma together. First tergite (Fig. 28) 1.28 times as long as broad close to its hind end, weakly broadening posteriorly and rounded apically. Second tergite 2.18 times as wide behind as long medially, third tergite 1.37 times as long as second tergite. Tergites 1—2 rugose, base of third tergite just uneven, otherwise together with further tergites polished. — Hypopygium usual in size, its hind margin truncate (Fig. 29); ovipositor sheath short, about as long as fourth joint of hind tarsus.

Head and mesosoma black. Metasoma yellow, tergites 1—2 black, sternites 1—2 pale yellow. Last two tergites as well as lower edge of hypopygium brownish. Palpi straw yellow. Antenna brownish yellow, scape apically brown. Tegula yellow. Legs yellow, coxae and trochanters pale yellow, hind coxa basally just blackish. Tip of hind femur and distal end of hind tibia brown, hind tarsus brownish yellow. Wings hyaline; pterostigma, metacarp, *r1* + *cuqu1* brownish yellow, other veins opaque yellowish.

Description of 2 ♀ paratypes — Similar to the holotype. Body 2.3 (1 ♀) as well as 2.5 mm long (1 ♀). Head in dorsal view 1.8—1.9 times as broad as long. First tergite 1.25—1.3 times as long as broad before its hind end. Second

tergite 2.2—2.3 times as wide behind as long medially. *D* 1.34 times and *d2* 1.2 times (1 ♀) as well as 1.29 times (1 ♀) as wide as high and *d2* 1.25 times as long as *d1* (1 ♀).

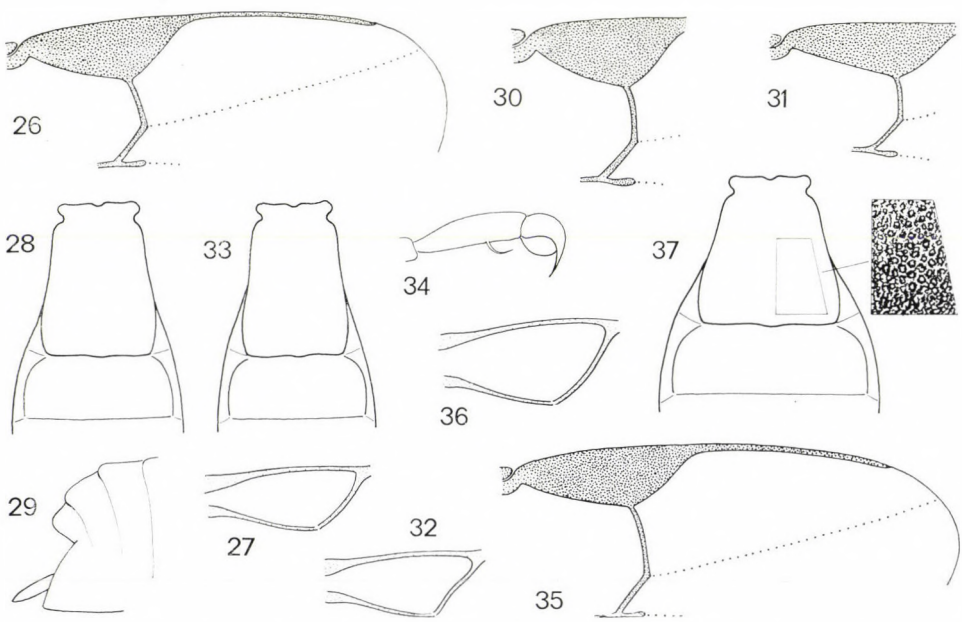
Male and host unknown.

Localities — 1.) Holotype ♀ + 1 ♀ paratype: "Korea, Prov. South Pyongan, Pyongyan, city park, 1 Sept. 1971" (first label), "No. 227, leg. S. HORVATOVICH et J. PAPP" (second label). — 2.) 1 ♀ paratype: "Korea, Prov. South Pyongan, Pyongyan, Hotel garden, 6—7 Sept. 1971" (first label), "No. 243, leg. S. HORVATOVICH et J. PAPP" (second label).

Holotype (♀) and 2 ♀ paratypes are deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. Nos 7217 (holotype) and 7218—7219 (paratypes).

The new species, *Cotesia ogara* sp. n., is related to *C. orestes* (NIXON, 1974) and *C. onaspis* (NIXON, 1974) considering their following features: (1) first tergite weakly broadening posteriorly and distinctly longer than broad at hind, (2) third tergite polished, (3) legs except coxae reddish yellow or yellow. The three species are separated with a short key expounded below:

1 (2) Inner spur of hind tibia shorter than half basitarsus. Pterostigma relatively wide, 2.1—2.35 times as long as wide and issuing radial vein less distally from its middle (Fig. 30). Mesonotum densely punctate, strength of punctation of usual size, notaulix indistinct.



Figs 26—29. *Cotesia ogara* sp. n.: 26 = distal part of right fore wing, 27 = submediallan cell with nervellus, 28 = tergites 1—2, 29 = posterior end of metasoma with hypopygium and ovipositor sheath. — Fig. 30. *C. onaspis* (NIXON): pterostigma, *r1* + *cuqu1* and *cu3* of right fore wing. — Figs 31—33. *C. orestes* (NIXON): 31 = pterostigma, *r1* + *cuqu1* and *cu3* of right fore wing, 32 = submediallan cell with nervellus, 33 = tergites 1—2. — Figs 34—37. *C. thapinthotha* sp. n.: 34 = fifth joint of fore tarsus with spinule (lateral view), 35 = distal part of right fore wing, 36 = submediallan cell with nerve lus, 37 = tergites 1—2 with indication of sculpture of first tergite

Penultimate joint of antenna subcubic, i.e. only a bit longer than broad. Tergites brown to dark brown, last 2—3 tergites usually blackish. ♀♂: 2.2—2.5 mm. — England, Hungary, USSR (Armenia), Turkey **C. onaspis** (NIXON, 1974)

2 (1) Inner spur of hind tibia longer than half basitarsus. Pterostigma relatively less wide, 2.6—2.85 times (*C. ogara*) as well as 3—3.2 times (*C. orestes*) as long as wide and issuing radial vein more distally from its middle (Figs 26 and 31). Mesonotum with dense and unusually coarse punctation, notaulix distinct by crowded punction. Penultimate joint of antenna clearly twice as long as broad.

3 (4) Temple in dorsal view moderately rounded, eye slightly longer than temple (Fig. 24). Phragma of scutellum distinctly less narrow (cf. Fig. 5). First tergite somewhat less long, 1.25—1.3 times as long as broad close before its hind end, second tergite 2.1—2.3 times as wide behind as long medially (Fig. 28). Nervellus deeply incurved (Fig. 27). *d2* 1.6—1.4 times as long as *d1*. Tergites yellow except black tergites 1—2. Every coxa yellow, base of hind coxa just black(ish). ♀: 2.3—2.5 mm. — Korea **C. ogara** sp. n

4 (3) Temple in dorsal view strongly rounded, eye 1.4—1.5 times as long as temple (Fig. 25). Phragma of scutellum very narrow thus hardly visible (cf. Fig. 1). First tergite somewhat longer, 1.5 times as long as broad at hind, second tergite twice as wide as long medially (Fig. 33). Nervellus faintly sigmoid-form (Fig. 32). *d2* 1.7—1.8 times as long as *d1*. All tergites black. Coxae 1—2 brownish black, coxa 3 black. ♀♂: 2.5—3 mm. — England, the Nederland, Germany, Finland, USSR (Russia: Kalinin district), Korea **C. orestes** (NIXON, 1974)

Cotesia thapinthotha sp. n. ♀♂

(Figs 34—38)

Description of the holotype ♀ — Body 3 mm long. Head in dorsal view transverse, twice as broad as long, temple rounded and one-third shorter than eye, occiput weakly excavated. Eye in lateral view 2.26 times as high as wide, temple as wide as eye. Ocelli round and relatively large, distance between fore and a hind ocelli shorter than diameter of an ocellus; hind imaginary tangent to fore ocellus transecting hind pair of ocelli; POL = OOL. Face 1.32 times as wide as high, inner margin of eyes parallel. Tentorial pits almost three times as far from each other as distance between a pit and lowest marginal point of eye. Clypeus of elongate-quadratic shape four times as wide below as high medially. Malar space as long as basal breadth of mandible. Head smooth, shiny to polished, face with very fine to indistinct and disperse punctation, temple behind uneven. — Antenna about as long as body. First flagellar joint 2.5 times as long as broad, further joints gradually attenuating so that penultimate joint also 2.5 times as long as broad.

Mesosoma in lateral view 1.33 times as long as high. Mesonotum between tegulae as broad as head in dorsal view. Lateral part of pronotum just uneven and shiny. Mesonotum with distinct and relatively strong punctation, interspaces shiny and clearly shorter than diameter of punctures, notaulix distinct by crowded and more or less confluent punctation. Prescutellar furrow deep, crenulated. Scutellum smooth, shiny. Propodeum medially rugose, laterally uneven-rugulose with almost smooth fields, without a distinct medio-longitudinal keel. — Legs of usual shape. Outer side of fifth joint

of fore tarsus with a spinule (Fig. 34). Outer side of hind coxa smooth and shiny, with disperse and very fine punctures. Hind femur 3.3 times as long as broad. Hind tibia somewhat shorter than hind tarsus; its pair of spurs unequal in length, inner spur two-thirds whereas outer spur half as long as basitarsus. Hind basitarsus as long as tarsal joints 2—4.

Fore wing as long as body. Pterostigma (Fig. 35) 3.2 times as long as wide, issuing radial vein distally from its middle, metacarp somewhat longer than pterostigma and 3.4 times as long as distance between its distal end and tip of radial cell; *r1* somewhat longer than width of pterostigma, slightly arched and 3.3 times as long as *cuqu1;* radial vein approaching tip of wing. *D* as long as high, *d2* clearly, i.e. 1.6 times, as long as *d1*, nervulus issuing from *d* proximally from its middle (Fig. 38, see arrows). Nervellus moderately incurved (Fig. 36).

Metasoma as long as mesosoma. First tergite (Fig. 37) clearly broadening posteriorly and as long as broad at hind, its hind width nearly twice as large as its basal width. Second tergite transverse, 2.66 times as wide behind as long medially; third tergite somewhat longer than second tergite. Fore half of first tergite smooth and shiny, its hind half punctate-rugose to rugose, shiny; second tergite subrugulose to uneven with (almost) smooth and shiny fields. Further tergites polished. In lateral view hind margin of hypopygium truncate, ovipositor sheath concealed.

Body black. Hind corner of third tergite and tergites 4—5 entirely reddish yellow medially with faint brownish tint. Sternites 1—2 pale yellow, further sternites and hypopygium reddish yellow, latter medially also brownish. Clypeus reddish yellow, palpi pale yellow. Scape dark reddish yellow, pedicel and flagellum dark brown, ventrally weakly rusty. Legs reddish yellow, coxae 1—2 brownish black, coxa 3 black. Wings hyaline; pterostigma brown, veins opaque yellowish.

Description of the paratypes (2 ♂) — Similar to female. Body (2.9—)3 mm long. Antenna somewhat longer than body, attenuating distally, every flagellar joint three times as long as broad. Second tergite somewhat less transverse, 2.1—2.25 times as wide behind as long medially, its sculpture slightly stronger. Fifth joint of fore tarsus without spinule. Tergites black, except reddish yellow postero-lateral corner of third tergite; last 2—3 sternites dark.

Localities — Holotype ♀: "Korea, Prov. Kanwon: Kum-gang san, environs of Hotel" (first label), "20. VIII. 1982, leg. BERON et POPOV No. 12" (second label). — 2 ♂ paratypes: "Korea, Prov. Gang-von, district On-dzong, Kum-gang san, near Hotel Go-song, 250 m" (first label), "No. 315, 4 August 1975, leg. J. PAPP et A. VOJNITS" (second label).

Holotype (♀) and 2 ♂ paratypes are deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. Nos 7220 (holotype) and 7221—7222 (paratypes).

The new species, *Cotesia thapinthotha* sp. n., runs to *C. rubripes* (HALIDAY, 1834), *C. limbata* (MARSHALL, 1885), *C. spurius* (WESMAEL, 1837) and *C.*

neustriae (TOBIAS, 1986) with the help of both TOBIAS's (1986) and my key (PAPP, 1987) to the species of *glomeratus*-group of *Apanteles* s. l. (= genus *Cotesia* CAMERON). They are separated with the following key:

1 (6) Fifth joint of fore tarsus on its outer side with a spinule (Fig. 34).
2 (3) Mesonotum with fine and less dense punctation, subshiny or somewhat pruinose; notaulix less clearly indicated by slightly stronger punctation. First tergite somewhat less broadening posteriorly; second tergite less transverse, about twice as wide behind as long medially (Fig. 39), rugo-rugulose with more or less polished fields. Pterostigma 2.5—2.8 times, rarely 2.2—2.3 times, as long as wide. Hind femur usually black, frequently either partly or (almost) entirely reddish yellow. ♀♂: 2.5—3.3 mm. — Frequent to common in the Palaearctic Region **C. spurius** (WESMAEL, 1837)
3 (2) Mesonotum with sharp and dense punctation, subshiny to dull; notaulix clearly indicated by crowded punctation anteriorly and by rugosity posteriorly. First tergite more or less broadening posteriorly (Figs 37, 40). Pterostigma 3—3.2 times as long as wide. Hind femur reddish yellow and exceptionally with dark suffusion.
4 (5) First tergite clearly broadening posteriorly and as long as wide at hind, its hind width nearly twice as large as its basal width (Fig. 37). Second tergite transverse, 2.66 times as wide behind as long medially (Fig. 37), weakly sculptured with smooth and shiny fields. *D* slightly less long, i.e. as long as high; *d2* 1.6 times as long as *d1*, i.e. nervulus issuing from *d* proximally from its middle (Fig. 38, see arrows). Nervellus of hind wing slightly more incurved (Fig. 36). Tergites 3—4 and all sternites reddish yellow (♀♀) or lateral pair of spots of tergites 3—4 and all sternites reddish yellow except last 2—3 ones being brownish to blackish (♂♂). ♀♂: 3 mm. — Korea **C. thapinthotha** sp. n.
5 (4) First tergite weakly broadening posteriorly and 1.2—1.3 times as long as wide at hind, its hind width about one-third greater than basal width (Fig. 40). Second tergite less transverse, at most twice as wide behind as long medially (Fig. 40), usually sculptured (similarly to first tergite) and without smooth and shiny fields. *D* slightly longer than high; *d2* only somewhat longer than *d1*, i.e. nervulus issuing near to middle of *d* (Fig. 40, see arrows). Nervellus of hind wing slightly less incurved (Fig. 42). Metasoma black, sternites 2—3 yellow (♀♂). ♀♂: 2.5—3 mm. — Europe, ?Japan. (?= *Apanteles kawadai* WATANABE, 1934) **C. limbata** (MARSHALL, 1885)
6 (1) Fifth joint of fore tarsus on its outer side without spinule.

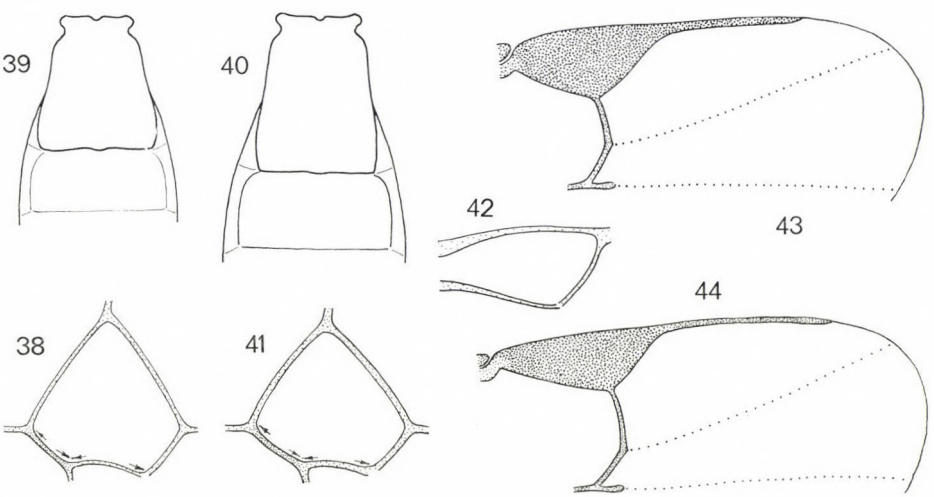


Fig. 38. *Cotesia thapinthotha* sp. n.: discoidal cell. — Fig. 39. *C. spurius* (WESMAEL): tergites 1—2. — Figs 40—42. *C. limbata* (MARSHALL): 40 = tergites 1—2, 41 = discoidal cell, 42 = submediallan cell with nervellus. — Fig. 43. *C. neustriae* (TOBIAS): distal part of right fore wing. — Fig. 44. *C. rubripes* (HALIDAY): distal part of right fore wing

7 (8) Pterostigma wide, 2—2.2 times as long as wide; metacarp relatively short, 1.4—1.6 times as long as distance between its distal end and tip of radial cell (Fig. 42). Penultimate joint of antenna 1.5 times as long as broad. Inner spur of hind tibia usually shorter than, rather exceptionally as long as or minutely / indistinctly longer than half basitarsus. Hind femur blackish brown with little reddish suffusion (basally). ♀♂: 2.5—2.7 mm. — USSR (European part) **C. neustriae** (TOBIAS, 1986)

8 (7) Pterostigma narrow, 2.6—3 times as long as wide; metacarp relatively long, 2.6—3 times as long as distance between its distal end and tip of radial cell (Fig. 43). Penultimate joint of antenna twice as long as broad. Inner spur of hind tibia distinctly longer than half basitarsus. Hind femur reddish yellow. ♀♂: 2.8—2 mm. — Europe, Korea **C. rubripes** (HALIDAY, 1834)

Considering its following features *C. thapinthotha* sp. n. reminds of the genus *Protapanteles* ASHMEAD, 1898: (1) fifth joint of fore tarsus with spinule, (2) propodeum laterally with somewhat weakening rugosity, (3) second tergite with weak sculpture and (4) antenna with long penultimate joint. The new species, however, belongs to the genus *Cotesia* CAMERON, 1891 owing to its (1) distinctly broadening first tergite, (2) strongly and densely punctate mesonotum, (3) sculptured propodeum and (4) phragma absent on axille.

Glyptapanteles bimus sp. n. ♀♂
(Figs 45—47)

Description of the holotype ♀ — Body 3.2 mm long. Head in dorsal view transverse, 1.9 times as broad as long, eye one-fifth longer than temple, latter rounded, occiput weakly excavated. Eye in lateral view twice as high as wide, temple one-fifth less wide than eye. Ocelli round, diameter of an ocellus 1.75 times as long as distance between fore and a hind ocelli, hind imaginary tangent to fore ocellus touching hind two ocelli; POL 1.43 times as long as diameter of a hind ocellus, POL ≃ OOL. Face indistinctly wider than high, inner margin of eyes parallel. Clypeus three times wider below than high medially. Tentorial pits 3.6 times as far from each other as to lowest marginal point of eye. Malar space as long as basal width of mandible. Head shiny to polished; face evenly and distinctly punctate, interspaces rather shorter than punctures. — Antenna one-fourth longer than body. First flagellar joint 2.66 times as long as broad, further joints gradually shortening and attenuating so that penultimate joint 1.8 times as long as broad.

Mesosoma in lateral view 1.49 times as long as high. Mesonotum just less broad than head, disc of mesonotum with discrete and small though distinct punctation, interspaces glistening and rather shorter than punctures. Prescutellar furrow finely crenulated. Scutellum with disperse punctation, interspaces greater in size than punctures. Polished field of axille reaching up to half scutellum. Propodeum dull, medially to laterally rugose-subrugose to rugulose, latero-posteriorly with smooth and shiny fields intercrossed with rugose elements; without medio-longitudinal keel. — Fifth joint of fore tarsus on its outer side with a curved spinule (Fig. 46). Hind coxa as

long as tergites 1—3; its outer surface with fine and more or less even punctation, interspaces greater than punctures. Hind femur four times as long as broad. Hind tarsus one-fifth longer than hind tibia. Inner (or longer) spur of middle tibia minutely longer than basitarsus; that of hind tibia distinctly longer than and outer (or shorter) spur just shorter than basitarsus. Hind basitarsus as long as hind tarsal joints 2—4.

F o r e w i n g somewhat longer than body. Pterostigma (Fig. 45) 2.86 times as long as wide, metacarp slightly longer than pterostigma and 4.5 times as long as distance between its distal end and tip of radial cell; pterostigma issuing between its distal end and tip of radial cell; pterostigma issuing radial vein distally from its middle, *r1* as long as width of pterostigma, slightly oblique to fore margin of pterostigma, *cuqu1* shorter than *r1*; radial vein approaching tip of wing. *D* wider than high, *d2* one-third longer than *d1*, i.e. nervulus issuing *d* proximally from its middle (Fig. 45, see arrows as well as small arrows). Nervellus moderately incurved. Setae of wings evenly dense as usually.

M e t a s o m a about as long as head and mesosoma together. First tergite (Fig. 47) twice as long as broad at base, almost evenly narrowing from base to apex; its basal (declivous) part polished and its hind (horizontal) part punctate, interspaces shiny and shorter than punctures. Second tergite isosceles trapezoid form, its hind base one-third wider than medially long, medially polished to uneven and laterally longitudinally rugulose. Further tergites polished. Hypopygium small, truncate; in lateral view ovipositor sheath as long as fifth joint of hind tarsus without claw.

Head and mesosoma black, tergites 1—2 black, tergites 3—4 yellow and medio-basally with a black (tergite 3) as well as dark brown and smaller (tergites 4) macula. Further tergites dark brown, with pale hind margin. Sternites yellow, hypopygium brown, ovipositor sheath dark brown. Legs yellow, basal half of hind coxa black, hind femur apically, base and distal third of hind tibia as well as entire hind tarsus brown. Palpi pale yellow, mandible dark yellow, labrum brownish. Scape and pedicel yellow, scape distally brownish; flagellum brownish greyish, ventro-proximally yellowish. Wings hyaline; pterostigma, metacarp and *r1* + *cuqu1* brownish, further vein opaque brownish.

D e s c r i p t i o n o f 4 ♀ p a r a t y p e s — Similar to the holotype. Body 3—3.2 mm long. Penultimate joint of antenna 1.6 times (1 ♀) and twice (2 ♀) as long as broad. Pterostigma 2.5 times (2 ♀) and 2.86 times (2 ♀) as long as wide. Tergites 3—4 black to blackish and only laterally yellow(ish). Pterostigma basally with a very small yellow spot (2 ♀).

D e s c r i p t i o n o f 1 ♂ p a r a t y p e — Male similar to female. Body 3.2 mm long. Antenna about 1.5 times as long as body. First flagellar joint 3.55 as long as broad, penultimate joint 2.3 times as long as broad.

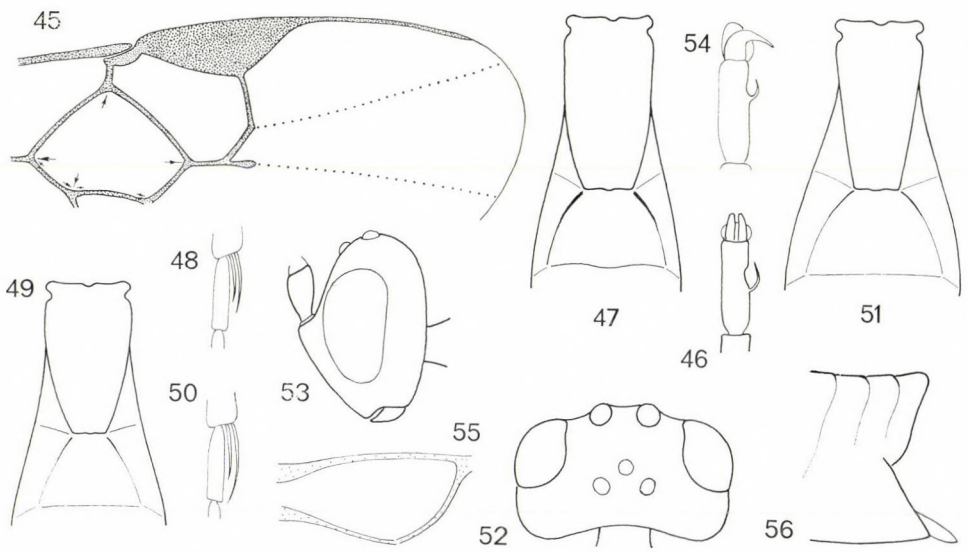
Host unknown.

Localities — 1.) Holotype ♀: "Korea, Prov. Gang-von, district On-dzong, Kum-gang san, along Ok-ru dong, 250—300 m" (first label) "No. 324, 7 August 1975, leg. J. Papp et A. Vojnits" (second label). — 2.) 1 ♀ paratype: "Korea, Prov. South Pyongan, Pyongyan, Hotel garden, 5—6 Aug. 1971" (first label), "No. 144, leg. S. Horvatovich et J. Papp" (second label). — 3.) 2 ♀ paratypes: "Korea, Prov. South Pyongan, Za-mo san, 60 km NE from Pyongyan, 2. Sept. 1971" (first label), "No. 231, leg. S. Horvatovich et J. Papp" (second label). — 4.) 1 ♂ paratype: "Korea, Prov. Gang-von, district On-dzong, Kum-gang san, near Hotel Go-song, 250 m" (first label), "No. 315, 4 August 1975, leg. J. Papp et A. Vojnits" (second label). — 5.) 1 ♀ paratype (in Zool. Inst. Warszawa): "Korea, Onpho ad. Chongjin, 21. VIII. 1959, leg. B. Pisarski et J. Prószyński".

Holotype (♀) and 3 ♀ + 1 ♂ paratypes in the Hungarian Natural History Museum, Budapest; Hym. Typ No. 7223 (holotype) and 7224—7227 (paratypes); 1 ♀ paratype in the Zoological Institute of the Polish Academy of Sciences, Warsaw.

The new species, *Glyptapanteles bimus* sp. n., is closely related to *G. acasta* (Nixon, 1973), *G. mygdonia* (Nixon) and *G. theivorae* (Shenefelt, 1972). The four species are keyed as follows:

1 (6) Outer-distal side of fifth joint of fore tarsus with a curved spine (Fig. 46).
2 (3) Propodeum medially to laterally subrugose to rugulose, dull, latero-posteriorly with small, smooth and shiny fields intercrossed with rugose elements. Mesonotum with discrete and small though distinct punctation, interspaces glistening and rather shorter than punctures; face with similar punctation, shiny. Penultimate joint of antenna 1.8—2 times as long as broad. Hind coxa distally in a variable size yellow; scape brownish to yellowish. ♀: 3—3.2 mm. — Korea **G. bimus** sp. n.
3 (2) Propodeum smooth and shiny to polished, at most around lunule weakly sculptured. Mesonotum with very fine to obsolescent punctation, glistening; face almost smooth, shiny.



Figs 45—47. *Glyptapanteles bimus* sp. n.: 45 = distal part of right fore wing, 46 = fifth joint of fore tarsus with spinule (in dorsal view), 47 = tergites 1—2. — Figs 48—49. *G. acasta* (Nixon): 48 = two spurs of middle tibia, 49 = tergites 1—2. — Figs 50—51. *G. mygdonia* (Nixon): 50 = two spurs of middle tibia, 51 = tergites 1—2. — Figs 52—56. *G. distatus* sp. n.: 52 = head in dorsal view, 53 = head in lateral view, 54 = fifth joint of fore tarsus with spinule (in lateral view), 55 = submediallan cell with nervellus, 56 = distal end of metasoma with hypopygium and ovipositor sheath

4 (5) Inner (or longer) spur of middle tibia two-thirds to three-fourths (Fig. 48) as long as basitarsus; two spurs of hind tibia subequal to equal in length, inner spur at most as long as half basitarsus. First tergite less than twice as long as broad at base, its sides rather arched (Fig. 49). Penultimate joint of antenna 1.5—1.6 times as long as broad. Pterostigma issuing radial vein less distally from its middle. Hind coxa black. Body, in comparison to next species, less strong or usual in size. ♀♂: 3 mm. — Europe and the USSR (European part, Caucasus Mts and Altay Mts) **G. acasta** (NIXON, 1973)

5 (4) Inner (or longer) spur of middle tibia longer than (Fig. 50) to as long as basitarsus; two spurs of hind tibia unequal in length, inner (or longer) spur longer than half basitarsus. First tergite (almost) twice longer than broad at base, its sides straight (Fig. 51). Penultimate joint of antenna 1.8—2 times as long as broad. Pterostigma issuing radial vein usually more distally from its middle. Hind coxa apically frequently yellow. ♀♂: (3—) 3.3—3.5 mm. — Europe and the USSR **G. mygdonia** (NIXON, 1973)

6 (1) Outer-distal side of fifth joint of fore tarsus without spinule. Mesonotum with fine though discrete punctation, interspaces shiny and about equal in size with punctures. Propodeum smooth and glistening with fine and disperse punctation, around lunule with rugae. Inner spur longer than and outer spur as long as half basitarsus. Metacarp 4—4.5 times as long as distance between its distal end and tip of radial cell. Hind coxa apically yellow. ♀♂: 2.8—3 mm. (= *Apanteles gracilariae* SONAN, 1942 nec *A. gracilariae* WILKINSON, 1940). — China **G. theivorae** (SHENEFELT, 1972)

Glyptapanteles distatus sp. n. ♀ ♂

(Figs 52—58)

Description of the holotype ♀ — Body 2.7 mm long. Head in dorsal view (Fig. 52) less transverse, 1.83 as broad as long, eye just less than twice as long as temple, latter rounded, occiput faintly excavated. Eye in lateral view (Fig. 53) just less than twice as high as wide, temple one-third less wide than eye and evenly broad, i.e. not broadening or narrowing ventrally; inner margin of eyes converging ventrally. Ocelli nearly round, diameter of an ocellus 1.5 times as long as distance between fore and a hind ocelli, hind imaginary tangent to fore ocellus touching hind pair of ocelli; POL 1.33 times as long as diameter of an ocellus, OOL 1.2 times as long as POL (Fig. 52). Face isosceles trapezoid form, its lower width somewhat greater than its median height. Clypeus 2.85 wider below than high medially. Tentorial pits almost four times as far from each other as distance between a pit and lowest marginal point of eye. Malar space shorter than basal width of mandible. Face finely punctate, shiny, otherwise head polished. — Antenna clearly 1.4 times as long as body. First flagellar joint 3.66 times as long as broad, further joints gradually shortening and slightly attenuating so that penultimate joint 2.2 times as long as broad.

Mesosoma in lateral view 1.2 times as long as high. Mesonotum between tegulae slightly less broad than head, disc of mesonotum with relatively strong, discrete and dense punctation, interspace shiny to subshiny and rather shorter than punctures. Prescutellar furrow finely crenulated. Punctation of scutellum less dense, i.e. interspaces shiny and greater than punctures. Polished field of axille reaching up to half way of scutellum. Pro-

podeum evenly rugose, without a medio-longitudinal keel, along its hind margin with small polished fields intercrossed with rugae-formed elements. — Fifth joint of fore tarsus with spinule (Fig. 54). Hind coxa as long as tergites 1—3, its outer surface with very fine and rather less even punctation, interspaces rather greater than punctures and shiny. Hind femur 4.6 times as long as broad, almost parallel-sided. Hind tarsus slightly longer than hind tibia. Inner (or longer) spur of middle tibia just shorter than basitarsus. Pair of spurs of hind tibia unequal, inner spur somewhat longer and outer spur shorter than half basitarsus. Hind basitarsus as long as tarsal joints 2—4.

Fore wing somewhat longer than body. Pterostigma (Fig. 57) 2.63 times as long as wide, metacarp somewhat longer than pterostigma and 5.7 times as long as distance between its distal end and tip of radial cell; pterostigma issuing radial vein distally from its middle, *r1* shorter than width of pterostigma and somewhat oblique to fore margin of pterostigma, meeting *cuqu1* angularly, latter somewhat longer than *r1*; radial vein approaching tip of wing. *D* unusually wide, 1.42 times as wide as high, *d2* 1.8 times as long as *d1*, i.e. nervulus issuing distinctly proximally from *d* (Fig. 57, see arrows as well as small arrows). Nervellus incurved (Fig. 55). Setae of wings evenly dense as usually.

Metasoma about as long as mesosoma. First tergite (Fig. 58) twice as long as broad at base, evenly narrowing posteriorly, its hind (or horizontal) half rugose. Second tergite 1.5 times wider behind than long medially, longitudinally subrugose, shiny. Third tergite smooth with disperse and fine punctures, further tergites polished. Hypopygium (Fig. 56) of usual size, its hind margin truncate; ovipositor sheath about half as long as fourth joint of hind tarsus.

Head, mesosoma and tergites 1—2 black. Antenna distally faintly darkening reddish yellow. Palpi straw yellow, labrum and mandible yellow. Tegulae yellow. Legs yellow, coxae and trochanters straw yellow, tip of hind femur, base and distal third of hind tibia brownish, hind tarsus brownish fumous. Tergites yellow, tergites 3—5 medio-basally with brown maculae, further tergites almost entirely brownish. Ovipositor sheath brown. Wings hyaline; pterostigma, metacarp, *r1* + *cuqu1* brownish, pterostigma with a small indistinct yellow basal spot, other veins opaque brownish.

Description of the paratype ♀ — Similar to the holotype. Face almost smooth, i.e. its punctation indistinct. Penultimate joint of antenna 2.5 times as long as broad. Pterostigma three times as long as wide, metacarp one-quarter longer than pterostigma and five times as long as distance between its distal end and tip of radial cell; *r1* just shorter than width of pterostigma. Hind (or horizontal) half of first tergite rugulose. Fore and middle legs except coxae + trochanters faintly fumous. Tergites black, only third tergite brownish yellowish.

Description of 2 ♂ paratypes — Similar to female. Body 2.7 mm. Penultimate joint of antenna almost three times as long as broad.

Host unknown.

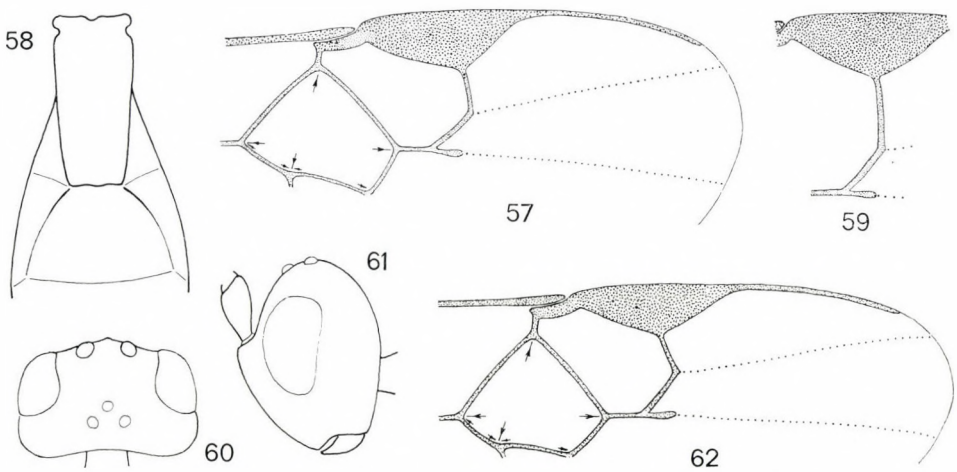
Localities — 1.) Holotype ♀: "Korea, Prov. Kangwon, Samil-po, 13. X. 1978, leg. Dr. A. VOJNITS et L. ZOMBORI, No. 493." — 2.) 1 ♂ paratype: "Korea, Prov. South Pyongan, Lyong-ak san, 14 km W from Pyongyan, 11. Aug. 1971" (first label), "No. 160, leg. S. HORVATOVICH et J. PAPP" (second label). — 3.) 1 ♂ paratype: "Korea, Prov. South Pyongan, Nam-po" (first label), "No. 273, 19 July 1975, leg. J. PAPP et A. VOJNITS" (second label). — 4.) 1 ♀ paratype: "Korea, Pyongyang City, Botong-yang Park" (first label), "30. V. 1985, leg. VOJNITS et ZOMBORI, No. 961" (second label).

Holotype (♀) and 1 ♀ + 2 ♂ paratypes are deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. Nos 7228 (holotype) and 7229—7231 (paratypes).

The new species, *Glyptapanteles distatus* sp. n., is allied with the following species: *G. lamborni* (WILKINSON, 1928), *G. longiantennatus* (YOU et XIONG, 1987) and *G. salepus* (PAPP, 1983). Their systematic affinity was established rather upon the basis of literary data. The three species *(G. distatus, G. lamborni, G. salepus)* are distinguished with the following key:

1 (2) Propodeum smooth with very fine to fine and disperse punctures, around lunule subrugose. Head in dorsal view twice broader than long. *r1* longer than width of pterostigma as well as *cuqu1* (Fig. 59). Inner spur of hind tibia somewhat longer than to as long as half basitarsus. Hind coxa black, only apically yellow. ♀♂: 2.5—3 mm. — Malaysia, China **G. lamborni** (WILKINSON, 1928)

2 (1) Propodeum rugose-subrugose. Head in dorsal view less than twice as broad as long. *r1* shorter than width of pterostigma as well as *cuqu1* (Fig. 57). Inner spur of hind tibia different in length.



Figs 57—58. *Glyptapanteles distatus* sp. n.: 57 = distal part of right fore wing, 58 = tergites 1—2. — Fig. 59. *G. lamborni* (WILKINSON): pterostigma, *r1* + *cuqu1* and *cu3* of right fore wing. — Figs 60—62. *G. salepus* (PAPP): 60 = head in dorsal view, 61 = head in lateral view, 62 = distal part of right fore wing

3 (4) Temple in dorsal view rounded, i.e. head between temples not broader than between eyes (Fig. 52); temple in lateral view evenly broad, i.e. not broadening ventrally (Fig. 53). Disc of mesonotum with discrete and relatively strong punctation, interspaces rather shorter than punctures. Pterostigma issuing radial vein distinctly distally from its middle (Fig. 57). Discoidal cell unusually wide, 1.4 times as wide as high; *d2* 1.8 times as long as *d1* (Fig. 57, see arrows as well as small arrows). Inner spur of hind tibia longer than half basitarsus. Penultimate joint of antenna 2.2—2.5 times as long as broad. Hind coxa straw yellow. ♀♂: 2.7—2.8 mm. — Korea **G. distatus** sp. n.

4 (3) Temple in dorsal view slightly broadening, i.e. head between temples slightly broader than between eyes (Fig. 60); temple in lateral view broadening ventrally (Fig. 61). Disc of mesonotum with fine and superficial punctation, interspaces greater than punctures. Pterostigma issuing radial vein hardly distally from its middle (Fig. 62). Discoidal cell less wide, 1.2—1.3 times as wide as high; *d2* 1.4—1.5 times as long as *d1* (Fig. 62, see arrows as well as small arrows). Inner spur of hind tibia just shorter than half basitarsus. Penultimate joint of antenna 1.3—1.5 times as long as broad. Hind coxa infuscate to black(ish), apically rusty to yellowish. ♀♂: 2.8—3 mm. — The Nederland **G. salepus** (PAPP, 1983)

Glyptapanteles longiantennatus (YOU et XIONG, 1987) is known by me only on the basis of its short characterization in English and of the figures accompanied to the original description in Chinese language. Besides the few differences to be established supposedly there are further ones if authenticated specimens would be examined:

G. distatus sp. n.	*G. longiantennatus* (YOU et XIONG)
1. Penultimate joint of antenna 2.2 times as long as broad.	1. Penultimate joint of antenna 2.5 times as long as broad.
2. Tergites 2—3 equal in length.	2. Tergite 2 shorter than tergite 3.
3. Hypopygium apically pointed, i.e. without excision.	3. Hypopygium apically excised, i.e. not pointed.
4. Hind coxa straw yellow.	4. Hind coxa yellow, basally brown.
5. Body 2.7—2.8 mm long (♀♂).	5. Body 2.4 mm long (♀♂).

G. distatus sp. n. is related to the other new species as *G. bimus* sp. n. described previously on p. 106—109, they are distinguished in a few though of specific features tabulated below:

G. distatus sp. n.	*G. bimus* sp. n.
1. Body relatively less strong, 2.7—2.8 mm long.	1. Body relatively strong, 3—3.2 mm long.
2. Penultimate joint of antenna 2.2—2.5 times (♀♀) as well as almost three times (♂♂) as long as broad.	2. Penultimate joint of antenna 1.8—2 times (♀♀) as well as 2.3 times (♂) as long as broad.
3. *r1* relatively more oblique to fore margin of pterostigma and shorter than width of pterostigma; *D* unusually wide, 1.4(—1.45) times as wide as high (Fig. 57).	3. *r1* relatively less oblique to fore margin of pterostigma and as long as width of pterostigma; *D* usual in width, 1.2—1.25 times as wide as high (Fig. 45).
4. Fisrt tergite evenly narrowing from base to apex (Fig. 58), its hind half rugose.	4. First tergite almost evenly narrowing from base to apex (Fig. 47), its hind half puctate.
5. Hind coxa fully straw yellow.	5. Basal half of hind coxa black, otherwise yellow.

Iconella repleta sp. n. ♀
(Figs 63—70)

Description of the holotype ♀ — Body 4.1 mm long. Head in dorsal view (Fig. 63) just twice as broad as long, eye somewhat longer than temple, latter rounded, occiput weakly excavated. Eye in lateral view 2.2 times as high as wide, temple slightly less wide than eye and hardly narrowing ventrally (Fig. 64). Ocelli round, distance between fore and a hind ocelli slightly shorter than diameter of an ocellus; hind imaginary tangent to fore ocellus before hind pair of ocelli; POL twice as long as diameter of a hind ocellus and minutely shorter than OOL (Fig. 63). Face twice as wide as high, inner margin of eyes parallel. Clypeus 2.3 times wider below than high medially. Tentorial pits about three times far from each other than distance between a pit and lowest marginal point of eye. Malar space as long as basal width of mandible. Head dull, shagreened-subrugulose; face with fine punctation, interspaces shagreened-subrugulose. — Antenna about as long as body. First flagellar joint three times as long as broad, further joints gradually shortening and slightly attenuating so that penultimate joint 1.5 times as long as broad.

Mesosoma 1.37 times as long as high. Mesonotum between tegulae as broad as head, densely and evenly punctate, interspaces dull and smaller than punctures (Fig. 65). Prescutellar furrow narrow and with fine crenulation. Scutellum punctate, interspaces shiny and more or less greater than punctures. Polished field of axille reaching up to two-thirds of scutellum. Propodeum uneven-shagreened and dull, around lunule with short striate elements. Mesopleuron dull, antero-posteriorly with weakening punctation. — Hind coxa as long as tergites 1—3. Hind femur three times as long as broad; hind tarsus 1.3 times as long as hind tibia. Pair of spurs of hind tibia unequal in length, inner spur just and outer spur clearly shorter than half basitarsus.

Fore wing about as long as body. Pterostigma (Fig. 67) 2.53 times as long as wide, issuing radial vein distally from its middle; metacarp 1.39 times as long as pterostigma, and 5.45 times as long as distance between its distal end and tip of radial cell; *r1* weakly arched and slightly longer than width of pterostigma as well as one-third longer than *cuqu1*, tip of *R* approaching end of wing. *D* minutely wider than high, *d2* slightly longer than *d1*, i.e. nervulus emitting almost from middle of *d*. Nervellus (Fig. 68) perpendicular to *n. med.* and straight.

Metasoma as long as head and mesosoma together. First tergite (Fig. 69) 1.4 times as long as broad at base; its base broad, here tergite twice as broad as apically; almost evenly narrowing from base to apex; its fore declivous half polished, its hind horizontal half with discrete punctures, interspaces shagreened, dull and rather greater than punctures. Second tergite

transverse, 4.25 times wider behind than long medially, laterally pointed (Fig. 69). Third tergite clearly three times as long as second tergite. Tergites 2—4 shagreened and dull, further tergites shiny except their hind faintly shagreened margin. Ovipositor sheath (together with ovipositor or terebra) long, as long as hind tibia + tarsus together. End of ovipositor sinuate (Fig. 70).

Body, antenna and legs black. Maxillar palp pale yellow, its first two joints brown; labial palp brownish. Mandible yellowish testaceous. Flagellum below faintly lighter. Tegula black. Distal half of first femur, apex of second femur, tibiae 1—2 yellow, tarsi 1—2 fumous yellow; base of hind tibia indistinctly yellow. Spurs of tibiae whitish. Ovipositor sheath black, ovipositor testaceous. Wings hyaline, pterostigma straw yellow, veins yellow, metacarp blackish.

Male and host unknown.

Locality — Holotype ♀: "Korea, Prov. Gang-von, district On-dzong, Kum-gang san, near Hotel Go-song, 250 m" (first label), "No. 325, 7 August 1975, leg. J. PAPP et A. VOJNITS" (second label).

Holotype is deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. No. 7232.

The new species, *Iconella repleta* sp. n., is a member of the *laspeyresiella*-group (within the genus *Iconella* MASON) upon the following considerations: (1) propodeum without a medio-longitudinal keel, (2) vannal lobe of the hind wing concave, (3) polished field of axille reaching up to two-thirds of scutellum and (4) first tergite broadest at its base and narrowing posteriorly. The new species is related to *I. albinervis* (TOBIAS), *I. laspeyresiella* (PAPP), *I. subcamilla* (TOBIAS) and *I. oppugnator* (PAPP), they are distinguished by the following key:

1 (6) Base of first tegite less broad, tergite itself 1.4—1.5 times as long as broad at its base (Fig. 69). Nervellus always perpendicular to *n. med.* and either fully straight (Fig. 68) or only its lower section incurved (Fig. 75). Ovipositor sheath either as long as hind tibia (*I. subcamilla*) or 1.5—2 times as long as hind tibia (*I. laspeyresiella*, *I. repleta*).

2 (3) Metacarp short, as long as pterostigma or distal end of metacarp far from tip of *R*, i.e. metacarp only 1.5 times as long as distance between its distal end and tip of *R* (Fig. 76). Mesonotum dull to subshiny, with small, superficial and more or less confluent punctation, interspaces smaller in size than punctures; notaulix indicated by crowded punctation giving impression of rugulosity. Ocelli forming a low triangle, hind imaginary tangent to fore ocellus transecting anteriorly hind pair of ocelli (Fig. 77). Penultimate joints of antenna cubic. Ovipositor sheath as long as hind tibia. Lower section of nervellus incurved (Fig. 75). ♀♂: 2.5—2.8 mm. — Azerbaidzhan (USSR) **I. subcamilla** (TOBIAS, 1976)

3 (2) Metacarp long (Fig. 67), longer than pterostigma or distal end of metacarp near to tip of *R*, i.e. metacarp six times as long as distance between its distal end and tip of *R*. Mesonotum dull, with dense and fine punctation; notaulix indistinct. Ocelli forming a less low triangle, hind imaginary tangent to fore ocellus before, or at most touching, hind pair of ocelli. Penultimate joint of antenna 1.3—1.5 times as long as broad. Ovipositor sheath 1.5 to 2 times as long as hind tibia.

4 (5) First tergite almost evenly narrowing from base to apex (Fig. 69). Propodeum unevenshagreened and dull. Pair of spurs of hind tibia unequal in length, inner spur just and outer spur clearly shorter than half basitarsus (Fig. 66). In lateral view temple almost as wide as eye, in comparison to next species slightly less narrowing ventrally (Fig. 64).

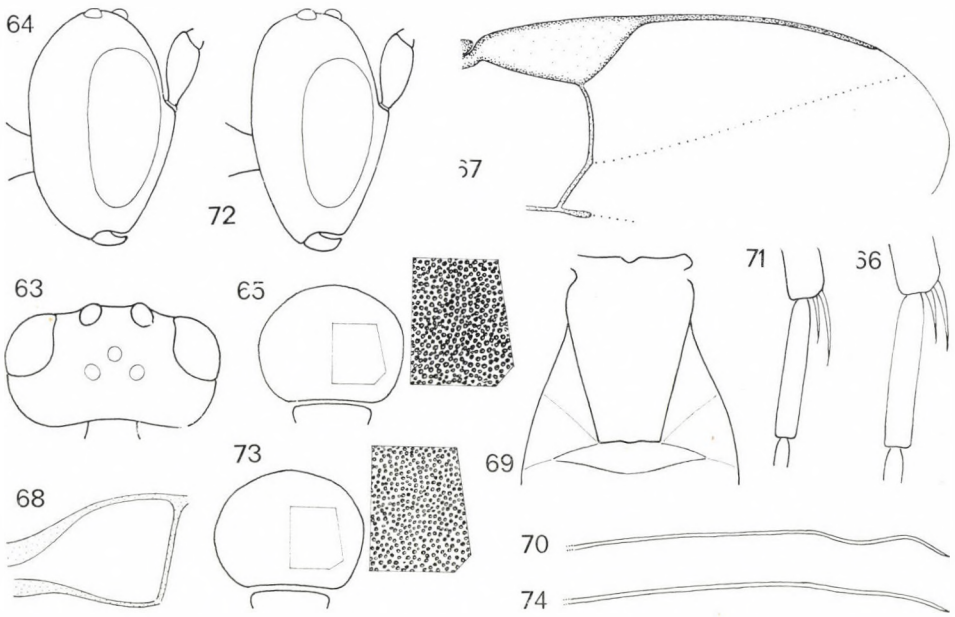
Punctation of mesonotum somewhat more contiguous, i.e. interspaces smaller than punctures (Fig. 65). Ovipositor in lateral view sinuate (Fig. 70). Colour similar to that of next species. ♀: 4.1 mm. — Korea **I. repleta** sp. n.

5 (4) First tergite anteriorly with (almost) parallel sides, posteriorly strongly narrowing (Fig. 78). Propodeum smooth and shiny, around lunule with weak rugulo-striation, and along hind margin subrugose. Pair of spurs of hind tibia distinctly unequal in length, inner spur somewhat longer than, or at most as long as, and outer spur clearly shorter than half basitarsus (Fig. 71). In lateral view eye 1.3—1.4 times as wide as temple, in comparison to previous species slightly more narrowing ventrally (Fig. 72). Punctation of mesonotum somewhat less contiguous, i.e. interspaces less smaller than punctures (Fig. 73). Ovipositor in lateral view downcurved (Fig. 74). Body black, legs also black, tibiae and tarsi 1—2 yellow. Pterostigma opaque yellow. ♀♂: 3—3.2 mm. — Austria, Hungary, Bulgaria, European part of the USSR **I. laspeyresiella** (PAPP, 1972)

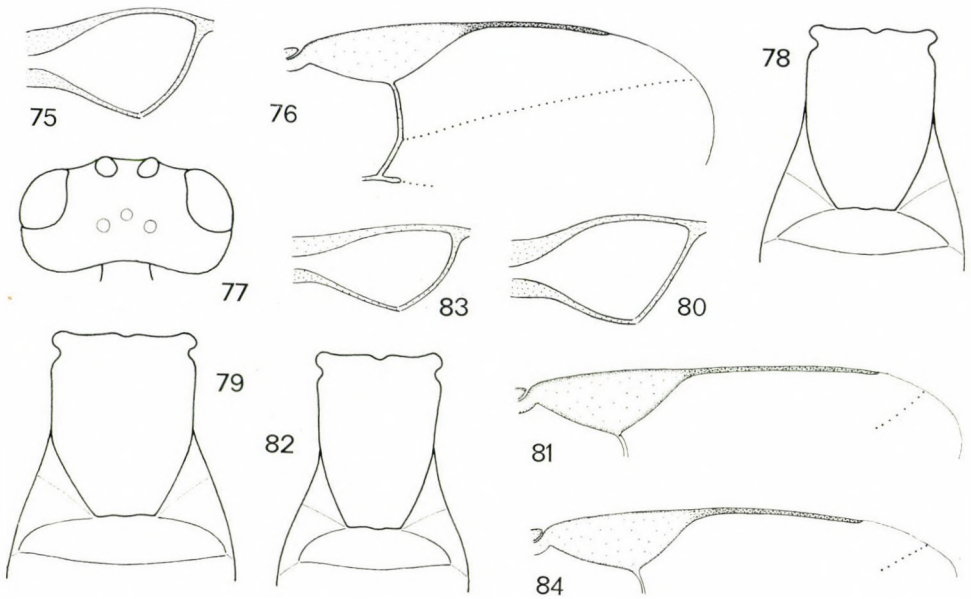
6 (1) Base of first tergite broad, tergite itself at most 1.2 times as long as broad at its base (Figs 79, 82). Nervellus never perpendicular to *n. med.* and either incurved (Fig. 83) or oblique to *n. med.* (Fig. 80). Ovipositor sheath as long as hind tibia.

7 (8) Mesonotum with dense and even punctation, interspaces subshiny to dull and smaller in size than punctures. Pterostigma 2.35 times as long as wide, issuing radial vein hardly distally from its middle; metacarp almost five as long as distance between its distal end and tip of *R* (Fig. 81). Nervellus straight and oblique to *n. med.* (Fig. 80). First tergite unusually broad basally, its anterior half parallel-sided, its posterior half strongly narrowing; second tergite somewhat less narrowing laterally (Fig. 80). Base of tibae brownish yellow. Pterostigma opaque light yellow. ♀: 3.1 mm. — Korea **I. oppugnator** (PAPP, 1974)

8 (7) Mesonotum with very fine to superficial and widely placed punctation, interspaces shiny to polished and usually greater in size than punctures. Pterostigma (2.5—)2.7—2.8 times as long as wide, issuing radial vein distinctly distally from its middle; metacarp about three times as long as distance between its distal end and tip of *R* (Fig. 84). Nervellus



Figs 63—70. *Iconella repleta* sp. n.: 63 = head in dorsal view, 64 = head in lateral view, 65 = punctation of mesonotum, 66 = pair of spurs of left hind tibia, 67 = distal part of right fore wing, 68 = submediallan cell with nervellus, 69 = tergites 1—2, 70 = ovipositor. — Figs 71—74. *I. laspeyresiella* (PAPP): 71 = pair of spurs of left hind tibia, 72 = head in lateral view, 73 = punctation of mesonotum, 74 = ovipositor



Figs 75—77. *Iconella subcamilla* (TOBIAS): 75 = submediallan cell with nervellus, 76 = distal part of right fore wing, 77 = head in dorsal view. — Fig. 78. *I. laspeyresiella* (PAPP): tergites 1—2. — Figs 79—81. *I. oppugnator* (PAPP): 79 = tergites 1—2, 80 = submediallan cell with nervellus, 81 = distal part of right fore wing. — Figs 82—84. *I. albinervis* (TOBIAS): 82 = tergites 1—2, 83 = submediallan cell with nervellus, 84 = distal part of right fore wing

incurved (Fig. 83). First tergite less broad basally and narrowing from its base posteriorly; second tergite somewhat more narrowing laterally (Fig. 82). Base of tibiae yellow, vivid yellow. Pterostigma bright yellow. ♀♂: 2.8—3 mm. — Hungary, USSR (Kazakhstan)
I. albinervis (TOBIAS, 1964)

3. Appendix

For the purpose of an up-to-date orientation and to promote the taxonomic survey it seems reasonable to accomplish a list of the species of the microgastrine genera distributed in the eastern Palaearctic Region and discussed in the present paper. Under the area "eastern Palaearctic Region" I mean the following territories: USSR (east of the river Yenisei), Mongolia, China (north of the river Yangtze), Korea and Japan. The species of the following genera are listed below: *Choeras* MASON, *Cotesia* CAMERON, *Deuterixys* MASON, *Distatrix* MASON, *Exoryza* MASON, *Glyptapanteles* ASHMEAD, *Iconella* MASON, *Illidops* MASON, *Nyereria* MASON, *Pholetesor* MASON and *Protapanteles* ASHMEAD. The genera *Apanteles* FOERSTER s. str. and *Dolichogenidea* VIERECK will be treated in my next paper within the series "Braconidae (Hymenoptera) from Korea".

In the subsequent list the name of the countries of the eastern Palaearctic Region are indicated in an abbreviated form as follows:

DPRK = Democratic People's Republic of Korea
J = Japan
MON = Mongolian People's Republic
PRC = People's Republic of China
RK = Republic of Korea
USSR = Soviet Union

COTESIA CAMERON, 1891

affinis (NEES, 1834): DPRK, J, PRK, USSR
= *okamotoi* (WATANABE, 1932)
= *planus* (WATANABE, 1932)
alternicolor (YOU et ZHOU, 1988) comb. n.: PRC
amphipyrae (WATANABE, 1934) comb. n.: J
anomidis (WATANABE, 1942) comb. n.: PRC
aphae (WATANABE, 1934) comb. n.: J
bosei (BHATNAGAR, 1948) comb. n.: PRC
brevicornis (WESMAEL, 1837): DPRK
cajae (BOUCHÉ, 1834): USSR
chiloluteelli (YOU, XIONG et WANG, 1986) comb. n.: PRC
chilonis (MATSUMURA, 1912) comb. n.: J, PRC
cirphicola (BHATNAGAR, 1948) comb. n.: PRC
dictyoplocae (WATANABE, 1940) comb. n.: J, PRC
eguchi (WATANABE, 1935) comb. n., jun. name
? = scabriculus (REINHARD, 1880) sen. name: PRC
ferruginea (MARSHALL, 1885): DPRK
flagitata (PAPP, 1971): MON
= *jaicus* (TOBIAS, 1986)
flavipes CAMERON, 1891: PRC
gabera sp. n.: DPRK
gastropachae (BOUCHÉ, 1834): ?J ("Trans-palaearctic" TOBIAS 1986: 396)
geryonis (MARSHALL, 1885): DPRK
glomerata (LINNAEUS, 1758): Arktogaea
= *nawaii* (ASHMEAD, 1906)
hanshouensis (YOU et XIONG, 1983) comb. n.: PRC
honora sp. n.: DPRK
inshizawai (WATANABE, 1939) comb. n.: J
jucunda (MARSHALL, 1885): MON
kamiyai (WATANABE, 1934) comb. n.: J
kariyai (WATANABE, 1937) comb. n.: DPRK, J, USSR
= *purgata* (TELENGA, 1955)
kasparyani (TOBIAS, 1976) comb. n.: USSR
kawadai (WATANABE, 1934) comb. n. et ?jun. name
? = limbata (MARSHALL, 1885): J
kazak (TELENGA, 1949): MON, USSR
kurdjumovi (TELENGA, 1955): MON
melanoscelus (RATZEBURG, 1844): MON, PRC, USSR
miyoshii (WATANABE, 1932) comb. n.: DPRK, J, PRC
nigritibialis (TOBIAS, 1986): DPRK
nothus (MARSHALL, 1885): DPRK
ogara sp. n.: DPRK
ordinaria (RATZEBURG, 1844): J, PRC
= *dendrolimi* (MATSUMURA, 1926)
orestes (NIXON, 1974): DPRK
pieridis (BOUCHÉ, 1834): USSR
plutellae (KURDJUMOV, 1912): DPRK, J, PRC
praepotens (HALIDAY, 1834): MON
rubecula (MARSHALL, 1885): USSR
rubripes (HALIDAY, 1834): DPRK, J, MON
ruficrus (HALIDAY, 1834): Cosmopolitan
salebrosa (MARSHALL, 1885): DPRK
sasakii (WATANABE, 1932) comb. n.: DPRK, J
scabriculus (REINHARD, 1880): DPRK
? = eguchii (WATANABE, 1935) jun. name
specularis (SZÉPLIGETI, 1896): USSR
= *balcanicus* (BALEVSKI, 1980)
spurius (WESMAEL, 1837): DPRK, J
suzumei (WATANABE, 1932) comb. n.: J
taprobanae (CAMERON, 1897) comb. n.: J, PRC, RK
tatehae (WATANABE, 1932) comb. n.: J
tegerus (PAPP, 1977): MON
tenebrosa (WESMAEL, 1837): DPRK
tibialis (CURTIS, 1830): DPRK, J, MON, PRC, RK, USSR
= *congestus* (NEES, 1834)
vanessae (REINHARD, 1880): PRC
villana (REINHARD, 1880): MON
= *rubroides* (PAPP, 1971)
zygaenarum (MARSHALL, 1885): J, USSR

CHOERAS MASON, 1981

arene (NIXON, 1973): USSR
parasitellae (BOUCHÉ, 1834): DPRK
ruficornis (NEES, 1834) comb. n.: USSR*
= *hedymeles* (NIXON, 1973)

* In my list (PAPP 1989)) of the European species of *Choeras* this name was omitted; additionally I include it in the list.

DEUTERIXYS Mason, 1981
carbonaria (Wesmael, 1837): DPRK, MON
condarensis (Tobias, 1960) comb. n.: DPRK, MON
= *nixoni* (Papp, 1971)

DISTATRIX Mason, 1981
formosa (Wesmael, 1837): DPRK
pompelon (Nixon, 1965): DPRK

EXORYZA Mason, 1981
schoenobii (Wilkinson, 1932): PRC

GLYPTAPANTELES Ashmead, 1905
acherontiae (Cameron, 1907) comb. n.: PRC
aletta (Nixon, 1973): DPRK
bimus sp. n.: DPRK
colemani Viereck, 1912: PRC
distatus sp. n.: DPRK
femoratus Ashmead, 1906
fraternus (Reinhard, 1880): MON
fulvipes (Haliday, 1834): DPRK, J, MON
hydroeciae (You et Xiong, 1983) comb. n.: PRC
inclusus (Ratzeburg, 1844): DPRK, RK, USSR
= *curvulus* (Thomson, 1895)
lamborni (Wilkinson, 1928) comb. n.: PRC
liparidis (Bouché, 1834): DPRK, J, MON, RK, USSR
= *japonicus* Ashmead, 1906
= *politus* Ashmead, 1906
= *posticae* Sonan, 1927
longiantennatus (You et Xiong, 1987) comb. n.: PRC
luciana (Nixon, 1973): DPRK
minor Ashmead, 1908: J
mygdonia (Nixon, 1973): DPRK, USSR
pallipes (Reinhard, 1880): DPRK, MON, PRC, RK
porthetriae (Muesebeck, 1928): DPRK, USSR
ripus (Papp, 1983): DPRK
sibiricus (Papp, 1983) comb. n.: USSR
theivorae (Shenefelt, 1972) comb. n.: PRC
thompsoni (Lyle, 1927): DPRK
vitripennis (Curtis, 1830): USSR

ICONELLA Mason, 1981
lacteoides (Nixon, 1965): MON
oppugnator (Papp, 1974) comb. n.: DPRK
repleta sp. n.: DPRK
vindicia (Nixon, 1965): DPRK

ILLIDOPS Mason, 1981
assimilis (Papp, 1976) comb. n.: MON
bellicosa (Papp, 1977) comb. n.: MON
cloelia (Nixon, 1965): DPRK
naso (Marshall, 1885): DPRK
= *contortus* (Tobias, 1964)
= *evander* (Nixon, 1965)
perseveratus (Papp, 1977) comb. n.: MON
suevus (Reinhard, 1880): DPRK
szaboi (Papp, 1972): MON
urgo (Nixon, 1965): MON

NYERERIA Mason, 1981
forensis (Tobias, 1976) comb. n.: DPRK, USSR

PHOLETESOR Mason, 1981
ambigua (Papp, 1977) comb. n.: MON
bicolor (Nees, 1834): ?J
circumscriptus (Nees, 1834): DPRK
elpis (Nixon, 1973): DPRK, MON
exiguus (Haliday, 1834): DPRK
intercedens (Tobias, 1976) comb. n.: USSR
moldavicus (Tobias, 1975) comb. n.: DPRK
phaetusa (Nixon, 1973): DPRK, MON

PROTAPANTELES Mason, 1981
anchisiades (Nixon, 1973): DPRK
buzurae (You et Xiong, 1987) comb. n.: PRC
enephes (Nixon, 1965): DPRK
immunis (Haliday, 1834): DPRK
vallatae (Watanabe, 1934) comb. n.: J
yunnanensis (You et Xiong, 1987) comb. n.: PRC

Species ranged provisionally in *APANTELES* Foerster s. l. owing to their uncertain taxonomic systematic position and supposedly belong to the following genera indicated with question mark:

bistomis Watanabe, 1934 ?Pholetesor: J
hamakii Watanabe, 1932 ?Dolichogenidea: J
kuwayamai Watanabe, 1932 ?Pholetesor: J
neptisis Watanabe, 1934 ?Apanteles s. str. or ?Iconella: J
sugae Watanabe, 1932 ?Dolichogenidea: J
taoi Watanabe, 1935 ?Protapanteles: J

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STUDIES ON THE PALAEARCTIC NOCTUIDAE. SECT. AMPHIPYRINAE, II. INVESTIGATIONS ON THE GENUS AUCHMIS HÜBNER, (1821) 1816 WITH TWO NEW TAXA (LEPIDOPTERA: NOCTUIDAE, AMPHIPYRINAE)

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The characterization of the genus and its phylogenetic relationships are given. Descriptions of two new taxa, *Auchmis mongolica pergrata* ssp. n. (Mongolia, Govi Altay) and *A. incognita* sp. n. (Turkestan). With 15 figures and 1 photoplate.

Introduction — The main evolutionary lines of the trifine noctuid "subfamilies" are very probably monophyletic and to be derived from a hypothetical ancestor group. This ancient trifine noctuid type can be characterized with a general configuration of the male genitalia to be found in numerous genera placed in different subfamilies and considered as disjunct groups from systematic point of view. These genital features, being plesiomorphic, cannot be used as arguments of the direct relationship among the several groups but reflect the homogeneity of the whole "Noctuidae Trifinae" and the dubious status of the trifine noctuid subfamilies.

One of the groups which display this hypothetically original genital configuration is the genus *Auchmis* HÜBNER, (1821) 1816 (RONKAY and VARGA 1989). The taxonomic relegation of the species belonging to this genus had been changed in several times: they were placed into the genera *Auchmis* (as a noctuine or amphipyrine genus), *Euscotia* BUTLER, 1889 (Cuculliinae or Amphipyrinae, in the latter case as a synonym of *Auchmis* — BOURSIN 1960, SUGI 1982), *Stenostigma* WARREN, 1910 (Cuculliinae), *Rhizotype* HAMPSON, 1906 (Cuculliinae), *Rhizogramma* LEDERER, 1857 (Cuculliinae, later Amphipyrinae), *Trichorhiza* HAMPSON, 1905 (Cuculliinae) and *Delta* SAALMÜLLER, 1891 (Amphipyrinae). The most modern interpretations of the genus are given by BOURSIN (1960 — with the checklist of the known taxa) and SUGI (1982); in their opinion the genus, forming a homogeneous unit, belongs to the subfamily Amphipyrinae. The main basis of the relegation of *Auchmis* to the Amphipyrinae is the practical approach that all the trifine genera which are

irreferable to the other subfamilies in the Hampsonian sense (without evidently common features) can be lumped into the "subfamily" Amphipyrinae. The situation is the same in case of several other, taxonomically not closely allied genera. In our opinion this group of species can be considered as a genus, which is composed from two more or less easily separable subgenera, *Auchmis* and *Euscotia*.

The genus has probably a tropical Asian origin and the related genera are also mainly tropical ones, as *Phlogophora* TREITSCHKE, 1825, *Trachea* OCHSENHEIMER, 1816, *Xenotrachea* SUGI, 1958, and the typical Palaearctic genus, *Hyppa* DUPONCHEL, 1845.

The main features of the genus are usually plesiomorphic ones but in a special composition. The head is small, with smooth frons. The palpi are relatively short, excepting the species of the genus *Euscotia* which have elongate and porrect third joint. The antennae are ciliate with the exception of only one species, having strongly bipectinate antennae. The thorax is with well-developed tegulae which may bear a characteristic blackish pattern. The shape of the fore wings is elongate, the colouration and pattern shows a same groundplan with greyish ground colour and brownish-blackish pattern; the ground colour is brown in the subgenus *Euscotia*. The abdomen is long and robust with large tufts of the dorsal crest; the coremata are present represented by a large, single bundle on the eighth sternite. The male genitalia is characterizable with the well-developed harpe and ampulla, the elongate and wide valvae with strong constriction at cucullus, the corona is usually strong. The sacculus is less large, the clavus usually absent or represented by a hairy margin of the sacculus. The aedeagus is cylindrical, usually short and thick, the carina is well-developed, bearing often large cornuti or dentated laminae. The vesica is tubular, everted forward, then upturned and more or less reclinate. Its basal third sometimes with a single cornutus, distal part finely granulose and, in the majority of species, with a field of small spinules near to ductus ejaculatorius. In case of the species of *Euscotia* the harpe is very large and twisted under the much smaller ampulla, the vesica with very long, pin-like spinules in the distal end of vesica. It is interesting to note that the species of a monotypical Cuculliinae genus, *Fuxenistis amicina* STAUDINGER, 1888 (known from Tibet) which resembles also externally to the species of the genus *Auchmis* (and the brownish ground colour and the strongly bipectinate antenna also appear in *Auchmis*), have a very similar configuration of the male genitalia (Figs 14—15). The main differences between them are the absence of the corona and the constriction of the valva at the cucullus in *Fuxenistis*; the coremata of *amicina* are absent. The female genitalia has a similar structure in the different species groups: the ovipositor is short and wide, the ostium bursae is large and usually heavily sclerotized, the ductus bursae is relatively short, walls of it are granulose or more strongly sclerotized,

often folded. Bursa copulatrix is very large and spacious, membranous, apex bursae usually a bit stronger, sometimes rugulose, corpus bursae with four long, ribbon-like signa.

The genus have a transpalaearctic distribution but with Central and Inner Asian centre, there are only two species occurring in the western part of the Palaearctic Region, *detersa* in Europe and Asia Minor and *peterseni* which is distributed from Turkestan to Transcaspia and the Elburs Mts. A larger number of species is known from Central Asia but absent in the Himalaya Region and the remained species have a Himalayan-Pacific (or only Himalayan) range. This distribution pattern has not correlated with the taxonomic relationships as the closely allied species groups usually have both Central Asian and Himalayan taxa; the distribution of the subgenus *Euscotia* is entirely Himalayan-Pacific.

Checklist of the species:

Subgenus *Auchmis* HÜBNER, (1821) 1816
- detersa (ESPER, 1791)
- detersa minoica REISSER, 1958
- detersa ssp. from the N Caucasus
- peterseni (CHRISTOPH, 1887)
- curva (STAUDINGER, 1889)
  - = inquieta (PÜNGELER, 1914)
- detersina (STAUDINGER, 1896)
- composita PLANTE, 1986
- mongolica (STAUDINGER, 1896)
  - mongolica pergrata ssp. n.
- subdetersa (STAUDINGER, 1895)
  - = poliorhiza (HAMPSON, 1902)
- incognita sp. n.
- paucinotata (HAMPSON, 1894)
- crassicornis BOURSIN, 1960
- indica (WALKER, 1865)
- hannemanni PLANTE, 1986

Subgen. *Euscotia* BUTLER, 1889, stat. n.
- inextricata MOORE, 1882
- saga (BUTLER, 1878)
  - = aurilegula (OBERTHÜR, 1880)

SYSTEMATIC PART

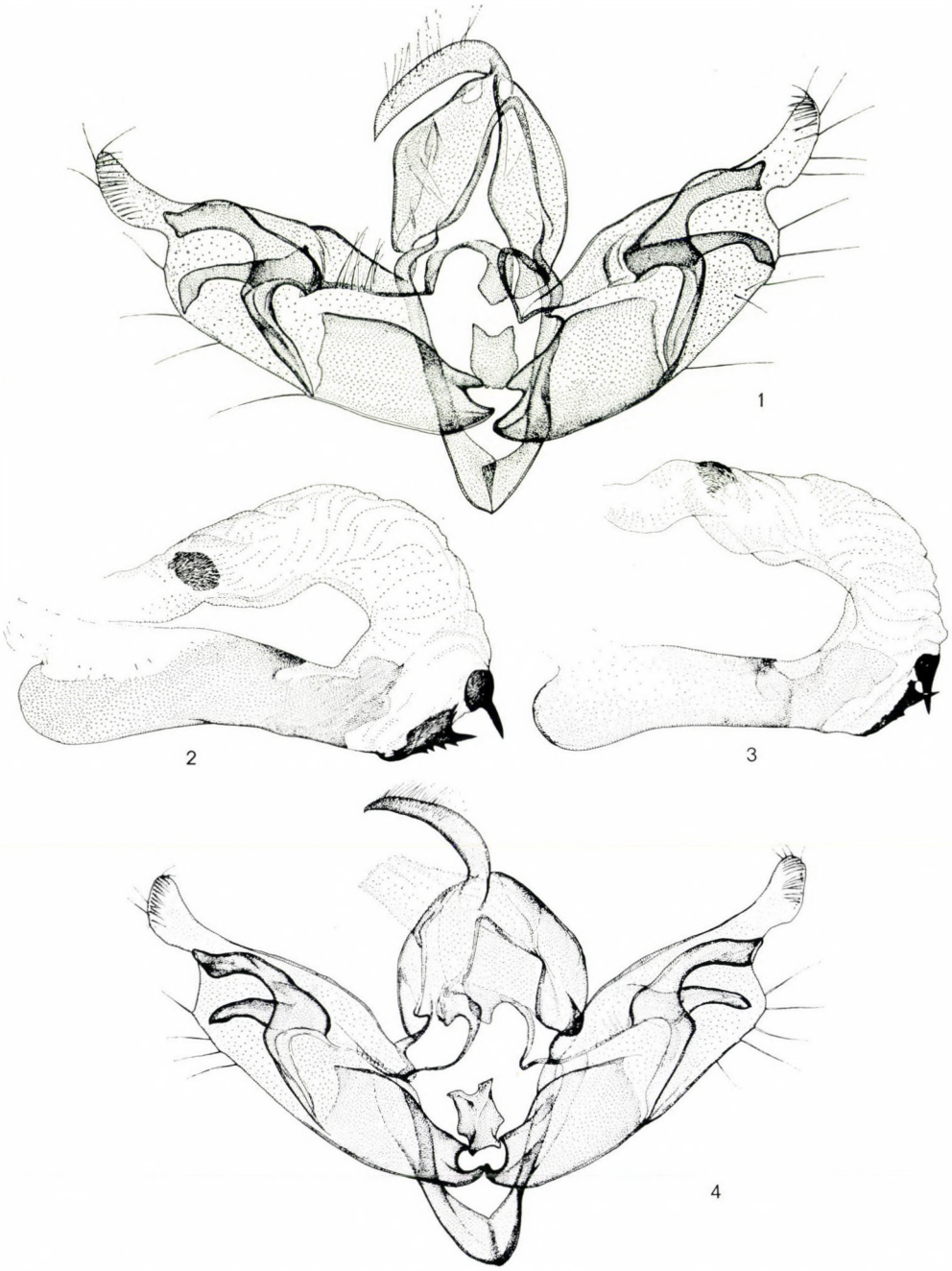
Auchmis mongolica mongolica (STAUDINGER, 1896) (Plates 1—2)

(D. ent. Z. IRIS, 9: 263—264 — *Rhizogramma*)

The species was described by a single female collected by LEDER in the Hangayn Mts (type locality: Shurangin gol) and it was considered as a rarity, represented by very few specimens even in the large collections; it had not been published outside from Mongolia. On his expeditions Dr. Z. KASZAB, who had collected an extensive and representative material, had not found any specimens. As in the recent times four Hungarian lepidopterological expeditions worked in Mongolia and discovered this species in numerous new localities, we have a much better overview on its distribution and individual variability.

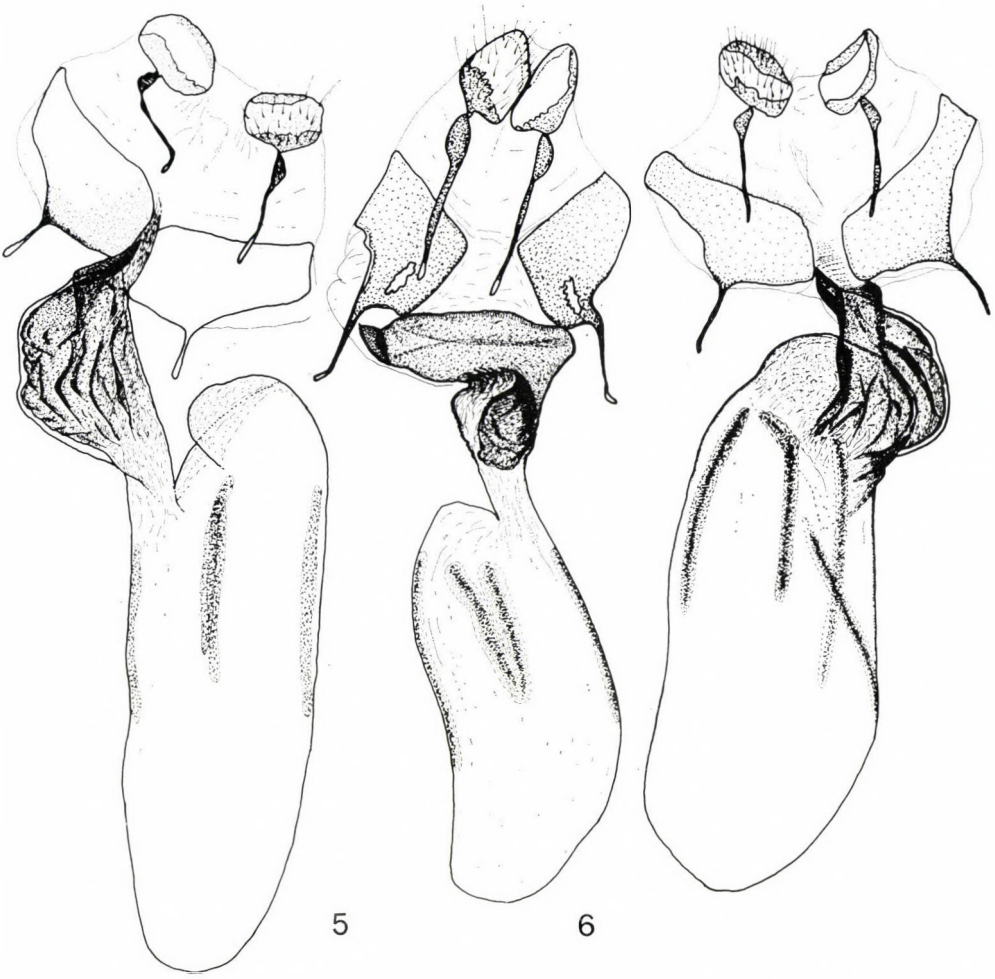
The typical subspecies is widely distributed in the western and central mountains of Mongolia, mostly in rocky and humid but not forested areas. It seems to be rare in the vicinity of Ulaanbaatar (known from the Bogdo Uul Mts) but fairly common in the Central and Western Hangayn Mts (Horgo, Hurhre, Harhorin) and the Mongolian Altay range. In this large area the variability of the species is relatively large but highly overlapping from place to place, therefore no geographical subspecies can be distinguished. The species seems to be absent from the wide area surrounding the southern slopes of the Hangayn Mts. range but occurs in the South-Easternmost massiv of the Govi Altay chain (Gurvan Sayhan Mts.), as a fairly isolated and distinct subspecies.

Beside the characterization of the unpublished genitalia of *Auchmis mongolica mongolica*, the description of the new subspecies is given below.



Figs 1—4. 1—2 = *Auchmis mongolica mongolica* STAUDINGER: Mongolia, Hangayn Mts. — 3—4 = *Auchmis mongolica pergrata* ssp. n.: Paratype, Mongolia, Gurvan Sayhan Mts.

Male genitalia (Figs 1—2): Uncus short and curved, tegumen wide and moderately high. Vinculum strong, U-shaped, saccus membranous, fultura inferior quadrangular. Valvae elongate and wide, strongly constricted at cucullus forming a narrow neck. Cucullus small, foot-like, corona fine. Sacculus wide with narrower basis, clavus represented by a narrow hairy area on the dorsal edge of sacculus. Harpe very large, distal part heavily sclerotized, flattened and ribbon-like, irregularly curved, apex quadrangular. Ampulla less strong, slender, distally curved and dilated forming a bulb-like apical part with pointed apex. Aedeagus thick, cylindrical, carina granulosely sclerotized, ventrally continued in a stick-like lamina terminated in a large,



Figs 5—7. 5 = *Auchmis mongolica mongolica* STAUDINGER: Mongolia, Hangayn Mts. — 6 = *Auchmis detersina* STAUDINGER: Mongolia, Mongolian Altay Mts. — 7 = *Auchmis mongolica pergrata* ssp. n.: Paratype, Mongolia, Gurvan Sayhan Mts.

dentated cornutus. Vesica everted forward, then upturned dorsally and reclinate, distal part finely granulose. Vesica bears a large, wide-based cornutus at basal third and a small field of fine spinules near to ductus ejaculatorius.

F e m a l e g e n i t a l i a (Fig. 5): Ovipositor short and wide, gonapophyses short. Ostium bursae granulosely sclerotized, narrow and funnel-like, ductus bursae rugulose and slightly folded, having strongly granulose surface with a hyaline edge; connected to bursa copulatrix with a short, membranous part. Bursa copulatrix large and spacious, elongate. Its walls membranous, with four long, ribbon-like signa.

Auchmis mongolica pergrata ssp. n. (Plate: 3)

H o l o t y p e: male, "Mongolia, Ömnögovi aimak, Govi Altay, Mts. Gurvan Sayhan, valley Yulin am, 2350 m, 104° 03′ E, 43° 26′ N", "22. 07. 1986, exp. GY. FÁBIÁN, M. HREBLAY, L. PEREGOVITS et G. RONKAY". Deposited in coll. Hungarian Natural History Museum Budapest. (= HNHM). — P a r a t y p e s: 11 males from same locality and data; 2 females from the same locality, 28. 07. 1988, leg. L. PEREGOVITS et Z. VARGA; 1 male from the same Mts., valley Alyut am, 2400 m, 23. 07. 1986. The specimens are deposited in the collections of the collectors and HNHM.

Slides Nos 2014, 2116 RONKAY, 4147 VARGA (males), 2967 RONKAY (female).

D e s c r i p t i o n — Alar expanse 38—41 mm, length of fore wing 18—20 mm. Head and thorax light ash-grey, palpi and frons with dark brown stripes. Abdomen grey, dorsal crest strongly reduced, tufts of the first two segments light grey. Fore wing ashy grey with some bluish shade, nearly unicolorous. Transversal lines single, grey, pale or obsolescent, very sinuous; streak of submedian fold very fine, black. Orbicular and reniform stigmata conjoined, encircled partly with blackish, filling of reniform a bit whitish. Claviform a flattened loop marked with blackish, its filling finely lighter than ground colour. Median area slightly suffused with ochreous-whitish below cell; subterminal line strongly sinuous, a row of blackish spots on veins and a diffuse brown shadow on its outer edge, streak of tornus strong but short. Terminal line whitish, cilia ochreous grey with darker grey inner part and some whitish hairy scales at ends of veins. Hind wing pale ochreous-grey with brownish-greyish suffusion, especially on veins and in wide marginal area. Transversal line absent or obsolete, cellular lunule present but slightly visible. Terminal line and cilia whitish with a fine, interrupted brown line at inner part of cilia. Underside of fore wing dark smoky-grey with some lighter irroration, mainly in marginal field, pattern absent or obsolescent. Hind wing ochreous-whitish, irrorated with grey, principally in costal area and in narrow marginal field. Cellular lunule grey, less conspicuous, transversal line a diffuse, dark stripe.

The new subspecies differs conspicuously from the nominate race by both in external and genital features, but, as the characteristics are partly over-

lapping and *mongolica* and *pergrata* have an allopatric distribution, it is more correct to interprete *pergrata* as a subspecies with almost finished isolation from the typical race, a species "in statu nascendi".

The main differences are as follows: *pergrata* is smaller in size (average of wingspan is 40 mm since 42.5 mm in case of *mongolica mongolica*), its ground colour lighter and more unicolorous, pastel-like grey without strong bluish shade and dark irroration, being typical for the nominate race. The dark pattern more fine and less extensive. The hind wing is also more unicolorous, the veins are not essentially darker, the dark line in the cilia is interrupted, not continuous. In the configuration of the male genitalia the shape of valvae of the two races is more or less the same but the cucullus in case of *pergrata* (Fig. 4) is smaller and narrower, the harpe is more slender and with more tapering apex, the ampulla is usually shorter; the clasping apparate of *pergrata* is essentially less sclerotized. The shape and size of the cornuti in the vesica (Fig. 3) are also show some slight differences. In case of the female genitalia the ductus bursae of *pergrata* (Fig. 7) is shorter and less sclerotized.

D i s t r i b u t i o n : Gurvan Sayhan Mts. (Mongolia, SE Govi Altay).

Auchmis detersina (STAUDINGER, 1896) (Plate: 5—7)

(D. ent. Z. IRIS, 9: 369 — *Rhizogramma*)

Examined material — L e c t o t y p e male (designated below): Issyk-kul; p a r a l e c t o t y p e s from Issyk-kul, Saisan and Margelan; 2 males from the same locality, 1 male, Turkestan, Dzharkent, Ili-Range; two females, Mongolia, Bayan Ölgiy aimak, Mongolian Altay Mts., Bulgan village, 6—7. 08. 1986, leg. P. GYULAI; two males, Afghanistan, Prov. Badakhshan, Darwaz Mts., Pari Kham, 2500 m, 29. 07. 1972., leg. C. NAUMANN; 1 male, NE Afghanistan, Wakhan valley, 3450 m, Darrah-e-Shaur, 25. 07. 1971, leg. EBERT et NAUMANN; 1 male, Aksu, 06. 1914, leg. RUECKBEIL. — Slides Nos MB 345 BOURSIN, 2107, 2121, 2512, 2836 RONKAY (males), 2513 RONKAY (female).

One of the recent expeditions to Mongolia collected two female specimens of an *Auchmis* species belonging to the *detersa* group by its well-discernible blackish stripes on the tegulae. The studies on the available Central Asian *Auchmis* material had pointed out that the Mongolian specimens represents the easternmost known population of *Auchmis detersina*. The second, interesting result of these studies was that the "*detersina*" material contained an another, externally *detersina*-like but by the genital features easily separable species. By the study of the type material we could state that the type series preserved in the Staudinger Collection (Zoological Museum, Humboldt University, Berlin) contains only the former taxon since the latter one is new for science. The designation of the lectotype of *detersina* with the description of the genitalia of both sexes and the description of the new species are given in the following chapter.

The original type series of *detersina* had been consisted of seven specimens originating from Issyk-Kul, Saisan and Margelan. The best of them, labelled as *detersina* by STAUDINGER itself, was selected as l e c t o t y p e: male, "Issyk Kul, S. or., 95 Rckbl.", "Origin." (pinkish label), "Detersina Stgr." (with the handwriting of STAUDINGER). The type locality, consequently the vicinity of the Lake Issyk-kul.

As the original description is satisfactorily detailed, only the differential characteristics between *detersina* and *detersa* are listed as follows:

— the medial black strip of the collar is sharp, which absent in *detersa*
— the reniform spot is very narrow, oblique and curved, usually connected with the orbicular, the latter is narrow and elongated. The reniform has a sharp, dark touch at the lower extremity;
— the dark apical streak always fused into a fumous grey cuneiform area.

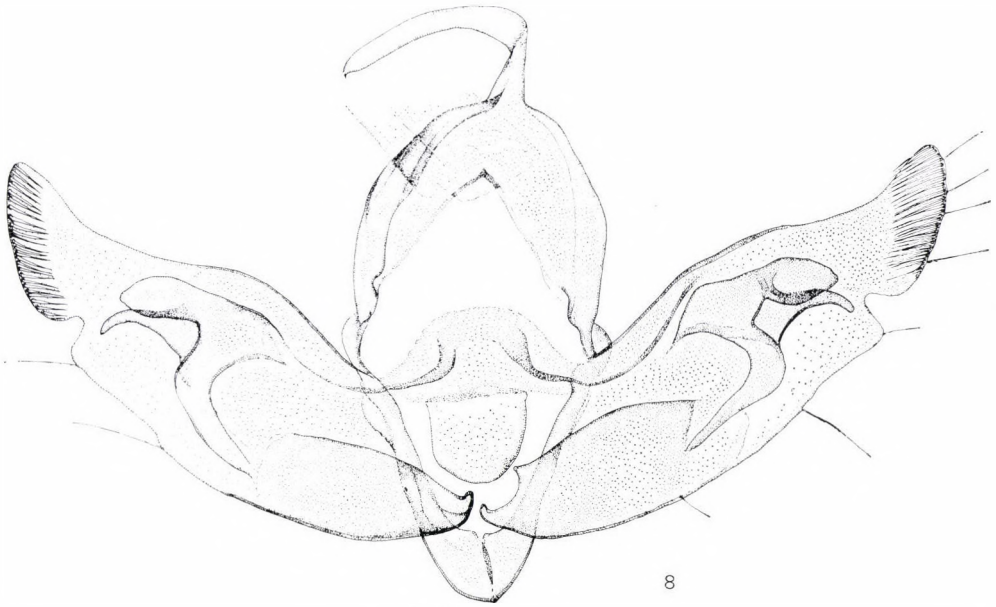
The external variability appears in the distinctness of the elements of of the dark pattern (e.g. the transversal lines, the extension of the dark tornal patch and the ground colour, they latter sometimes suffused with dark grey and/or brownish grey). The specimens from Afghanistan have a much lighter, pale and patternless fore wing, without the characteristic dark irroration of the typical race (Plate: 8). This dark irroration is most expressive in the Mongolian specimens.

M a l e g e n i t a l i a (Figs 8, 10): uncus moderately long and curved, tegumen wide and less high. Fultura inferior quadrangular or slightly anvil-shaped, vinculum short and rounded. Valvae large, elongate and wide, cucullus relatively small, foot-shaped with finely pointed apex and connected to main part of valva with a narrower neck. Sacculus narrow, clavus reduced. Harpe large and strong, basal part curved, apical part dilated and flattened. Ampulla strongly sclerotized, its basal part wide and flat, apical extension slender and finely curved, longer than harpe and reaches ventral margin of valva. Aedeagus medium-size long, thick, distally dilated. Carina very strong, ventral part rostrum-like, covered with strong teeth, dorsal end with an elongate, sclerotized extension having a long tooth on its apical extremity. Vesica everted forward, than upturned and slightly reclinate, more or less tubular. Walls of vesica with some granulose sclerotization in distal part.

F e m a l e g e n i t a l i a (Fig. 6): ovipositor moderately long and gonapophyses posteriores long, anteriores short and fine. Ostium bursae very wide, granulosely sclerotized. Ductus bursae membranous with hyaline distal edge and a large, globular and rugulose, granulosely sclerotized distal protuberance. Bursa copulatrix elongate and large, signa long, ribbon-like.

Although the male genitalia displays the main features of the genus, it differs very strongly from the externally similar *detersa* and *peterseni* (the male genitalia of the latter is illustrated on the Figs 12—13).

The species *Auchmis detersina* has a well-defined Central Asiatic distribution. The westernmost known localities lie in NE Afghanistan (Darwaz,



Figs 8—9. 8 = *Auchmis detersina* STAUDINGER: Issyk-kul. — 9 = *Auchmis incognita* sp. n.: Holotype, "Turkestan"

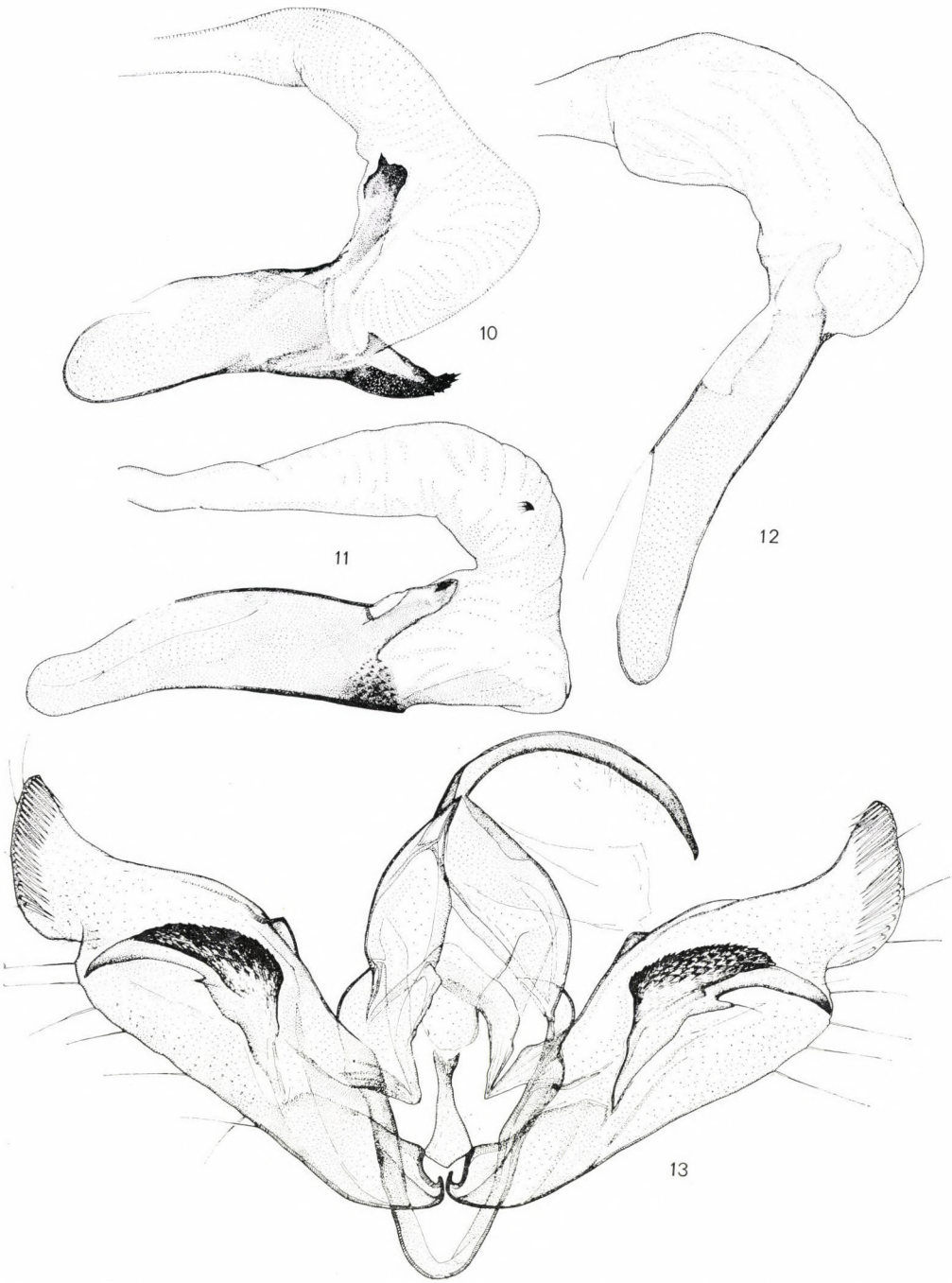
Wakhan valley) and in Uzbekistan SSR (Margelan), respectively. The disjunction between the Tien Shan range, the Saisan area and the eastern chain of the Altay Mts. is very probably the result of the low level of the exploration of the region and not a real zoogeographical phenomenon. The colouration shows a peculiar light-dark geographical cline from West to East.

Auchmis incognita sp. n. (Plate: 4)

Holotype: male, "Coll. Velez, Asia, Turkestan, 1935. VI., ♀ (!), 10805", on the backside: "Delta detersina Stgr. 8/10." — Slide No. 2106 RONKAY, deposited in the collection of the HNHM, Budapest. — Paratypes: 1 male Aksu, Funke (coll. Naturhistorisches Museum, Vienna); 1 male, Indus Kohistan, Kaghantal Naran, Pakistan, 3200—4500 m, 16. 7,—5. 8. 1977, leg. deFREINA (coll. Zoologische Staatssammlung, München); 1 female, India, Jammu and Kashmir, vic. Lotsun, 3000 m, 25. VII. 1987, leg. THOMAS (coll. HNHM). Slides Nos 3096, 3123 RONKAY (males), 3172 RONKAY (female).

Description — Alar expanse 45 mm, length of fore wing 21 mm, head and thorax light ash-grey; head and collar striolate with chocolate-brown. Tip of collar and margins of tegulae widely dark brown with fine blackish outline. Abdomen darker grey with brownish tufts of dorsal crest. Ground colour of fore wing light ashy grey with some fine ochreous and orange-brown tinge, especially in outer part of median area. Antemedial line interrupted, very pale at costa, below consists of some short dark streaks and a strong black line at inner margin. Dark streak of submedian fold long and conspicuous, black, with a wide dark brown zone below it. Orbicular spot flattened, narrow, encircled with black, reniform whitish with grey centre and partly defined with dark grey; with a common, dark brown stripe below them, running from orbicular spot to subterminal line. Claviform spot represented by a short brown streak defined by whitish. Postmedial line obsolescent, with a well-visible, strong angle below vein *Cu2*. Subterminal line strongly sinuous, interrupted, consists of short black streaks and a wide brown stripe; blackish streak of tornus very long. Terminal line whitish, cilia grey with white spots at ens of veins. Hind wing whitish with light cupreous suffusion. Veins and marginal area covered with brown, cellular lunule present, moon-shaped. Terminal line brown, cilia whitish. Underside of wings pale ochreous-whitish, fore wing irrorated with brown. Cellular lunules and shadows of transversal lines represented by brownish spots on veins on both wings.

Male genitalia (Figs 9, 11): Uncus relatively short, tegumen less wide and high. Fultura inferior quadrangular, vinculum short and strongly sclerotized. Valvae elongate and broad, strongly constricted at cucullus. Cucullus big, elongate and pointed, corona well developed. Sacculus short and wide, clavus a short, conical processus. Harpe strong and curved, apical surface with small, rounded emergences. Ampulla much longer, reaches ventral edge of valva, slender and distally curved. Aedeagus thick, cylindrical, carina

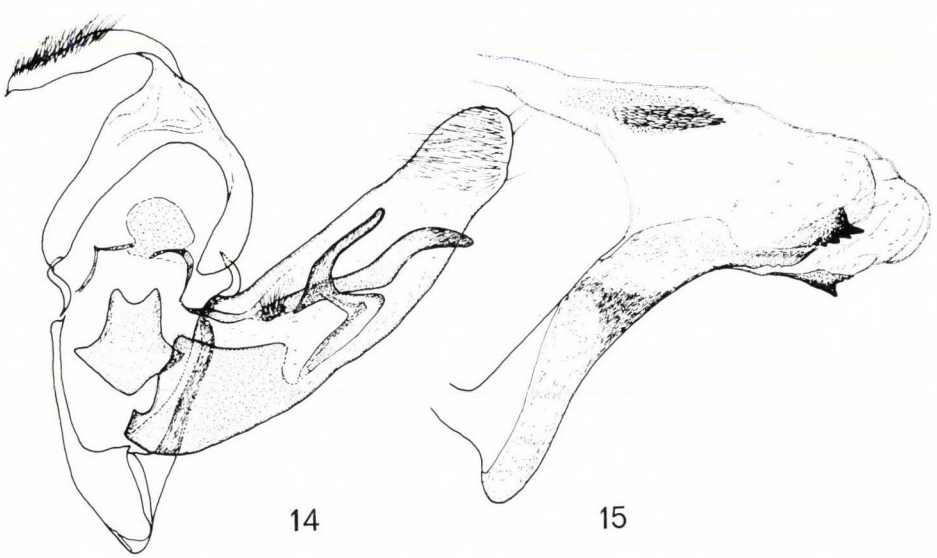


Figs 10—11. 10 = *Auchmis detersina* STAUDINGER: Issyk-kul — 11 = *Auchmis incognita* sp. n.: Holotype, "Turkestan", — Figs 12—13. *Auchmis peterseni* CHRISTOPH: USSR, Turkmenian SSR

strongly sclerotized, ventral edge with a sclerotized lamina, covered densely with small teeth, dorsal edge with a pair of sclerotized ribbons, which terminated in a common, double-peaked tooth. Vesica tubular, everted forward, upturned and reclinate; distal part finely granulose and bears a small, conical cornutus.

The new species resembles in its appearance to *detersina*, but the external differences are rather poor as compared with the features of the male genitalia. The main distinctive external features are as follows: the new species has larger and wider fore wings, the lower streak of the tornus much longer, expanding into the medial area, the blackish streak of subterminal line between the veins *m3* and *cu1* is straight and not triangular, the colouration of the hind wing is more unicolorous with less conspicuous dark marginal suffusion. The configuration of the male genitalia of *incognita* differs significantly from that of *detersina* — by the shape of the valva, the harpe and the ampulla, the quite different distal structure of the aedeagus and the vesica — and display the more close relationships of the new species with *subdetersa* and, especially, *paucinotata*. The configurations of the male genitalia of the two related species are illustrated by BOURSIN (1956) on the Figs 88—90. In case of the new species the harpe is shorter since the ampulla is essentially longer than those of *paucinotata* and the carina is without larger teeth but with a wide, dentated lamina.

Acknowledgement — We would like to express our thank to PROF. Dr. H.-J. HANNEMANN and Dr. W. MEY (Berlin), PROF. Dr. C. NAUMANN (Bielefeld), Dr. M. LÖDL (Vienna), Dr. Z. F. KLYUCHKO and Dr. I. Y. KOSTYUK (Kiev) for their kind help.



Figs 14—15. *Euxenistis amicina* STAUDINGER: Kuku Noor

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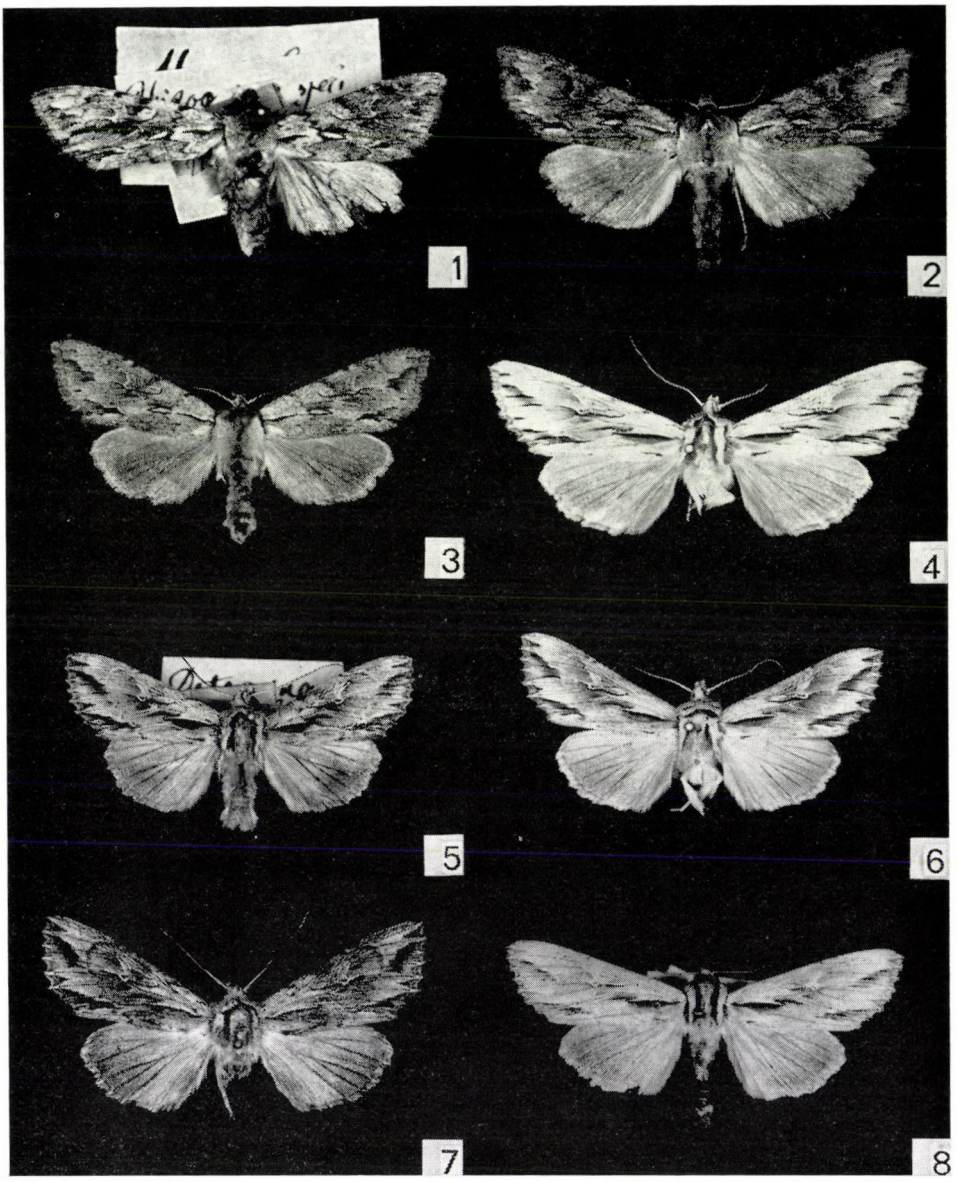

1 = *Auchmis mongolica mongolica* STAUDINGER, Holotype: Uliassutai. — 2 = *Auchmis mongolica mongolica* STAUDINGER, Mongolia, Hangayn Mts. — 3 = *Auchmis mongolica pergrata* ssp. n., Holotype: Mongolia, Gurvan Sayhan Mts. — 4 = *Auchmis incognita* sp. n. Holotype: "Turkestan". — 5 = *Auchmis detersina* STAUDINGER, Lectotype: Issyk-kul. — 6 = *Auchmis detersina* Staudinger, Issyk-kul. — 7 = *Auchmis detersina* STAUDINGER, female: Mongolia, Mongolian Altay Mts. — 8 = *Auchmis detersina* STAUDINGER, Afghanistan, Wakhan valley.

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A REVISION OF THE GENUS ANECHURA SCUDDER, 1876 (DERMAPTERA: FORFICULIDAE)

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The description of the known species on the basis of external morphology, their systematic revision and description of the male genital apparatus are given along with two new species: *Anechura senator* sp. n. (China) and *A. globalis* sp. n. (Syria). With 38 figures.

Anechura SCUDDER

1876 *Anechura* SCUDDER, Proc. Boston Soc. nat. Hist., 18: 289. — Species typica: *Forficula bipunctata* FABRICIUS, 1781.
1904 *Odontopsalis* BURR, Trans. ent. Soc. London, 1904: 315. — Species typica: *Odontopsalis harmandi* BURR, 1904.

The species are highly varying. Size medium. Head tumid, postfrontal and coronal sutures distinct or indistinct. Antennae with about thirteen joints, third joint long and subcylindrical; fourth about two-thirds as long as third, fifth nearly as long as third, rather thick and cylindrical. Pronotum broad, truncate anteriorly, more or less convex posteriorly. Tegmina ample, smooth, broad, rounded at shoulders, but the sides parallel; lateral margins without keels. Wings present or absent. Sternal plates transverse. Legs moderately long and slender; second tarsal joint distinctly lobed. Abdomen depressed and dilated at about the middle. Male forceps more or less straight or undulate in lateral view, inner and dorsal margins with or without tooth or tubercle. Female forceps very simple. Male genitalia generally with long virga.

Distribution: Oriental and Palaearctic faunal regions.

19 species.

IDENTIFICATION KEY TO THE SPECIES

1 (6) Wings entirely absent.
2 (3) Legs brownish black; male forceps not of *Anechura*-type, very simple, more or less straight, and unarmed **forficuliformes** SEMENOV et BEY-BIENKO, 1935
3 (2) Legs pale yellow; male forceps strongly developed, as in figs 2—3.
4 (5) Male forceps very short, robust (Fig. 2); branches strongly depressed horizontally, inner margins with some smaller or larger tubercles **potanini** BEY-BIENKO, 1934
5 (4) Male forceps elongated, slender (Fig. 3); branches strongly depressed vertically at basal part; dorsal surface with a longer or larger, inner margin with a small but prominent tooth basally; male genitalia as in Fig. 4 **senator** sp. n.

6 (1) Wings present.
7 (22) Male forceps seen in lateral view quite straight, or only faintly undulate.
8 (11) Male forceps characteristic, with a conspicuous, double, specific dorsal tooth (Figs 5 and 8).
9 (10) Male forceps strongly curved, the branches with comparatively smaller teeth medially (Fig. 5); external parameres of male genital armature normally developed, not narrowed apically (Fig. 6) **harmandi** (BURR, 1904)
10 (9) Male forceps curved, the branches with comparatively larger double tooth medially (Fig. 8); external parameres of male genital armature conspicuously narrowed apically (Fig. 9) **lewisi** (BURR, 1904)
11 (8) Male forceps without double, bifurcated dorsal tooth.
12 (13) Male forceps specific, with a very large inner tooth medially (Fig. 10); branches with or sometimes without smaller dorsal tooth basally **japonica** (BORMANS, 1880)
13 (12) Male forceps without conspicuous, trigonal and very large inner tooth medially.
14 (15) Male pygidium ornamented by some small tubercles posteriorly (Fig. 13); male forceps with obtuse, but prominent inner tooth medially; external parameres of male genitalia moderately short, and curved apically (Fig. 14) **lucifer** STEINMANN, 1985
15 (14) Male pygidium simple posteriorly; branches of male forceps without median tooth.
16 (17) Male ultimate tergite with smaller or larger, generally tumid elevations laterally (Fig. 15); inner margin of male forceps with a characteristic, and very small, but sharp tooth basally near pygidium; virga within male genital lobe with specific basal vesicl e (Fig. 16) **globalis** sp. n
17 (16) Male ultimate tergite without larger elevations laterally.
18 (19) Male pygidium very small, quadrate (Fig. 17); basal portions of male forceps depressed horizontally and ending a prominent, but obtuse tooth near pygidium; male genitalia with characteristic basal vesicle (Fig. 18) **nayyari** KAPOOR, 1966
19 (18) Male pygidium large, generally transverse.
20 (21) Male forceps with smaller or larger dorsal tooth basally (Figs 19—20); wings normally developed, sometimes concealed; male ultimate tergite with smaller or sometimes larger elevations dorsally **filchneri** (BURR, 1908)
21 (20) Male forceps without dorsal tooth basally (Fig. 22); male ultimate tergite sometimes with broadly rounded elevations medially **modesta** BEY-BIENKO, 1959
22 (7) Male forceps in lateral view strongly undulating, strongly bowed downwards in the basal part.
23 (24) Male forceps simple, without inner or dorsal tooth or teeth (Fig. 23); male ultimate tergite with rounded depression medially near posterior margin **primaria** BEY-BIENKO, 1959
24 (23) Male forceps armed with inner or dorsal tooth.
25 (30) Male forceps with smaller or larger dorsal tooth basally.
26 (27) Male forceps with smaller dorsal tooth basally, and a larger inner tooth medially (Fig. 24); male genitalia comparatively narrow, and virga within genital lobe short (Fig. 25) **quelparta** OKAMOTO, 1924
27 (26) Male forceps with larger dorsal tooth basally (Figs 26 and 29), but branches without inner tooth medially.
28 (29) Male pygidium less transverse, and inner margins of forceps with a smaller, but prominent tooth near pygidium (Fig. 26); apex of male genitalia strongly curved and directed inwards (Fig. 27), basal vesicle of virga not associated with a larger, and sclerotized plate **pirpanjalae** KAPOOR, 1966
29 (28) Male pygidium strongly transverse, but inner margins of forceps without tooth near pygidium (Fig. 29); apex of male genitalia straight and directed forwards (Fig. 30), basal vesicle of virga associated with a larger and sclerotized plate **zubovskii** SEMENOV, 1901
30 (25) Male forceps without dorsal tooth basally.
31 (34) Inner margins of male forceps with two teeth.
32 (33) Male pygidium characteristic, of *Doru*-type, spinelike, prominent (Fig. 31); virga within genital lobe of male genitalia comparatively long, basal vesicle specific (Fig. 32) **torquata** BURR, 1905
33 (32) Male pygidium transverse or hidden; ultimate tergite strongly transverse, simple, smooth **crinitata** (SHIRAKI, 1905)
34 (31) Inner margin of male forceps with one tooth.
35 (36) Tegmina dark, with a big yellow spot in the anterior part; male ultimate tergite with a large, prominent peg laterally (Fig. 34); male genital armature characteristic, generally as in Fig. 35 **bipunctata** (FABRICIUS, 1781)

36 (35) Tegmina unicolorous; male ultimate tergite normally developed, simple (Fig. 37); male genital armature specific, large, central parameral plate with conspicuous basal vesicle (Fig. 38) **svenhedini** BEY-BIENKO, 1933

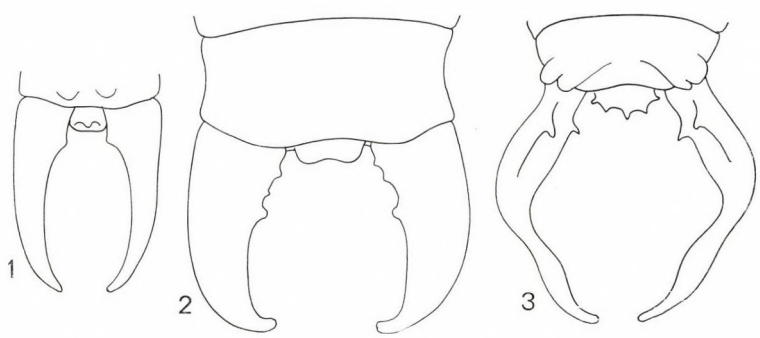
Anechura forficuliformis SEMENOV et BEY-BIENKO

1935 *Anechura forficuliformis* SEMENOV et BEY-BIENKO, Eos, Madr., 10: 222; fig. 1 (male in dorsal view). Terra typica: East Tibet; type-male: Zool. Inst. Mus. Acad. Sci. URSS, Leningrad.

1936 *Anechura (Odontopsalis) forficuliformis* — BEY-BIENKO, Faune de l'USSR, Dermaptera: 169.

M a l e general colour dark brownish black, tegmina dark red, legs darker, generally brownish black, sometimes black; lateral margins of pronotum lighter as the median part. — H e a d longer than broad, frons a little tumid, postfrontal and coronal sutures indistinct, posterior margin concave in the middle. Eyes typical, shorter than the length of head behind eyes. First antennal joint or scape small, shorter than distance between antennal bases; second quadrate or transverse, third longer than fourth. — P r o n o t u m a little broader than long, and narrower than head; anterior margin transversely truncate, posterior margins more or less straight, but a little broader posteriorly, last angles and margin broadly rounded. Tegmina comparatively short, but longer than pronotum; wings entirely absent. — A b d o m e n a little depressed, with subparallel lateral margins; lateral glandular folds on tergites 3—4 distinct. Ultimate tergite transverse, simple, smooth. Pygidium a little broader than long, posterior margin a little curved upwards. — Each branch of f o r c e p s (Fig. 1) simple, strongly flattened basally, oval in cross-section medially and cylindrical apically; branches unarmed. Genitalia unknown. — F e m a l e unknown. — L e n g t h of body with forceps: 13—14 mm.

Distribution: China (East Tibet).



Figs 1—3. 1 = Male ultimate tergite with forceps of *Anechura forficuliformis* SEMENOV et BEY-BIENKO, 1935. 2 = Holotype ultimate tergite with forceps of *A. potanini* BEY-BIENKO, 1934, and 3 = Holotype ultimate tergite with forceps of *A. senator* sp. n. (Original)

Anechura potanini BEY-BIENKO

1934 *Anechura potanini* BEY-BIENKO, Ann. Mag. nat. Hist., (10) 13: 406; fig. 3 (male ultimate tergite with forceps). Terra typica: China: Szechwan; type male: Zool. Inst. Mus. Acad. Sci. URSS, Leningrad.
1936 *Anechura (Odontopsalis) potanini* — BEY-BIENKO, Faune de l'USSR, Dermaptera: 167, fig. 51 (male ultimate tergite with forceps).

M a l e general colour dark reddish brown; antennae and legs pale yellow, or sometimes pale reddish; pronotum and tegmina unicolorous dirty brown. — H e a d depressed, not tumid, a little broader than anterior margin of the pronotum, with very fine but distinct sutures. Eyes typical, a little shorter than the length of head behind eyes. Antennae 13-jointed; first joint shorter than distance between antennal bases; second quadrate, third joint cylindrical, nearly three times as long as broad, and equal in length to fifth. — P r o n o t u m a little broader than long, with parallel and straight lateral margins; posterior margin very feebly rounded; median longitudinal furrow well marked. Tegmina short, nearly half as long as the pronotum, a little widened posteriorly, with a feebly oblique and rounded hind margin. Wings entirely absent. Prosternum strongly widened anteriorly, mesosternum rounded, as broad as long, metasternum not decidedly broad, with truncate posterior margin. — A b d o m e n with subparallel lateral margins, smooth, without distinct puncturation; lateral glandular folds feeble, especially on the third segment. Ultimate tergite transverse, with two feeble spherical projections before hind margin placed over the inner basal part of the forceps, and with a distinct depression between these projections. Pygidium broad, distinctly prominent, with subvertical apical side roundly emarginated on the apex of the upper surface. — F o r c e p s (Fig. 2) remote at the base, not undulated, in profile quite straight, from above widened at the base and regularly narrowed to the apex; inner margin with very feeble denticulation between a median tooth and the base of the forceps. Genitalia unknown. — F e m a l e unknown. — L e n g t h of body with forceps: 13 mm.

Distribution: China (Szechwan).

Anechura senator sp. n.

M a l e head blackish, pronotum, tegmina and legs pale yellow, abdominal tergites and forceps dark reddish brown. — H e a d longer than broad, frons a little tumid, postfrontal and coronal sutures present, posterior margin convex in the middle. Eyes small, essentionally shorter than the length of head behind eyes. First antennal joint short, significantly shorter than distance between antennal bases; second quadrate, third longer than fourth. — P r o n o t u m a little broader than long, anterior margin transversely truncate,

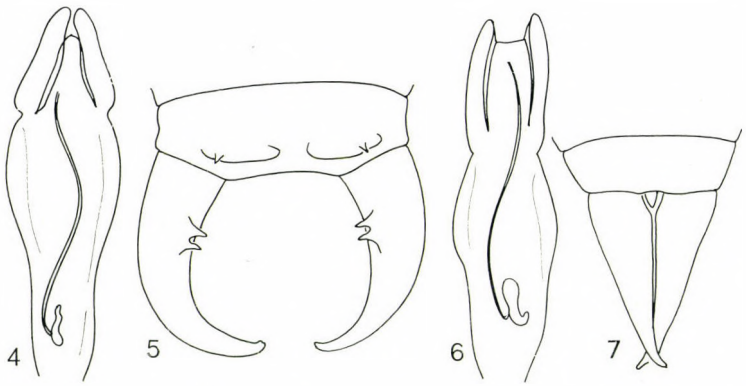
lateral margins convex and widened posteriorly, posterior margin and angles broadly rounded; median longitudinal furrow faint, prozona tumid, metazona depressed. Tegmina a little longer than the length of pronotum, smooth. Wings completely absent. — A b d o m e n a little depressed, lateral margins subparallel; lateral glandular folds on tergite 3 very small, those on tergite 4 large. Ultimate tergite specific, a little of *Oreasiobia*-type, dorsal plate with two large, a little flattened projections laterally. Pygidium broad, posterior margin ornamented by five small tubercles. — F o r c e p s (Fig. 3) characteristic, branches strongly undulated horizontally and vertically, the basal portion strongly depressed vertically, with sharp dorsal and ventral edges, the dorsal edge ornamented by a large, sharp and strongly curved tooth, the ventral edge with a further, but very small tooth. Genitalia (Fig. 4) of *Anechura*-type; central parameral plate narrowed basally, and widened apically, virga within genital lobe very long, the basal vesicle as in Fig. 4; external parameres well developed, with apices obtuse. — F e m a l e unknown. — L e n g t h of body with forceps: 15 mm.

H o l o t y p e male: "Kina, S. Kansu, Sven Hedin Exp. Ctr. Asien, Dr. Hummel"; gen. prep. No. 545, det. Dr. H. Steinmann. — Deposited in the Hungarian Natural History Museum, Budapest.

Anechura harmandi (Burr)

1904 *Odontopsalis harmandi* Burr, Trans. ent. Soc. London, 1904: 316. Terra typica: Japan; type male: Mus. nation. Hist. nat., Paris.
1905 *Apterygida japonica* Shiraki (nec Bormans, 1880), J. Coll. Sapporo, 2 (2): 83.
1910 *Anechura harmandi* — Burr, Proc. U. S. natn. Mus., 38: 462.
1936 *Anechura (Odontopsalis) harmandi* — Bey-Bienko, Faune de l'USSR, Dermaptera: 171.

M a l e general colour very dark brownish black to black; antennae, lateral margins of pronotum, and legs brown. — H e a d longer than broad, a little tumid, postfrontal and coronal sutures indistinct, posterior margin concave. Eyes prominent, but shorter than the length of head behind eyes. First antennal joint well developed, but shorter than distance between antennal bases; second quadrate, third and rest typical. — P r o n o t u m transverse, anterior margin a little concave or truncate, lateral margins more or less straight, and parallel, posterior angles rounded, last margin convex; median longitudinal furrow indistinct. Tegmina and wings normally developed, or sometimes a little reduced. — A b d o m e n comparatively large, broad, lateral margins convex in superior view; lateral glandular folds on tergites 3—4 distinct. Ultimate tergite very broad, transverse, dorsal surface with two, large, broad and rounded projections near posterior margin; sometimes the projections with a pair of minute tubercles. Pygidium hidden. — Each branch of f o r c e p s (Fig. 5) strongly curved, more or less cylindrical in cross-section, but the median section with a characteristic, double tooth.



Figs 4—7. 4 = Holotype genital armature of *Anechura senator* sp. n. 5 = Male ultimate tergite with forceps of *A. harmandi* (BURR, 1904), 6 = ditto, male genital armature, and 7 = ditto, female ultimate tergite with forceps (Original)

Genitalia (Fig. 6, gen. prep. No. 194, det. DR. H. STEINMANN) of *Anechura*-type; central parameral plate moderately short and broad, narrowed basally; virga within genital lobe long, basal vesicle of *bipunctata*-type, resembling anterior margin transversely truncate. External parameres comparatively thin and long. — F e m a l e very similar to male, but ultimate tergite simple, smooth, and forceps (Fig. 7) very short, straight. — L e n g t h of body with forceps: male: 13—15 mm, female: 11—12 mm.

Distribution: Japan and East USSR.

Anechura lewisi (BURR)

1904 *Odontopsalis lewisi* BURR, Trans. ent. Soc. London, 1904: 317. Terra typica: Japan; type male: BURR's Collection in Brit. Mus. nat. Hist., London.
1911 *Anechura lewisi* — BURR, Genera Insectorum, Bruxelles, 122: 73.
1973 *Anechura (Odontopsalis) harmandi* forma *lewisi* — SAKAI, Dermapterorum Cat. Prael., Tokyo, 7: 160 (Japan, and Liverpool, in St. John's Market).

M a l e general colour dark brownish black; antennae, lateral margins of pronotum, legs and wings yellow, or sometimes light brown. — H e a d longer than broad, a little tumid, coronal and postfrontal sutures indistinct but posterior margin concave in the middle. Eyes prominent, but shorter than the length of head behind eyes. First antennal joint normally developed, about as long as distance between antennal bases, or sometimes a little shorter; second quadrate, rest cylindrical, typical. — P r o n o t u m transverse, anterior margin transversely truncate, lateral margins faintly convex with posterior angles and margin broadly rounded; median longitudinal furrow present. Tegmina and wings well developed. — A b d o m e n short and broad, lateral glandular folds on tergites 3—4 very distinct. Ultimate tergite

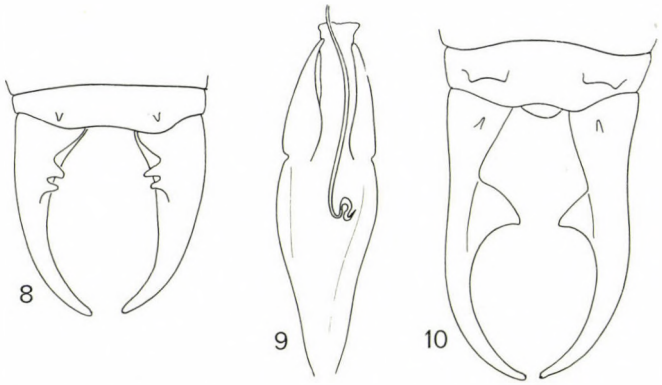
strongly transverse, depressed medially, and the disc with two small, but sharp tubercles near posterior margin. Pygidium small, rounded in superior view. — F o r c e p s (Fig. 8) very similar to *harmandi* (BURR), but branches less curved, and the double dorsal tooth larger. Genitalia (Fig. 9, gen. prep. No. 956, det. DR. H. STEINMANN) specific, central parameral plate narrowed basally, and a little expanded apically; virga within genital lobe long, the basal vesicle small, and less sclerotized; external parameres broad basally, regularly narrowed apically. — F e m a l e similar to male, but ultimate tergite simple, smooth, without teeth, and forceps straight, simple, tapering, contiguous. — L e n g t h of body with forceps: male: 18—19 mm, female: 14—17 mm.

Distribution: Japan.

Anechura japonica (BORMANS)

1880 *Forficula japonica* BORMANS, Annls Soc. esp. nat. Hist., 9: 512. Terra typica: Japan; type male: unknown locality.
1900 *Apterygida japonica* — BORMANS et KRAUSS, Das Tierreich, Berlin, 11: 110.
1902 *Anechura eoa* SEMENOV, Revue Russe d'Ent., 2: 100, fig. 2 (male in dorsal view). Terra typica: Japan; type male: unknown locality.
1904 *Odontopsalis japonica* — BURR, Trans. ent. Soc. London, 1904: 315.
1904 *Apterygida athymia* REHN, Proc. U. S. natn. Mus., 27: 540. Terra typica: Japan; type male: unknown locality.
1904 *Sphingolabis japonica* — KIRBY, Syn. Cat. Orth., 1: 54.
1977 *Anechura japonica* — STEINMANN, Acta zool. hung., 23: 208, fig. 23 (male genitalia, gen. prep. No. 478, det. Dr. H. STEINMANN) (Eastern Siberia, from Amur to Vladivostok; Korea, Japan, Manchuria, China: Gansu, Szechwan).

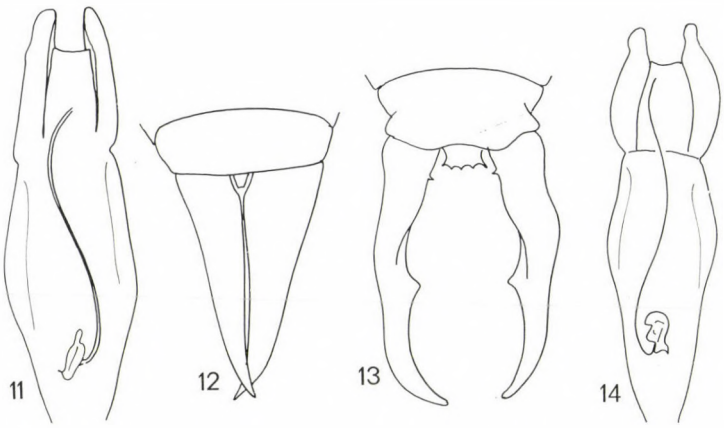
M a l e general colour lighter or darker reddish brown; antennae, median part of pronotum, and legs brown, lateral margins of pronotum, and lateral margins of wings yellowish. — H e a d typical, smooth, faintly tumid, postfrontal and coronal sutures indistinct, posterior margin straight. Eyes typical, shorter than the length of head behind eyes. First antennal joint short, strongly narrowed basally, essentially shorter than distance between antennal bases; second transverse, third conical, longer than fourth. — P r o n o t u m transverse, truncate on anterior margin, lateral sides narrowed posteriorly, last angles and margin rounded; median longitudinal furrow present. Tegmina rather short, punctured, wings well developed, humeral margins and apices black. — A b d o m e n moderately short and broad; lateral glandular folds on tergites 3—4 distinct. Ultimate tergite short and transverse, at each exterior angle armed with a strong flattened or bifurcated tubercle, sometimes the projections absent. Pygidium short, rounded posteriorly. — F o r c e p s (Fig. 10) specific, branches depressed vertically at basal half, with a very large, triangular lobe-like tooth ventrally, and branches with a smaller,



Figs 8—10. 8 = Male ultimate tergite with forceps of *Anechura lewisi* (BURR, 1904), 9 = ditto, male genital armature. 10 = Male ultimate tergite with forceps of *A. japonica* (BORMANS, 1880) (Original)

pointed tubercle dorsally. Genitalia (Fig. 11) typical, of *Anechura*-type; central parameral plate medium elongated, external parameres robust, wide and long, their apices not incurving. Anterior margin of genital lobe transverse, slightly truncate. Virga within genital lobe long, basal vesicle of *bipunctata*-type, resembling a bean, with an appendage anteriorly. — F e m a l e similar to male, but ultimate tergite simple, and forceps (Fig. 12) short, straight, tapering. — L e n g t h of body with forceps, in both sexes: 11—17 mm.

Distribution: East Asia.



Figs 11—14. 11 = Male genital armature of *Anechura japonica* (BORMANS, 1880), and 12 = ditto, female ultimate tergite with forceps. 13 = Holotype ultimate tergite with forceps of *A. lucifer* STEINMANN, 1985 and 14 = ditto, male genital armature (Original)

Anechura lucifer STEINMANN

1985 *Anechura lucifer* STEINMANN, Folia ent. hung., 46 (1): 167, fig. 5 (male ultimate tergite with forceps), 6 (male abdominal end with forceps in lateral view), 7 (holotype genital armature), 8 (basal vesicle of male genital lobe). Terra typica: Armenia; type male, gen. prep. No. 968, det. Dr. H. STEINMANN: Zool. Inst., Yerevan.

M a l e general colour dark brownish black, except legs dark reddish brown, and tegmina with wings ornamented by dark yellowish patches medially. Cuticle finely punctured and pubescent. — H e a d larger than broad, frons a little tumid, postfrontal and coronal sutures faint but well visible, posterior margin a little emarginate in the middle. Eyes comparatively large, but essentionally shorter than the length of head behind eyes. Lateral margins of head behind eyes converging posteriorly. Antennae 12-jointed; first joint typical, shorter than distance between antennal bases, second quadrate, rest typical of the genus. — P r o n o t u m transverse, anterior margin transversely truncate, lateral margins more or less parallel, posterior margin with postero-lateral angles rounded; median longitudinal furrow present. Prozona tumid, metazona deplanate. Tegmina comparatively short, posterior margin finely concave, and postero-humeral angles rounded, the yellowish patch oval. Wings short, yellow, but with dark longitudinal stripe humerally. — A b d o m e n a little depressed, normally developed, lateral sides convex in superior view; lateral glandular folds on tergite 3 very small, those on tergite 4 large, obtuse. Ultimate tergite transverse, with two lateral tubercles near posterior margin. Pygidium transverse, specific, posterior margin finely undulate, postero-lateral angles sharp. Penultimate sternite with a concave section medially at posterior margin. — F o r c e p s (Fig. 13) more or less elongate, comparatively straight in lateral view, on dorsal view strongly undulate, curved, and armed with a larger tooth medially. Genitalia (Fig. 14) well developed, of *Anechura*-type, central parameral plate comparatively narrow, virga within genital lobe very long with a specific basal vesicle. — F e m a l e unknown. — L e n g t h of body with forceps: 13—18 mm.

Distribution: USSR (Armenia).

Anechura globalis sp. n.

M a l e head, median portion of pronotum, and tegmina very dark brownish black; antennae and abdominal tergites dark brown; lateral margins of pronotum, the large, oval patches of tegmina and legs yellowish. — H e a d longer than broad, faintly tumid, postfrontal and coronal sutures present, posterior margin a little emarginate in the middle. Eyes prominent, but shorter than the length of head behind eyes. First antennal joint shorter than distance between antennal bases, strongly narrowed basally, expanded api-

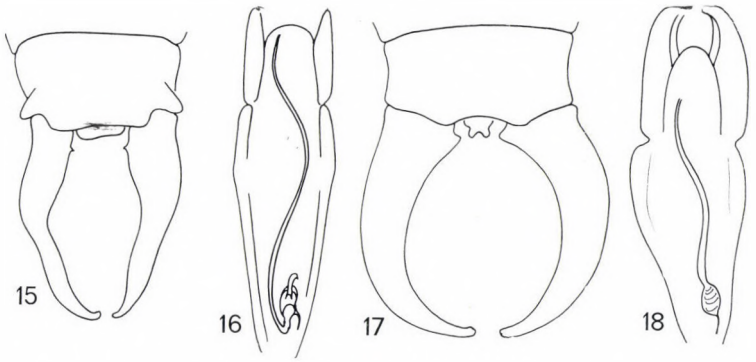
cally; second joint quadrate, third a little longer than fourth — P r o n o t u m strongly transverse, lateral margins more or less straight and parallel, posterior angles rounded, last margin convex; median longitudinal furrow faint, prozona tumid, lateral parts of the disc deplanate. Tegmina and wings normally developed. Wings yellow. Abdomen fusiform, lateral sides convex in superior view; lateral glandular folds on tergites 3—4 distinct. Ultimate tergite strongly transverse, depressed medially near posterior margin, and postero-lateral angles with sharp angular lobe. Pygidium simple, transverse. — F o r c e p s (Fig. 15) very remote at the base; branches more or less cylindrical in cross-section, with a small conical tooth near the base on the inner margin. Genitalia (Fig. 16, gen. prep. No. 400, det. DR. H. STEINMANN) large, central parameral plate well developed, broad; virga within genital lobe long, basal vesicle characteristic, associated with a smaller and a further larger strongly sclerotized plate; external parameres with inner margins straight. — F e m a l e unknown. — L e n g t h of body with forceps: 14 mm.

H o l o t y p e male: Persia sept. 16. XI. 1962, legit H. WARCHATOWSKI, gen. prep. No. 400, det. Dr. H. STEINMANN. — Deposited in the Hungarian Natural History Museum, Budapest.

Anechura nayyari KAPOOR

1966 *Anechura nayyari* KAPOOR, Ann. Mag. nat. Hist., (13) 9: 389, figs 1 (basal antennal joints), 2 (pronotum, tegmina and wings), 3 (male forceps), 4 (episthomeres), 5 (penultimate sternite), 6 (genitalia of holotype). Terra typica: Himalaya; type male: KAPOOR's Collection.

M a l e general colour black. — H e a d large, broad, frons tumid; occiput deeply depressed; postfrontal and coronal sutures prominent, posterior margin of head convex in the middle. Eyes small, shorter than the length of head behind eyes. Antennae 12-jointed; first joint large and club-shaped, about equal in length to second and third combined; fourth slightly smaller than third. — P r o n o t u m transverse, about as broad as head, semicircular; anterior margin nearly straight, sides prominently rounded, posterior margin slightly rounded; prozona very slightly tumid, metazone not depressed. Tegmina normally developed, wings exposed posteriorly. Abdomen fusiform, much depressed in the middle, median segments smooth. Ultimate tergite transverse, smooth, posterior margin trisinuate. Pygidium small, more or less as long as wide, posterior margin strongly concave. — F o r c e p s (Fig. 17) remote at base, basal portion much depressed thus forming a pair of tooth-like tubercles pointing towards each other and then arcuate, ending in pointed apex. Genitalia (Fig. 18) characteristic; central parameral plate strongly widened apically, virga within genital lobe long, chitinized and bowed at the junction with the reniform, not of *Anechura*-type basal vesicle. External parameres fully developed, much broader near the base and narrower towards



Figs 15—18. 15 = Holotype ultimate tergite with forceps of *Anechura globalis* sp. n., 16 = ditto, holotype genital armature. 17 = Male ultimate tergite with forceps of *A. nayyari* KAPOOR, 1966, and 18 = ditto, male genital armature (Original)

the apex which is nearly pointed. — F e m a l e unknown. — L e n g t h of body with forceps: 19.5 mm.

Distribution: India (Himalaya).

Anechura filchneri (BURR)

1908 *Odontopsalis filchneri* BURR, in Filcher, Wiss. Ergeb. Exp. China and Tibet, Zool.-Bot., 10: 58, pl. 3, fig. 8 (male in dorsal view). Terra typica: Tibet; type male: unknown locality.
1911 *Anechura filchneri* — BURR, Genera Insectorum, Bruxelles, 122: 73.

M a l e general colour shining dark brownish black; sides of pronotum, tegmina and wings testaceous brown. — H e a d large, broad, frons a little tumid, postfrontal and coronal sutures indistinct; posterior margin more or less straight. Eyes comparatively small, essentionally shorter than the length of head behind eyes. First antennal joint short, narrowed basally, widened apically; shorter than distance between antennal bases; second quadrate, third typical, longer than fourth. — P r o n o t u m strongly transverse, about as broad as the head or sometimes a little broader; anterior margin transversely truncate, lateral sides with posterior angles rounded, last margin convex; median longitudinal furrow present, prozona faintly tumid, metazona deplanate. Tegmina comparatively short, posterior margin obliquely truncate, wings present. — A b d o m e n a little depressed, lateral margins of abdominal tergites convex in superior view; lateral glandular folds on tergites 3—4 distinct. Ultimate tergite transverse, tumid elevation above bases of forceps strongly or poorly developed. Pygidium transverse, a little reflexed along hind margin, postero-lateral angles with minute point. — F o r c e p s remote at base, branches short and stout (Fig. 19, forma *cyclolabia*) or along and slender (Fig. 20, forma *macrolabia*); armed at base with a small vertical

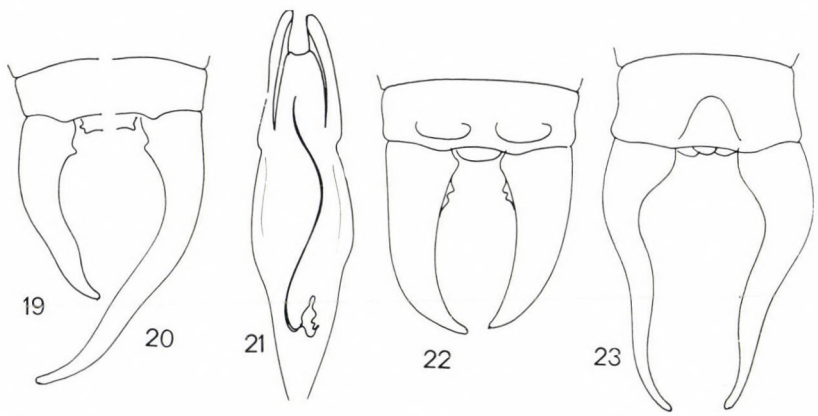
tooth above and below with another somewhat similar tooth. Genitalia (Fig. 21, gen. prep. No. 545, det. Dr. H. Steinmann) well developed; central parameral plate narrowed basally, and a little widened apically or sometimes medially; virga within genital lobe long, of *Anechura*-type, with specific basal vesicle; external parameres comparatively long and narrow, straight. — Foe m a l e very similar to male, but ultimate tergite simple, smooth, and mrceps straight, contiguous, simple. — L e n g t h of body with forceps: jale: 10—13 mm, female: 9—10 mm.

Distribution: India (Himalaya), China (Tibet, Szechwan, Gansu), Mongolia.

Anechura modesta Bey-Bienko

1959 *Anechura modesta* Bey-Bienko, Ent. Obozr., 38: 619. Terra typica: China: Yunnan; type male: unknown locality, perhaps in Peking Museum.

M a l e general colour black, antennae brownish yellow, lateral margins of pronotum yellowish, legs reddish yellow. — H e a d longer than broad, a little tumid, postfrontal and coronal sutures indistinct, posterior margin concave in the middle. Eyes typical, shorter than the length of head behind eyes. Antennae 12-jointed; first joint small, essentionally shorter than distance between antennal bases; second quadrate, third about equal in length to fourth or a little longer. — P r o n o t u m slightly transverse, anterior margin truncate, lateral margins faintly convex, posterior angles and margin rounded; median longitudinal furrow distinct. Tegmina and wings well developed. — A b d o m e n fusiform, tergites punctured; lateral glandular folds on tergites 3—4 present. Ultimate tergite strongly transverse, depressed medially near



Figs 19—23. 19 = Cyclolabic, and 20 = macrolabic male ultimate tergite with forceps of *Anechura filchneri* (Burr, 1908), and 21 = ditto, male genital armature. 22 = Male ultimate tergite with forceps of *A. modesta* Bey-Bienko, 1959, and 23 = Male ultimate tergite with forceps of *A. primaria* Bey-Bienko, 1959 (Original)

posterior margin. Pygidium transverse, simple. — Each branch of forceps (Fig. 22) comparatively short, stout; branches depressed basally and medially, more or less oval or cylindrical in cross-section apically; the basal portion of forceps trigonal, ventral edge with two-three denticles. — Female unknow for me. — Length of body with forceps: 16—18 mm.

Distribution: China (Yunnan).

Anechura primaria Bey-Bienko

1959 *Anechura primaria* Bey-Bienko, Ent. Obozr., 38: 619, fig. 36 (male ultimate tergite with forceps). Terra typica: China: Szechwan; type male: unknown locality, perhaps in Peking Museum.

Male general colour dark brownish black; head black, antennae brownish; tegmina and wings yellowish brown, abdominal tergites blackish, forceps dark reddish black. — Head large, broad, frons tumid, postfrontal and coronal sutures indistinct, but present, posterior margin concave in the middle. Eyes typical of the genus, small, shorter than the length of head behind eyes. First antennal joint comparatively small, shorter than distance between antennal bases. — Pronotum slightly transverse, anterior margin transversely truncate, lateral margins with posterior margin broadly rounded; median longitudinal furrow distinct. Tegmina and wings normally developed. — Abdomen comparatively short and broad, a little depressed; tergites punctured; lateral glandular folds on tergites 3—4 distinct. Ultimate tergite transverse, median part with a deep depression near posterior margin. Pygidium large, transverse, with a rounded dorsal portion. — Each branch of forceps (Fig. 23) strongly curved and undulate; branches a little depressed basally, cylindrical in cross-section medially and apically; without tooth or teeth. Genitalia unknown. — Female unknown. — Length of body with forceps: 16 mm.

Distribution: China (Szechwan).

Anechura quelparta Okamoto

1924 *Anechura quelparta* Okamoto, Bull. Agr. Exp. Station Korea, 1 (2): 53, pl. 8, fig. 5 (male forceps). Terra typica: Korea; type male: unknown locality.

Male very similar to *japonica* (Bormans). — Head dark reddish, antennae dark brown, legs lighter brown; lateral margins of pronotum yellowish, tegmina and wings unicolorous, brownish black, abdominal tergites with forceps dark brown. Cuticle punctured. — Head longer than broad, frons tumid, postfrontal and coronal sutures present, but faint; posterior margin

of head faintly concave in the middle. Eyes small but prominent, significantly shorter than the length of head behind eyes. Antennae 12-jointed; first joint comparatively long, about as long as distance between antennal bases, rest typical. — P r o n o t u m strongly transverse, anterior margin transversely truncate, lateral sides more or less straight, posterior angles with margin broadly rounded; median longitudinal furrow distinct. Prozona faintly tumid, metazona deplanate. Tegmina moderately short, wings distinct. — A b d o m e n comparatively long, a little depressed, tergites with deep punctures; lateral glandular folds on third tergite small, those on tergite 4 large. Ultimate tergite strongly transverse, depressed medially near posterior margin, and with smaller, indistinct pegs laterally. Pygidium hidden. — F o r c e p s (Fig. 24) of *japonica*-type; branches straight medially, inner ventral surface with a larger, triangular tooth. Genitalia (Fig. 25, gen. prep. No. 957, det. Dr. H. Steinmann) specific; central parameral plate moderately long and narrow, virga within genital lobe comparatively short, basal vesicle not of *Anechura*-type; external paramers normally, developed, straight. — F e m a l e very similar to male in external characters, but forceps straight, simple, without inner tooth. — L e n g t h of body with forceps, in both sexes: 12—15 mm.

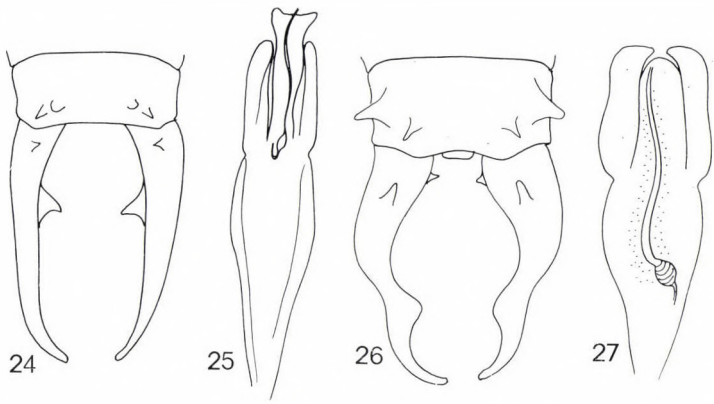
Distribution: Quelparta Island (near South Korea).

Anechura pirpanjalae Kapoor

1955 *Anechura bipunctata* var. *pirpanjalae* Santock Singh, Agra Univ. J. Res. (Sci.), 4 (1): 182, fig. 6 (male in dorsal view), 7 (female forceps), 8 (first five antennal joints), 9 (antenna), 10 (leg). Terra typica: India; type male: Nation. Coll. Zool. Survey India, Calcutta.

1966 *Anechura pirpanjalae* (as sp. n.) Kapoor, Ann. Mag. nat. Hist., (13) 9: 391, fig. 7 (basal antennal joints), 8 (pronotum, tegmina and wings), 9 (male ultimate tergite with forceps), 10 (opisthomeres), 11 (penultimate sternite), 12 (genitalia of holotype).

M a l e general colour black; pronotum, tegmina and wings with yellowish tinges. — H e a d large, broad, frons tumid, postfrontal and coronal sutures distinct; occiput slightly depressed in the middle and tumid on the lateral sides; posterior margin of head concave in the middle. Eyes small, shorter than the length of head behind eyes. Antennae 12-jointed; first joint club-shaped, and nearly equal in length to the second and third combined; fourth smaller than third. — P r o n o t u m transverse, about as broad as head, anterior margin straight, lateral margins parallel anteriorly and rounded posteriorly; last margin convex; prozona tumid, a little depressed in the middle on either side of the suture, metazona very slightly depressed on the posterior side. Tegmina and wings normally developed. — A b d o m e n short and broad, much depressed in the middle; lateral glandular folds on tergites 3—4 distinct, large. Ultimate tergite simple, transverse with anterior



Figs 24—27. 24 = Male ultimate tergite with forceps of *Anechura quelparta* OKAMOTO, 1924, and 25 = ditto, male genital armature. 26 = Male ultimate tergite with forceps of *A. pirpanjalae* KAPOOR, 1966, and 27 = ditto, male genital armature (Original)

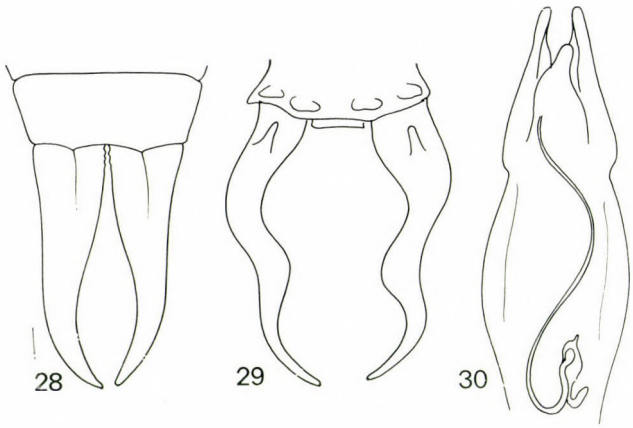
side more tumid and posterior side much depressed between the branches of forceps; at each exterior angle a strong conical tubercle present (similar to *Oreasiobia* species), between the tubercles another pair of small, a little conical tubercle-like prominences are present near the roots of forceps. Pygidium comparatively small, broad. — F o r c e p s (Fig. 26) remote at the base with a small, conical and strong tooth near the base on either dorsal side, another pair of small pointed teeth present very near the basal sides. Genitalia (Fig. 27) specific, and not of *Anechura*-type; central parameral plate very short, virga within genital lobe long and clearly elbowed at the junction with the reniform basal vesicle. External parameres fully developed, and curved apically. — F e m a l e similar to male, but ultimate tergite smooth, simple, and forceps (Fig. 28) straight, a little trigonal basally, cylindrical and simple medially and apically. — L e n g t h of body with forceps, in both sexes: 17—23 mm.

Distribution: India.

Anechura zubovskii SEMENOV

1901 *Anechura zubovskii* SEMENOV, Trud. Russ. ent. Obr., 35: 188. Terra typica: Tibet; type male: unknown locality, perhaps undesignated in Zool. Inst. Mus. Acad. Sci. USSR, Leningrad.

M a l e general colour black to brownish, somewhat shining; lateral margins of pronotum yellow, tegmina and wings with a smaller or larger yellowish spot. Cuticle glabrous and smooth. — H e a d tumid, smooth, postfrontal and coronal sutures faintly distinct, posterior margin concave in the middle. Eyes small, shorter than the length of head behind eyes. First antennal joint



Figs 28—30. 28 = Female ultimate tergite with forceps of *Anechura pirpanjalae* KAPOOR, 1966. 29 = Male ultimate tergite with forceps of *A. zubovskii* SEMENOV, 1901, and 30 = ditto, male genital armature (Original)

small, shorter than distance between antennal bases; second transverse, third and rest typical of the genus. — P r o n o t u m transverse, truncate on anterior margin, convex posteriorly, the lateral sides parallel. Tegmina rather short, not surpassing and scarcely equalling the posterior femora in length. — A b d o m e n very broad and depressed in the middle, smooth; latera glandular folds on tergites 3—4 distinct. Ultimate tergite transverse, posteriorly depressed, tumid above bases of forceps, armed at exterior angle with a sharp ridge, sometimes poorly marked. Pygidium more transverse, simple. — F o r c e p s (Fig. 29) with the branches very remote at the base, rather stout, roundly triangular, with a short conical tooth near the base on the upper surface; they are directed at first gently upwards and outwards, and then, at one quarter at their length, bowed strongly downwards; at about three-quarters of their length, horizontal and almost parallel as far as the points which are gently hooked. Genitalia (Fig. 30, gen. prep. No. 543, det. DR. H. STEINMANN) characteristic; central parameral plate very large and broad, virga within genital lobe very long with a specific, strongly sclerotized basal vesicle. External parameres well developed, broader basally, and regularly narrowed to apices. — F e m a l e very similar to male, but ultimate tergite and forceps simple. — L e n g t h of body with forceps, in both sexes: 14—17 mm.

Distribution: India (Kashmir) and China (Tibet).

Anechura torquata BURR

1905 *Anechura torquata* BURR, Entomologist's month. Mag., 16: 84. Terra typica: Tonkin; type male: Mus. nation. Hist. nat., Paris.

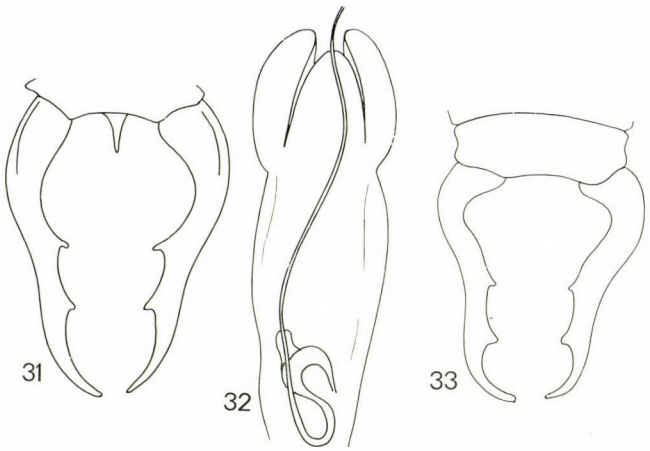
M a l e general colour dark reddish, sometimes brownish black, shining; lateral margins of pronotum light brown; antennae and legs brown. — H e a d large, broad, frons tumid, postfrontal and coronal sutures indistinct, posterior margin of head concave in the middle. Eyes typical, shorter than the length of head behind eyes. First antennal joint comparatively short, shorter than distance between antennal bases; second quadrate, third a little longer than fourth. — P r o n o t u m transverse, anterior margin transversely truncate, lateral margins faintly convex, posterior angles and margin broadly rounded; median longitudinal furrow indistinct; prozona tumid, metazona deplanate. Tegmina and wings of *Anechura*-type, moderately short. — A b d o m e n fusiform, slightly dilated medially; lateral glandular folds on tergite 3 small, those on tergite 4 large. Ultimate tergite transverse, simple. Pygidium prominent, of *Doru*- or *Allodahlia*-type. — F o r c e p s (Fig. 31) a little trigonal in cross-section basally, cylindrical medially and apically; branches strongly undulated, inner margins with two pairs of large teeth. Genitalia (Fig. 32, gen. prep. No. 520, det. Dr. H. STEINMANN) not of *Anechura*-type, central parameral plate oval, virga within genital lobe long with strongly sclerotized basal vesicle; external parameres broad and short. — F e m a l e unknown for me. — L e n g t h of body with forceps: 18 mm.

Distribution: Vietnam and China (Szechwan).

Anechura crinitata (SHIRAKI)

1905 *Apterygida crinitata* SHIRAKI (nec BURR, 1906), Trans. Sapporo nat. Hist. Soc., 1 (2): 11. Terra typica: Formosa; type male: unknown locality.
1911 *Anechura crinitata* — BURR, Ann. Mag. nat. Hist., (8) 8: 52.

M a l e head, apical part of tibiae, and tarsi, reddish yellow or sometimes light brown; antennae and body dark brown, forceps reddish brown. — H e a d large, broad, tumid, postfrontal and coronal sutures indistinct, posterior margin straight. Eyes small, essentionally shorter than the length of head behind eyes. First antennal joint comparatively long, about as long as distance between antennal bases; second joint quadrate, third longer than fourth. — P r o n o t u m about as long as broad or very faintly transverse; anterior margin truncate; lateral margins convex, posterior angles and margin broadly rounded; median longitudinal furrow present. Tegmina and wings normally developed, unicolorous. — A b d o m e n fusiform, a little narrowed basally and widened medially; lateral glandular folds on tergites 3—4 distinct.



Figs 31—33. 31 = Male ultimate tergite with forceps of *Anechura torquata* BURR, 1905, and 32 = ditto, male genital armature. 33 = Male ultimate tergite with forceps of *A. crinitata* (SHIRAKI, 1905) (Original)

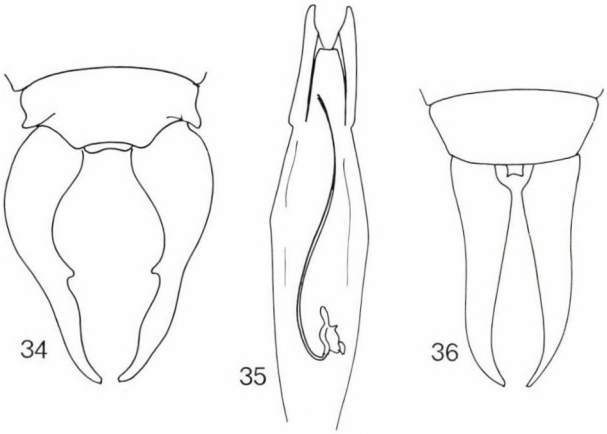
Ultimate tergite strongly transverse, simple, smooth. Pygidium very small, generally hidden in superior view. — F o r c e p s (Fig. 33) strongly undulate; branches remote at bases, inner margins with two pairs of large teeth. Genitalia unknown for me. — F e m a l e similar to male, but forceps straight, contiguous, tapering, simple. — L e n g t h of body with forceps, in both sexes: 12—15 mm.

Distribution: Taiwan.

Anechura bipunctata (FABRICIUS)

1781 *Forficula bipunctata* FABRICIUS, Spec. Ins.: 340. Terra typica: Italy; type female: Zoologisk Mus., København.
1794 *Forficula biguttata* FABRICIUS, Ent. Syst., 2: 2. Terra typica: Hungary; type male: lost in 1956.
1846 *Chelidura anthracina* KOLENATI, Malet. Ent., 5: 73, pl. 17, fig. 5 (male in dorsal view), Terra typica: "Europe"; type male: unknown locality.
1854 *Forficula fabricii* FIEBET, Lotos, 3: 253. Terra typica and type unknown.
1900 *Anechura bipunctata* — BORMANS & KRAUSS, Das Tierreich, Berlin, 11: 101.
1900 *Anechura bipunctata orientalis* KRAUSS, in BORMANS & KRAUSS, Das Tierreich, 11: 101. Terra typica: Krim; type female: unknown locality.
1901 *Anechura orientalis* SEMENOV (nec KRAUSS, 1900), Horae Soc. ent. Ross., 35: 187. Terra typica: Rossia; type male: unknown locality.
1903 *Anechura asiatica* SEMENOV, Ent. Obozr., 3: 197. Terra typica: Russia, type male: Zool. Inst. Mus. Acad. Sci. USSR, Leningrad.

M a l e bicolorous; anterior part of head, and basal part of forceps reddish, legs, lateral portions of pronotum, patches of tegmina and wings, yellowish; anterior part of head, median portion of pronotum, tegmina and abdominal tergites dark brownish black. — H e a d smooth, tumid, postfrontal and



Figs 34—36. 34 = Male ultimate tergite with forceps of *Anechura bipunctata* (FABRICIUS, 1781), 35 = ditto, male genital armature, and 36 = ditto, female ultimate tergite with forceps (Original)

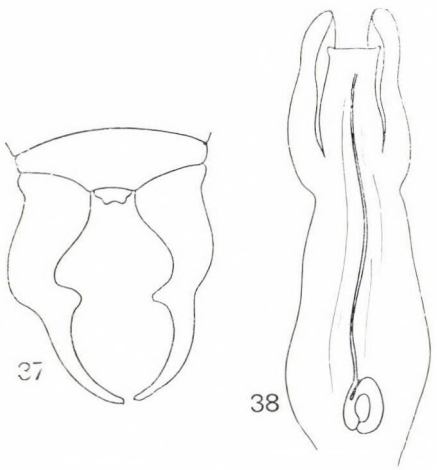
coronal sutures indistinct; posterior margin of head straight. Eyes small, significantly shorter than the length of head behind eyes. Antennae 12-jointed; first joint short, narrowed basally, widened apically, shorter than distance between antennal bases; second quadrate, third longer than fourth. — P r o n o t u m transverse, anterior margin truncate, lateral margins more or less straight and parallel, posterior angles and margin rounded; median longitudinal furrow present. Tegmina and wings well developed. — A b d o m e n fusiform, a little depressed; lateral glandular folds on tergite 3 small, those on tergite 4 large. Ultimate tergite transverse, depressed medially near posterior margin, lateral parts with smaller or larger pegs. Pygidium short, broad and simple. — F o r c e p s (Fig. 34) strongly undulate horizontally and vertically, branches more or less cylindrical in cross-section, dorsal surface with or without smaller or larger tooth, inner margin ornamented by a smaller, sometimes larger, triangular tooth. Genitalia (Fig. 35, gen. prep. No. 22, det. DR. H. STEINMANN from Mongolia) of *Anechura*-type, central parameral plate comparatively narrow and elongate, virga within genital lobe long; the basal vesicle rounded. External parameres thin, comparatively small, apices acute. — F e m a l e very similar to male, but ultimate tergite simple, smooth, pygidium small, quadrate, and forceps (Fig. 36) straight, a little depressed, simple. — L e n g t h of body with forceps, in both sexes: 13—21 mm.

Distribution: Central and East Europe, West and Central Asia.

Anechura svenhedini BEY-BIENKO

1933 *Anechura sven-hedini* BEY-BIENKO, Ark. Zool. Uppsala, 25A (20): 4, pl. 1, fig. 2 (male in dorsal view). Terra typica: China: Szechwan; type male: unknown locality.

M a l e small, for the genus, form relatively robust. General colour darkish brown; head unicolourous, reddish, pronotum blackish brown, with dirty lateral margins; tegmina unicolourous, without light spots, dirty pale, the visible part of wings of the same color. — H e a d depressed, postfrontal and coronal sutures distinct. Eyes small, shorter than the length of head behind eyes. First antennal joint small, shorter than distance between antennal bases; second quadrate, third joint distinctly longer than fourth. — P r o n o t u m transverse, lateral margins parallel in anterior half, hind margin, including externo-posterior angles, broadly rounded; prozona distinctly tumid in anterior part, with extremely dense and very fine, practically indistinct puncturation; metazona deplanate. Tegmina short, twice as long as the pronotum, with very sparse puncturation, posterior margin indistinctly rounded, practically straight; median longitudinal furrow indistinct. Wings very short, scarcely visible beyond the tegmina. — A b d o m e n widened before its apex, anterior tergites finely punctured, specially in anterior half; lateral glandular folds on tergites 3—4 well developed. Ultimate tergite transverse, with bow-shaped median impression and with two lateral inflations scarcely divided into two tubercles. Pygidium short, broad, with distinct, very obtuse, broadly conical tubercle placed near median part of pygidium. — F o r c e p s (Fig. 37) strongly undulate, very similar to *bipunctata* (FABRICIUS). Genitalia (Fig. 38, gen. prep. No. 519, det. DR. H. STEINMANN) specific, central parameral plate



Figs 37—38. 37 = Male ultimate tergite with forceps of *Anechura svenhedini* BEY-BIENKO 1933, and 38 = ditto, male genital armature (Original)

comparatively narrow, medially somewhat widened; virga within genital lobe long, basal vesicle characteristic: a sac of two branches, resembling a bean; external parameres fully developed with apices obtuse. — Female unknown. — Length of body with forceps: 16 mm.

Distribution: China (Szechwan, Gansu and Tibet).

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Acta Zoologica Hungarica 36 (1—2), pp. 157—161 (1990)

UROPODA (CILLIBA) SOPRONENSIS SP. N. AUS UNGARN (ACARINA, UROPODINA)

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(Eingegangen am 8. Februar, 1989)

A new species of *Uropodina*-mite was described on the basis of a male, gathered in the environment of Sopron in the galleries of bark beetle *Ips typographus* (L.). With 4 (9) figures.

In Borkenkäfergängen in der Umgebung von Sopron wurde ein Männchen einer neuen *Uropoda*-Art gefunden, welcher folgend beschrieben wird

Uropoda (Cilliba) sopronensis sp. n.
(Abb. 1—4)

Männchen — Gnathosoma-Unterseite (Abb. 1a): Hypostom zu einem verdickten, abgerundeten Chitinstück umgebildet. Corniculi hornförmig. Laciniae stark ausgezogen, mit Flächen- und Seitenzacken. *C1* am Ansatz gebogen, glatt, überragt die Laciniae; *C2* kurz, glatt, nadelförmig, erreicht den *C1* Ansatz; *C3* fehlt, an seiner Stelle ein von einem eiförmigen Chitinhof umgebener Porus. *C4* distal kurz gezackt, schräg nach aussen verlagert; *C1* = 4 1/2—5 × *C2*; *C4* etwas länger als *C2*. Vordere Hypostomrinne schmal. Am Hypostomabschluss einseitig ein Zähnchenbogen sichtbar.

Episthom (Abb. 1b): Lanzettförmig, einspitzig. Basalteil mit grösseren Zacken, Mittelteil zusätzlich mit einigen Flächenzacken. Distalteil beiderseits klein gezackt, wobei die Zacken zur Spitze hin an Grösse abnehmen.

Tritosternum (Abb. 1c): Grundglied glockenförmig, Schaft in sechs gezackte Äste aufgeteilt, die nicht in gleicher Höhe entspringen. Aussen- und Innenäste ungefähr gleichlang, Seitenäste verlängert.

Chelicere (Abb. 1d): Fixusspitze helmförmig. Mobilislänge: Fixusspitze = 4,5. Unterkante der festen Lade mit Zähnchenplatte. In der Hälfte der Oberseite der beweglichen Lade ein schräg nach oben gerichtetes sinneshaarähnliches Gebilde.

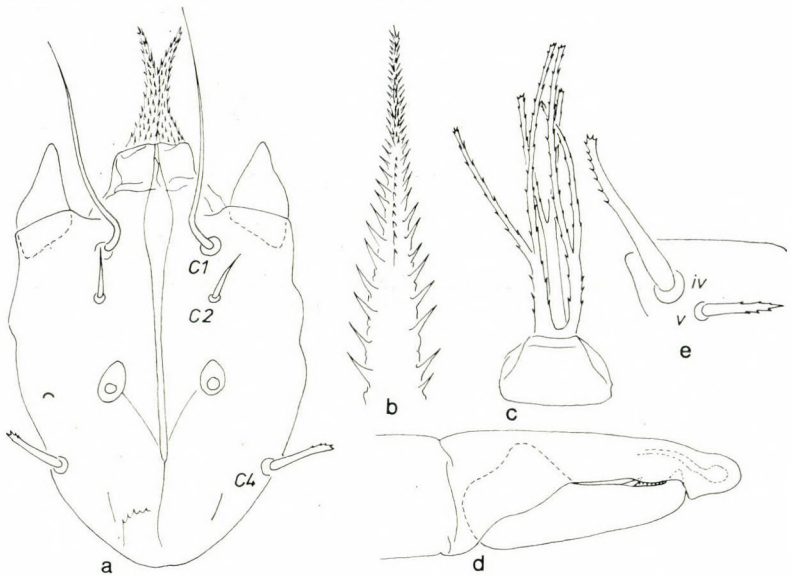

Abb. 1. *Uropoda sopronensis* sp. n., Männchen: a = Hypostom, b = Epistom, c = Tritosternum, d = Chelicere, e = Palptrochanter

P a l p e (Abb. 1e): *v* am Trochanter kurz, mit einigen Seitenzacken auf der distalen Hälfte. *iv* stäbchenförmig verdickt, am distalen Teil einseitig mit kurzen Zacken. *iv* = 2x *v*.

D o r s a l f l ä c h e (Abb. 2a): Annähernd kreisförmig. Ausser im vorderen Teil Dorsale durch eine kräftige Absturzstrukturgirlande vom Marginale getrennt. Marginalbereich glatt, mittlerer Dorsalbereich mit kleinen Scheinporenkreisen, welche im hinteren Teil des Dorsalbereiches von feiner Netzstruktur umgeben sind. Dorsalhaare verlängert, mit einer fadenförmigen Spitze, distal geschwungen (Abb. 2b). Marginalhaare nadelförmig, um die Hälfte kürzer als Dorsalhaare.

V e n t r a l f l ä c h e (Abb. 3): Endo-Metapodiallinie mit der Strukturlinie verwachsen, welche die Beingrube IV umgiebt. In Höhe zwischen Coxen III und IV eiförmiges Operculum mit Vx4, welches in der hinteren Hälfte mit einen Chitinbogen umgeben ist. Sternalbereich mit Scheinporenkreisen verschiedener Grösse. Zwischen *v3* und *v4* jederseits zwei Poren. Anus annähernd rundlich, beiderseits mit kurzen *V*x*4* und *V*x*4d*, welche gleichlang *U* sind. *V8* = 2 × *V*x*4*. Stigma in Höhe Ende Coxen III. Peritrema L-förmig. Einseitig über 55 kurze, nadelförmige, etwas gebogene Randhaare vorhanden.

B e i n e : Bein II mit je einer stäbchenförmigen Apophyse auf Genu, Tibia und Tarsus (Abb. 4).

G r ö s s e : 755 × 715 *u*m.

Weibchen und Entwicklungsstadien: unbekannt.

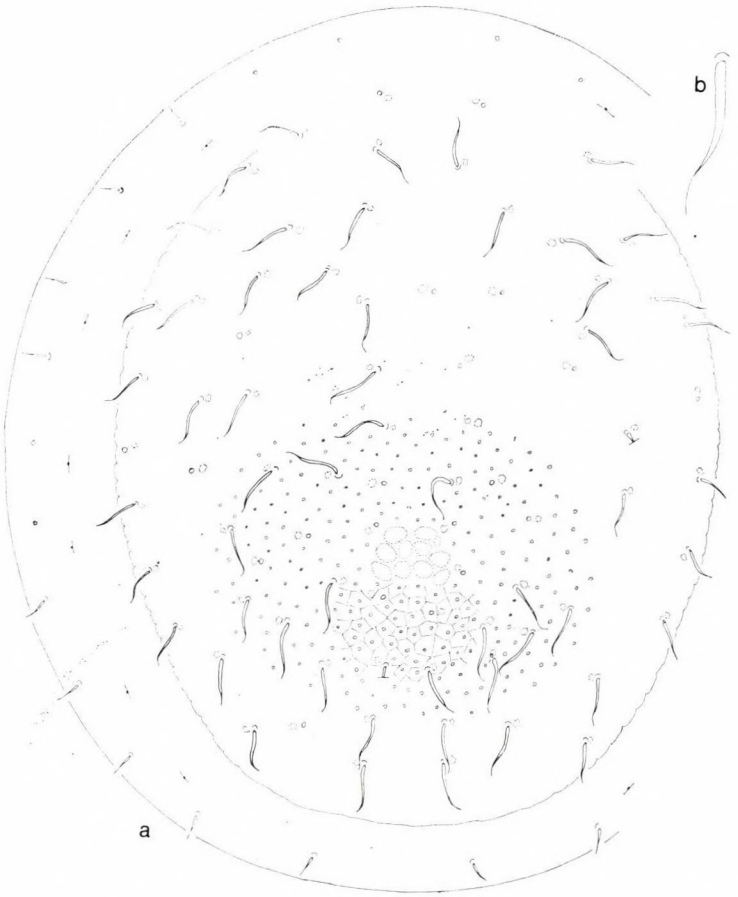

Abb. 2. *Uropoda sopronensis* sp. n., Männchen: *a* = Dorsalfläche *b* = = Dorsalhaar

F u n d o r t: Ungarn; No U-795; im Gang von *Ips typographus* (L.) (Coleoptera, Scolytidae); Lehroberförsterei Sopron (Försterei Sopron); 21. X. 1988; leg. J. WIŚNIEWSKI.
Die Art wird nach dem Fundort benannt.
Holotyp: in HIRSCHMANN's Milbensammlung in Nürnberg.

Auf ganzem Körper kommen vereinzelte Pilzsporen vor, welche BAŁAZY et al. (1987) wie folgt charakterisieren: ". . . elongate, 4-celled, light brown with dark walls . . . at one end obtuse and with the other elongated into a branched appendix. The branches of which have small lobate terminal holdfasts, affixing them to the surface of mite". Diese undeterminierten, wahrscheinlich pathogene Pilze wurden bis jetzt auf einigen Mesostigmata in Polen gefunden.

Uropoda (*Cilliba*) *sopronensis* sp. n. ist nahe verwandt mit dem Männchen von *U.* (*C.*) *athiasae* HIRSCHMANN et ZIRNGIEBL-NICOL 1969 bei welchen *C2* und der Porus an Stelle des fehlenden *C3* durch eine Längslinie verbunden ist.

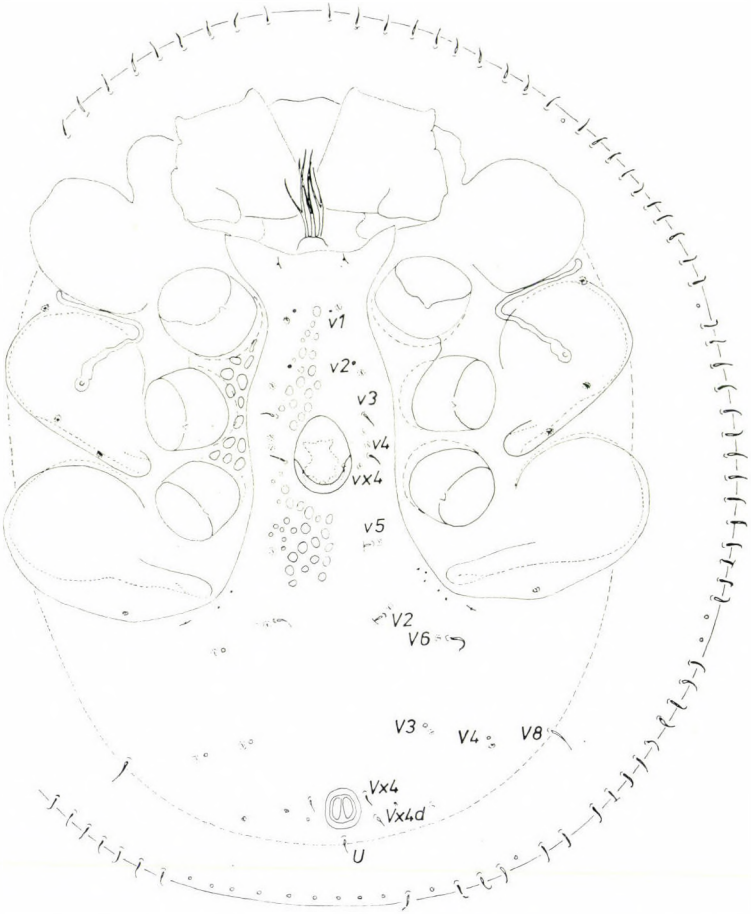

Abb. 3. *Uropoda sopronensis* sp. n., Männchen: Ventralfläche

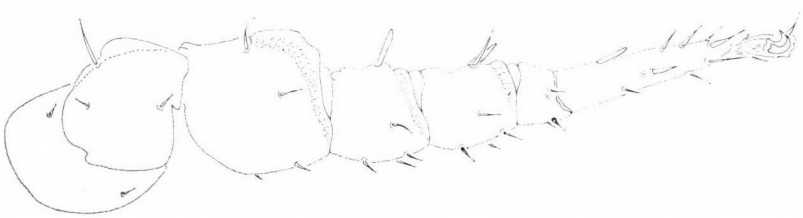

Abb. 4. *Uropoda sopronensis* sp. n., Männchen: Bein II.

Der Porus *C3* liegt näher an *C4*. Das Grundglied des Tritosternum ist hutförmig; bei dem sechsgespalteten Schaft sind die Aussenäste am kürzesten und die Innenäste am längsten. Der Rumpf ist schmäler. Die Dorsalhaare sind länger; diese überragen immer die danach stehenden Haare. *V8* = *V*x*4*, *V*x*4d*, *U*. Die Scheinporenkreise im Sternumbereich sind kleiner.

Dagegen sind bei *U.* (*C.*) *sellnicki* HIRSCHMANN et ZIRNGIEBL-NICOL 1969 *C1*, *C2* und der Porus an Stelle des fehlenden *C3* durch eine Längslinie verbunden. Die Corniculi sind schmäler. Das Epistom ist distal kurz zweigespalten. Das Grundglied des Tritosternum ist annähernd dreieckig, der Rumpf schmäler, die Dorsalhaare sind kürzer. *V8*, *V*x*4* = 2x *V*x*4d*.

SCHRIFTTUM

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THE SUPERFAMILY DORYLAIMOIDEA (NEMATODA) — A REVIEW. FAMILY QUDSIANEMATIDAE, I.

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(Received 10 November, 1989)

In the course of a series analysing the taxonomy of Dorylaimoidea the family Qudsianematidae will be discussed. In the present paper two subfamilies, Chrysonematinae and Discolaiminae, are reviewed. Eight genera are characterized and 73 valid species are enumerated and presented in keys. Two new species: *Discolaimium cephalatum* sp. n. and *Discolaimoides loofi* sp. n. and a rare one: *Chrysonema holsaticum* (SCHNEIDER, 1925) comb. n. are described or redescribed, respectively. Several new combinations and synonyms are proposed. — The other two subfamilies of the same family will be discussed in a subsequent article. With 17 original figures.

This paper is the third part of a series in which I have intended to give a survey on the taxonomic status of families, genera and species belonging to the nematode superfamily Dorylaimoidea DE MAN, 1876. The first paper (1987) dealt with the families Thorniidae DE CONINCK, 1965 and Thornenematidae SIDDIQI, 1969, and listed 11 genera and 59 species. The second (1988) reviewed the great family Dorylaimidae DE MAN, 1876; it defined 19 genera and enumerated 221 valid species. The next family, Qudsianematidae JAIRAJPURI, 1965, will be reviewed now. Since it contains a too great number of genera (24) and species (nearly 300), I want to discuss it in two articles. The first of them presents two subfamilies — Chrysonematinae SIDDIQI, 1969 and Discolaiminae SIDDIQI, 1969 — and defines eight genera, while the second will deal with sixteen further genera of the subfamilies Carcharolaiminae THORNE, 1967 and Qudsianematinae JAIRAJPURI, 1965. In the present paper 73, in the subsequent 221 valid species will be listed and presented in form of keys.

The Qudsianematinae, as a subfamily, was proposed by JAIRAJPURI (1965) for the one genus *Qudsianema* and placed in the family Leptonchidae. SIDDIQI first (1966) synonymized the subfamily with Dorylaiminae and the genus with *Eudorylaimus*, however later (1969) he acknowledged the former as valid and raised it to family rank. He placed the genera *Labronema*, *Eudorylaimus* (syn. *Qudsianema* and *Crassolabium*) and *Kochinema* under Qudsianematidae.

In my book (1976) I accepted Qudsianematidae as a family of Dorylaimoidea and listed eleven genera under three subfamilies: *Crassolabium*, *Ecume-*

nicus, *Eudorylaimus*, *Labronema*, *Malekus*, *Oonaguntus*, *Oriverutus*, *Qudsianema* (Qudsianematinae), *Discolaimium* (syn. *Discolaimoides* and *Durinema*) (Discolaiminae) and *Metadorylaimus* (Metadorylaiminae).

ELIAVA (1982) distinguished two subfamilies — Qudsianematinae and Metadorylaiminae — and enumerated nine genera: *Eudorylaimus*, *Crassolabium*, *Ecumenicus*, *Labronema*, *Malekus*, *Oonaguntus*, *Oriverutus*, *Qudsianema* and *Metadorylaimus*.

SANTIAGO, BARCINA and MILLAN (1983) listed eleven genera in the family all belonging to the type subfamily: *Crassolabium*, *Ecumenicus*, *Eudorylaimus*, *Labronema*, *Oonaguntus*, *Malekus*, *Mammillonema*, *Oriverutus*, *Paroriverutus*, *Qudsianema* and *Thonus*.

KHAN and FATIMA (1980) suggested a new subfamily, *Eudorylaiminae*, for the genera *Eudorylaimus* and *Thonus* but this subfamily must be regarded as a synonym of Qudsianematinae.

Some nematologists, e.g. HEYNS, FERRIS and MAGGENTI have ignored SIDDIQI's proposition (1969) to look at Qudsianematidae as a separate family and ordered all the "dorylaimid" genera under the family Dorylaimidae.

Finally it may be mentioned that the three further subfamilies discussed in the present paper were originally described as families: Carcharolaimidae THORNE, 1967, Chrysonematidae SIDDIQI, 1969 and Discolaimidae SIDDIQI, 1969.

Family *QUDSIANEMATIDAE* JAIRAJPURI, 1965

Dorylaimoidea. Small to comparatively large nematodes, body length varying between 0.3 and 6 mm. Cuticle smooth or finely striated, without longitudinal ridges. Head generally offset, lips more or less developed; labial region and pharynx sometimes with heavily sclerotized structure. Spear straight, moderately long with distinct lumen, aperture mostly 1/3 of its length. Guiding ring simple or double but thin. Oesophagus expanded in its posterior half or so. Prerectum never too long. Female genital organ predominantly didelphic, seldom opisthodelphic. Vulva transverse or longitudinal, vulval lips sclerotized, rarely simple. Testes two, spermatozoa elongate or spheroid. Spicula dorylaimid with small lateral pieces. Ventromedial supplements one to numerous, contiguous or spaced. Tail in both sexes similar, conoid but never too long, or short, more or less rounded.

Within the superfamily Dorylaimoidea the family Qudsianematidae may be characterized by the moderately long spear, the thin guiding ring and the comparatively short tail showing no sexual dimorphism. From the closest family, Aporcelaimidae HEYNS, 1965 it differs in having a simple — not dorsoventrally elongate — oral opening and a predominantly short aperture of spear.

The twenty-four genera (with almost 300 species) may be grouped under four subfamilies:

Chrysonematinae SIDDIQI, 1969
Discolaiminae SIDDIQI, 1969
Carcharolaiminae THORNE, 1967
Qudsianematinae JAIRAJPURI, 1965

KEY TO SUBFAMILIES OF *QUDSIANEMATIDAE*

1 Lateral chords with numerous conspicuous glands and pores; vulval lips not sclerotized 2
— Lateral chords without conspicuous glands and pores; vulval lips sclerotized 3
2 Head with heavily sclerotized basket-like inner structure; pharynx sclerotized **Carcharolaiminae**
— Head without such a structure (at most with a simple bowl-shaped plate); pharynx not sclerotized **Discolaiminae**
3 Lips amalgamated; spear very slender with minute aperture **Chrysonematinae**
— Lips well developed; spear normal with distinct aperture **Qudsianematinae**

Subfamily *CHRYSONEMATINAE* SIDDIQI, 1969

Qudsianematidae. Medium-sized to large nematodes with slender body. Cuticle (or subcuticle) finely annulated, somewhat thickened on head. Lips hardly separate. Spear small and slender, often needle-like, guiding ring fine. Female genital organ amphidelphic. Spermatozoa fusiform. Ventromedial supplements spaced, moderate in number. Vulva transverse, not sclerotized. Tail in both sexes conoid to elongate-conoid, ventrally arcuate.

The representatives of the subfamily are characterized by the thickened cuticle on head, the amalgamated lip region, the thin spear with small aperture and the slender body. Rare animals.

Two genera (with 8 species):

Chrysonema THORNE, 1929
Chrysonemoides SIDDIQI, 1969
Oonaguntus THORNE, 1974

KEY TO GENERA OF *CHRYSONEMATINAE*

1 Tail longer, 4—8 anal diameters, in males with paired subventral papillae **Chrysonema** THORNE
— Tail shorter, about 2 anal diameters, in males without subventral papillae **Oonaguntus** THORNE

Genus **Chrysonema** THORNE, 1929

Syn. *Chrysonemoides* SIDDIQI, 1969 (syn. n.).

Qudsianematidae, Chrysonematinae. Body 1 to 3 mm long, very slender (*a* to 90). Cuticle and/or subcuticle finely annulated, thin. Lips amalgamated, rounded, head hardly separate showing thickened cuticle. Amphids calici-

form. Spear small and thin, 10—20 μm, nearly as long as labial diameter; aperture occupying 1/4—1/6 of spear length. Guiding ring thin. Oesophagus expanded anterior or posterior to its middle. Prerectum moderately long. Vulva transverse, not sclerotized, in 34 to 49% of body length, vagina swollen. Ovaries amphidelphic, well developed. Testes two, spermatozoa spindle-shaped. Spicula dorylaimid. Ventromedial supplements spaced, 6—9 in number, without precloacal space. Tail in both sexes elongate-conoid, 4—8 times as long as anal diameter, in males provided with conspicuous subventral papillae arranged in pairs.

Type-species: *Chrysonema aurum* THORNE, 1929.

When SIDDIQI proposed the family Chrysonematidae, he described a new genus as well: *Chrysonemoides* SIDDIQI, 1969. After his diagnosis *Chrysonemoides* differs from *Chrysonema* in having six lips with differently arranged papillae, differently-shaped vagina and in lacking a "muscular ring" around the vestibule. The lips are hardly expressed both in *Chrysonema* and *Chrysonemoides* and as far the arrangement of labial papillae no essential differences can be stated between the two taxa. There are, in fact, no differences in shape of vagina: after THORNE it is "subspherical", after SIDDIQI "very muscular". I feel that there is no reason enough to separate these genera.

The species of *Chrysonema* are limnic or terrestrial, and have been reported from Europe, Asia, North America and Australia.

Six species:

C. aurum THORNE, 1929
C. distinctum (JANA et BAQRI, 1985) comb. n.
Chrysonemoides distinctus JANA et BAQRI, 1985
C. holsaticum (SCHNEIDER, 1925) comb. n.
Dorylaimus holsaticus SCHNEIDER, 1925
Eudorylaimus holsaticus (SCHNEIDER, 1925) ANDRÁSSY, 1959
Chrysonemoides holsaticus (SCHNEIDER, 1925) SIDDIQI, 1969
C. limigenus (SIDDIQI, 1969) comb. n.
Chrysonemoides limigenus SIDDIQI, 1969
C. lozovense (NESTEROV, 1976) comb. n.
Crateronema lozovense NESTEROV, 1976
C. maksymovi (ALTHERR, 1963) comb. n.
Eudorylaimus maksymovi ALTHERR, 1963
Chrysonemoides maksymovi (ALTHERR, 1963) SIDDIQI, 1969

KEY TO SPECIES OF *CHRYSONEMA*

1 Vulva far anterior to the middle of body (in 34%); lips obscure. — ♀: L = 1.9 mm; a = 67; b = 7.1; c = 25; V = 34%; c' = 5. ♂ unknown. (United States: California, Colorado, Utah) **aurum** THORNE
— Vulva slightly anterior to the middle of body (in 42—49%); lips somewhat better developed 2
2 Body 2—3 mm long; female tail 7—8 times anal diameter 3
— Body less than 2 mm long; female tail 4—7 times anal diameter 5
3 Vulva close to mid-body (in 47—49%); posterior end of tail hooked. — ♀: L = 2.2—2.5 mm; a = 51—71; b = 6.1—6.3; c = 12—14; V = 47—49%; c' = 10. ♂ unknown. (Soviet Union: Moldavia) **lozovense** (NESTEROV)
— Vulva anterior to mid-body (in 42—43%); posterior end of tail not hooked 4

4 Supplements 6, one of them level with spicula. — ♀: L = 2.6 mm; a = 76; b = 5.1; c = 15; V = 43%; c' = 8. ♂: L = 1.3—1.6 mm; a = 57—71; b = 4.2—4.4; c = 12; c' = 6—7; PO: 6. (Holland, Federal Republic of Germany, Czechoslovakia, Hungary, Poland, Soviet Union [Russia], Australia) **holsaticum** (SCHNEIDER)

— Supplements 9, two of them level with spicula. — ♀: L = 2.3—3.0 mm; a = 70—86; b = 6.9—7.6; c = 11—18; V = 42—43%; c' = 7—13. ♂: L = 2.4—3.0 mm; a = 80—90; b = 7.3—8.6; c = 19—22; c' = 6—7; PO: 9. (Poland, India, Suriname) **limigenus** (SIDDIQI)

5 Smaller species, about 1 mm; tail 6—7 anal diameters long. — ♀: L = 0.9—1.0 mm; a = 48—54; b = 4.1—4.2; c = 11—12; V = 46—48%; c' = 6—7. ♂ unknown. (India) **distinctum** (JANA et BAQRI)

— Larger species, 1.5 mm or more; tail 4—6 anal diameters long. — ♀: L = 1.5—1.8 mm; a = 36—43; b = 4.1—5.0; c = 17—19; V = 44—46%; c' = 4—5. ♂ unknown. (Switzerland, Spitzbergen) **maksymovi** (ALTHERR)

Remarks

Chrysonema dubium THORNE, 1974 — THORNE suggested that this species was possibly not a *Chrysonema*. Owing to the distinct labial papillae, the comparatively strong spear, and the short, conoid tail I transfer this nematode to the genus *Eudorylaimus*. Since the name "*dubius*" is in the genus *Eudorylaimus* already occupied (*E. dubius* THORNE, 1974) I recommend *Eudorylaimus thorneanus* **nom. n.** for the new name of *Chrysonema dubium*.

Chrysonema abyssinicum FILIPJEV, 1931 — Although THORNE (1939) accepted this species as *Chrysonema*, FILIPJEV's drawing clearly shows an actinolaimid head and buccal cavity. These structures as well as the long tail all suppose that *abyssinicus* belongs to the family Actinolaimidae, probably to the subfamily Actincinae.

Chrysonema luettichaui MEYL, 1957 — I accept SIDDIQI's opinion in regarding this species as a *Laimydorus* (see ANDRÁSSY, 1988).

Chrysonema maksymovi (ALTHERR, 1963) — I list this species after the proposition of SIDDIQI to the *Chrysonema*, am however rather uncertain of its taxonomic position.

Chrysonema mauritianum WILLIAMS, 1959 — BAQRI et JAIRAJPURI (1968) transferred it to the genus *Thornenema*.

Chrysonema thornei FILIPJEV, 1931. — This species also may not belong to *Chrysonema* (male tail short and rounded, supplements contiguous). Since the female is not known, we cannot place it anywhere with certainty. Probably a *Mesodorylaimus?*

Genus **Oonaguntus** THORNE, 1974

Qudsianematidae, Chrysonematinae. Small nematodes, 1 mm or shorter with moderately slender shape. Cuticle smooth, thickened on head. Lips amalgamated, labial region not separate. Amphids caliciform. Spear thin, 7—11 μm, nearly as long as cephalic diameter; aperture obscure. Guiding ring simple. Oesophagus enlarged in its mid-part. Prerectum short. Vulva equatorial, transverse, not sclerotized. Female gonads amphidelphic. Spicula arcuate, dorylaimid. Ventromedial supplements 2 or 3, widely spaced. Tail in both sexes similar, conoid, ventrally arcuate, about twice as long as anal diameter.

Type-species: *Oonaguntus calvus* THORNE, 1974.

This genus may be differentiated from *Chrysonema* THORNE, 1929 in having a stouter body, a more slender spear, a shorter tail, supplements in less number and the lack of subventral pairs of papillae on male tail.

Terrestrial animals, occurring in North America.

Two species:

O. calvus THORNE, 1974
O. tenuidens THORNE, 1974

KEY TO SPECIES OF *OONAGUNTUS*

1 Body shorter, 0.7 mm; spear 10—11 μm long. — ♀: L = 0.7 mm; a = 25; b = 4.1; c = 17; V = 54%; c' = 2. ♂ unknown. (United States: South Dakota) **tenuidens** THORNE
— Body longer, 1 mm; spear 7—8 μm long. — ♀: L = 1.0 mm; a = 37; b = 4.8; c = 32; V = 51%; c' = 1.7. ♂: L = 0.9 mm; a = 37; b = 4.6; c = 38; PO: 2—3. (United States: North and South Dakota) **calvus** THORNE

Subfamily *DISCOLAIMINAE* SIDDIQI, 1969

Qudsianematidae. Medium to large-sized nematodes. Cuticle smooth with numerous lateral-sublateral pores leading to large glandular cells. Labial region often expanded, discoidal or sucker-like, rarely with a sclerotized inner plate. Oral opening large, hexagonal. Spear short with large aperture. Guiding ring simple. Orifice of dorsal oesophageal gland lying well behind the expansion zone, first pair of subventral nuclei conspicuous. Vulva transverse, vagina not sclerotized. Female genital organ amphidelphic or, rarely, opisthodelphic. Ventromedial supplements spaced. Tail in both sexes similar, short, conoid or rounded.

The shape of head, large aperture of the short spear, presence of striking sublateral glands as well as the unsclerotized vulva are the chief characteristics of this subfamily.

Six genera (with 65 species):

Discolaimium THORNE, 1939
Crassolabium YEATES, 1967
Durinema JAIRAJPURI, 1968
Neodiscolaimium PATIL et KHAN, 1982
Discolaimoides HEYNS, 1963
Discolaimus COBB, 1913
Latocephalus PATIL et KHAN, 1982
Mylodiscus THORNE, 1939
Mylodiscoides LORDELLO, 1963

KEY TO GENERA OF *DISCOLAIMINAE*

1 Lip region with an inner bowl-shaped sclerotized plate 2
— Lip region without sclerotized elements 3
2 Tail conoid, ventrally bent **Mylodiscoides** LORDELLO
— Tail rounded, very short **Mylodiscus** THORNE
3 Head much wider than the adjacent body, oral field sunken, sucker-like **Discolaimus** COBB
— Head not so, if wider than the adjacent body, oral field not sucker-like 4
4 Female genital organ unpaired, postvulval **Latocephalus** PATIL et KHAN
— Female genital organ paired 5
5 Tail elongate, 2—5 anal diameters; prerectum with caudal blind sack **Discolaimoides** HEYNS
— Tail stout, shorter than two anal diameters; prerectum without caudal blind sack **Discolaimium** THORNE

Genus **Discolaimium** THORNE, 1939

Syn. *Crassolabium* YEATES, 1967 **(syn. n.)**; *Durinema* JAIRAJPURI, 1968; *Neodiscolaimium* PATIL et KHAN, 1982 **(syn. n.)**

Qudsianematidae, Discolaiminae. Body small to medium-sized, 0.4 to 2.2 mm long, mostly close to 1 mm, slender. Cuticle smooth, subcuticle occasionally striated. Lateral chords with distinct subcuticular glands numbering 20 to 80 on each side of body. Head offset, sometimes wide, almost discolaimoid, with small inner liplets. Lips well separate. Amphids dorylaimid. Spear short, 5 to 20 μm, as long as or shorter than labial diameter; aperture occupying 1/3 or 1/2 of spear length. Guiding ring simple. Anterior part of oesophagus moderately slender. Dorsal oesophageal gland usually back in position, about at twice oesophagus width behind the expansion zone. Prerectum short. Vulva transverse, not sclerotized, in 38 to 69% of body length. Ovaries paired. Spermatozoa fusiform, spicula dorylaimid. Ventromedial supplements 3—14, spaced; precloacal space present. Tail similar in both sexes, conoid, conoid-cylindroid or broadly rounded, shorter than two anal diameters. Males very rare, known in three species only.

Type-species: *Discolaimium cylindricum* THORNE, 1939.

This genus is very close to *Discolaimoides* HEYNS, 1963; the distinguishing characters can be found there.

In 1967 YEATES described a new genus, *Crassolabium*, characterized by small thickenings in the lateral lips. I am convinced that this genus is identical with *Discolaimium*: it corresponds to the criteria of the latter very well (lateral glandular bodies present, vulva not sclerotized, supplements spaced, tail short and broadly rounded, etc.). Similar thickening-like structures in lips are fairly common in different genera in Qudsianematidae, and they are rather optical features than sclerotized pieces.

Neodiscolaimium PATIL et KHAN, 1982 is in my opinion also identical with *Discolaimium*. The Indian authors proposed the genus for a sole species, *N. dubium* (DAS, KHAN et LOOF, 1961) but they did not give definite characteristics enough to separate it from other species of *Discolaimium* at generic level.

The representatives of *Discolaimium* are soil inhabitants. They occur in six continents: Europe (4 species), Asia (14 species), Africa (5 species), North America (5 species), South America (4 species) and Australia (1 species). The richest country is in this respect India, with 12 species.

Twenty-two species:

D. asji MEHDI ALI, SURYAWANSHI et PRABHA, 1973
D. australe (YEATES, 1967) comb. n.
Crassolabium australe YEATES, 1967
Eudorylaimus australis (YEATES, 1967) SIDDIQI, 1969
Thonus australis (YEATES, 1967) ANDRÁSSY, 1986

D. brachyurum HUSAIN et SIDDIQI, 1967
D. cephalatum sp. n.
D. clavatum BAQRI et KHERA, 1976
D. conura THORNE, 1939
D. cylindricum THORNE, 1939
D. dubium DAS, KHAN et LOOF, 1969
Neodiscolaimium dubium (DAS, KHAN et LOOF, 1969) PATIL et KHAN, 1982
D. gigas FIELDING, 1950
D. indicum (MAHAJAN, 1972) comb. n.
Discolaimoides indicus MAHAJAN, 1972
D. jairajpurii FERRIS, FERRIS et GOSECO, 1983
Durinema gracile JAIRAJPURI, 1968, nec Discolaimium gracile THORNE, 1939
D. latum THORNE, 1939
D. maracaiense (LORDELLO, 1965) MONTEIRO, 1970
Pungentus maracaiensis LORDELLO, 1965
D. mazhari BAQRI et JAIRAJPURI, 1968
D. mucurubanum (LOOF, 1964) comb. n.
Discolaimus mucurubanus LOOF, 1964
D. mukhtarpuriense BAQRI et JAIRAJPURI, 1969
D. obtusum HUSAIN et SIDDIQI, 1967
Durinema obtusum (HUSAIN et SIDDIQI, 1967) JAIRAJPURI, 1968
D. paraconura SIDDIQI, 1965
D. pseudoporum FIELDING, 1950
D. simplex SIDDIQI, 1965
D. sublatum HEYNS, 1963
D. upum BAQRI et JAIRAJPURI, 1968

KEY TO SPECIES OF *DISCOLAIMIUM*

1 Tail extremely short, hardly 1/2 of anal diameter. — ♀: L = 1.7 mm; a = 35; b = 4.6—5.0; c = 80—100; V = 48%; c' = 0.4. ♂ unknown. (United States: Florida) **pseudoporum** FIELDING
— Tail not so short, at least one anal diameter 2
2 Body 2 mm or longer 3
— Body 1.5 mm or shorter 4
3 Vulva anterior to mid-body (in 42%); anterior part of oesophagus with unusually wide lumen. — ♀: L = 2.2 mm; a = 42; b = 4; c = 45; V = 42%; c' = 1.3. ♂ unknown. (Egypt, United States: California) **gigas** FIELDING
— Vulva far posterior to mid-body (in 60—63%); lumen in anterior part of oesophagus normal, narrow. — ♀: 2.0—2.6 mm; a = 57—71; b = 4.8—5.9; c = 48—60; V = 60—63%; c' = 1.5. ♂ unknown. (India) **jairajpurii** FERRIS, FERRIS et GOSECO
4 Tail swollen, clavate; vulva anterior, far from mid-body (in 38—44%). — ♀: L = 1.0—1.2 mm; a = 31—39; b = 4.0—4.6; c = 50—61; V = 38—44%; c' = 1.0—1.2. ♂ unknown. (India). **clavatum** BAQRI et KHERA
— Tail not swollen; vulva closer to mid-body (in 42—57%) 5
5 Tail hemispheroid, broadly rounded, shorter than anal diameter. — ♀: L = 1.1—1.2 mm; a = 30—33; b = 3.5—4.0; c = 61—65; V = 43—45%; c' = 0.8. ♂ unknown. (India) **brachyurum** HUSAIN et SIDDIQI
— Tail conoid-rounded or cylindroid-rounded, as long as or longer than anal diameter 6
6 Spear longer, 16—20 μm 7
— Spear shorter, 5—12 μm 10
7 Vulva post-equatorial (in 52—57%); aperture 1/3 of spear length 8
— Vulva pre-equatorial (in 42—45%); aperture 1/2 of spear length 9
8 Tail conoid, 1.5 times as long as anal diameter. — ♀: L = 0.9—1.6 mm; a = 33—39; b = 4.1—5.0; c = 31—41; V = 52—57%; c' = 1.5. ♂ unknown. (India) **mukhtarpuriense** BAQRI et JAIRAJPURI
— Tail conoid-rounded, as long as anal diameter. — ♀: L = 0.—1.5 mm; a = 22—30; b = 3.4—4.4; c = 44—66; V = 53—57%; c' = 0.8—0.9. ♂: L = 1.0—1.2 mm; a = 23—31; b = 3.5—4.4; c = 47—57; c' = 0.8—0.9; PO: 11—14. (New Zealand) **australe** (YEATES)
9 Spear 16 μm long; tail tip distinctly rounded. — ♀: L = 1.2 mm; a = 36—39; b = 3.6; c = 40—42; V = 44—45%; c' = 1.5. ♂ unknown. (Egypt, Venezuela) **mucurubanum** (LOOF)

— Spear 19—20 μm long; tail tip nearly pointed. — ♀: L = 1.2—1.6 mm; a = 40—48; b = 3.5—3.9; c = 41—50; V = 42—44%; c' = 1.5. ♂ unknown. (Soviet Union [Moldavia], India, Brazil) **simplex** SIDDIQI

10 Tail short and bluntly rounded, about as long as anal diameter 11
— Tail 1.5—2 anal diameters long, conoid-cylindroid 15

11 Dorsal gland far — about two oesophagus widths — from the expansion zone of oesophagus 12
— Dorsal gland closer — about one oesophagus width — to the expansion zone of oesophagus 13

12 Spear 10 μm long; head sharply offset. — ♀: L = 1.4 mm; a = 48—50; b = 4.1—4.3; c = 67—70; V = 42—43%; c' = 1. ♂ unknown. (India) **cephalatum** sp. n.
— Spear 8—9 μm long; head less offset. — ♀: L = 0.9—1.2 mm; a = 40—47; b = 4.3—5.0; c = 53—70; V = 46—50%; c' = 1.2. ♂ unknown. (India) **obtusum** HUSAIN et SIDDIQI

13 Spear 5—6 μm, distinctly shorter than cephalic diameter. — ♀: L = 0.8 mm; a = 24; b = 4.3; c = 37; V = 54%; c' = 1.2. ♂: L = 0.9 mm; a = 33; b = 4.5; c = 50; PO: 5. (United States: California, Texas, Utah) **latum** THORNE
— Spear 11—13 μm, as long as or longer than labial diameter 14

14 Number of lateral glands 25; body shorter (0.8—0.9 mm). — ♀: L = 0.8—0.9 mm; a = 26—33; b = 3.4—4.0; c = 39—51; V = 46—55%; c' = 1. ♂ unknown. (South Africa) **sublatum** HEYNS
— Number of lateral glands 75—82; body longer (1.1—1.3 mm). — ♀: L = 1.1—1.3 mm; a = 30—41; b = 3.8—4.3; c = 60—64; V = 42—44%; c' = 1. ♂ unknown. (India) **mazhari** BAQRI et JAIRAJPURI

15 Body shorter than 1 mm (0.4—0.9 mm); aperture 1/3 of spear length 16
— Body longer than 1 mm (1.1—1.6 mm); aperture 1/2 of spear length 18

16 Tail conoid with narrowly rounded tip; spear 6—7 μm long. — ♀: L = 0.7—0.8 mm; a = 38—42; b = 3.8—4.3; c = 33—46; V = 47—51%; c' = 1.7. ♂ unknown. (India) **asji** MEHDI ALI, SURYAWANSHI et PRABHA
— Tail cylindroid with broadly rounded tip; spear 10—12 μm long 17

17 Small animal, 0.4—0.6 mm, body stout (a = 20—25); about 20 lateral glands. — ♀: L = 0.4—0.6 mm; a = 20—25; b = 3.1—3.6; c = 25—35; V = 48—53%; c' = 1.5. ♂ unknown. (Brazil) **maracaiense** (LORDELLO)
— Bigger animal, 0.8—0.9 mm, body more slender (a = 36—42); about 40 lateral glands. — ♀: L = 0.8—0.9 mm; a = 36—42; b = 3.5—4.5; c = 41—47; V = 45—48%; c' = 1.5. ♂ unknown. (India) **upum** BAQRI et JAIRAJPURI

18 Dorsal gland far — two oesophagus widths — from the widening zone of oesophagus. — ♀: L = 1.4—1.6 mm; a = 46—56; b = 4.1—4.4; c = 48—54; V = 49—51%; c' = 1.5. ♂ unknown. (India) **paraconura** SIDDIQI
— Dorsal gland close — one oesophagus width — to the widening zone of oesophagus 19

19 Vulva unusually back, in 64—69% of body length. — ♀: L = 1.4—1.6 mm; a = 39—46; b = 4.2—4.9; c = 35—40; V = 64—69%; c' = 1.5—1.8. ♂ unknown. (India) **indicum** (MAHAJAN)
— Vulva closer to the middle of body, in 45—57% 20

20 Lateral glands indistinct; spear 8—10 μm long. — ♀: L = 1.1—1.3 mm; a = 40—49%; b = 3.5—4.1; c = 33—39; V = 53—57%; c' = 1.5—2. ♂ unknown. (Holland, Switzerland, Italy) **dubium** DAS, KHAN et LOOF
— Lateral glands distinct; spear 6 μm long 21

21 Tail conoid with narrowly rounded tip; vulva post-equatorial (in 54%). — ♀: L = 1.2 mm; a = 41; b = 4.5; c = 39; V = 54%; c' = 1.8. ♂ unknown. (Italy, Soviet Union [Uzbekistan], Cameroun, United States [Utah, Colorado]) **conura** THORNE
— Tail more cylindroid with broadly rounded tip; vulva pre-equatorial (in 45%). — ♀: L = 1.3 mm; a = 40; b = 4.5; c = 59; V = 45%; c' = 1.5. ♂: PO: 3. (Bulgaria, Soviet Union [Russia, Uzbekistan], Egypt, United States [California, Utah], Cuba, Venezuela, Brazil) **cylindricum** THORNE

Remarks

Discolaimium monhysteroides ALTHERR, 1974. — The shape of head and spear, the striated cuticle, the opisthodelphic gonad with long prevulval sac and the shape of tail all suggest that ALTHERR's species belongs to the genus *Axonchium*: *A. monhysteroides* (ALTHERR, 1974) comb. n.

Discolaimium mucurubanum (LOOF, 1964) and **Discolaimium simplex** SIDDIQI, 1965. — It is very probable that these species are one and the same: equal measurements, lateral glands of the same number, similar shape of head, etc. Only insignificant differences in length of spear and shape of tail were mentioned.

Discolaimium pygmaeum MONTEIRO, 1970. — Is a nomen nudum.

Genus **Discolaimoides** HEYNS, 1963

Qudsianematidae, Discolaiminae. Body 0.9 to 2.1 mm long, slender to very slender (*a* to 86). Cuticle smooth, subcuticle often striated. Lateral glands in entire length of body present, 30 to 83 on each side. Head well offset, often broad, almost discolaimoid, with inner liplets. Amphids dorylaimid. Spear short, 6 to 16 μm, as long as, or shorter than cephalic diameter, simple; aperture occupying 1/3 or 1/2 of spear length. Anterior part of oesophagus unusually slender, posterior part strongly widened. Dorsal gland far — two or three oesophagus widths — from the expansion zone. Prerectum of middle length, with a short caudal sack. Vulva transverse, not sclerotized, in 40 to 57% of body length. Female genital organ amphidelphic. Spermatozoa fusiform, spicula dorylaimid. Precloacal space present. Ventromedial supplements 4—8, well spaced. Tail in both sexes similar, conoid with narrowly rounded tip, more or less bent ventrally, 2 to 5 times as long as anal diameter. Males rare, known in two species only.

T y p e - s p e c i e s: *Dorylaimus bulbiferus* COBB, 1906 = *Discolaimoides bulbiferus* (COBB, 1906) HEYNS, 1963.

The opinions vary regarding the validity of *Discolaimoides*. HEYNS (1963) proposed the genus for *Discolaimium*-like species showing tapering body and expanded lip region. DAS, KHAN & LOOF (1969) retained the genus but characterized it briefly by the back position of the dorsal oesophageal gland. On the other hand, TIMM & BHUIJAN (1963) synonymized *Discolaimoides* with *Discolaimium*, and MEHDI ALI, SURYAWANSHI & PRABHA (1973) also concluded that neither the shape of head nor the location of oesophageal glands serve good arguments to separate the two genera.

I think that a group of species of the *Discolaimium-Discolaimoides* complex may be well distinguished by a number of characteristics from the remained species. Since *Discolaimoides bulbiferus*, the type species of the latter genus belongs to this group, they would represent the genus of HEYNS. In re-establishing *Discolaimoides* as valid taxon I follow, however, neither HEYNS nor DAS, KHAN and LOOF: I prefer to characterizing it by other features than head region and oesophageal glands.

Thus, *Discolaimoides* may be distinguished from *Discolaimium* THORNE, 1939 in having a more slender (often very slender) body, a very slim anterior oesophageal region, a prerectum showing caudal blind sack and a longer and more elongate tail (2—5 vs. 1—2 anal diameters).

The *Discolaimoides* species inhabit the soil and are distributed over five continents: 6 species occur in Europe, 8 in Asia, 4 in Africa, 2 in North and 3 in South America. The most common representative is *D. bulbiferus* having been reported from 15 countries hitherto.

Twelve species:

D. arcuatus (HUSAIN et SIDDIQI, 1967) comb. n.
Discolaimium arcuatum HUSAIN et SIDDIQI, 1967
D. arcuicaudatus (FURSTENBERG et HEYNS, 1965) DAS, KHAN et LOOF, 1969
Discolaimium arcuicaudatum DAS, KHAN et LOOF, 1969
D bulbiferus (COBB, 1906) HEYNS, 1963
Dorylaimus bulbiferus COBB, 1906
Discolaimus bulbiferus (COBB, 1906) THORNE et SWANGER, 1936
Discolaimium bulbiferum (COBB, 1906) TIMM et BHUIJAN, 1963
Discolaimoides coniocardia MONTEIRO, 1968 **(syn. n.)**
Discolaimium coniocardia (MONTEIRO, 1968) MEHDI ALI, SURYAWANSHI et PRABHA, 1973
D. filiformis DAS, KHAN et LOOF, 1969
Discolaimium filiforme (DAS, KHAN et LOOF, 1969) MEHDI ALI, SURYAWANSHI et PRABHA, 1973
D. gracilis (THORNE, 1939) comb. n.
Discolaimium gracile THORNE, 1939
D. intrastriatus (LOOS, 1945) LOOF, 1964
Dorylaimus intrastriatus LOOS, 1945
Eudorylaimus intrastriatus (LOOS, 1945) ANDRÁSSY, 1959
Discolaimium intrastriatum (LOOS, 1945) MEHDI ALI, SURYAWANSHI et PRABHA, 1973
D. loofi sp. n.
D. skrjabini (TULAGANOV, 1949) comb. n.
Dorylaimus skrjabini TULAGANOV, 1949
Eudorylaimus skrjabini (TULAGANOV, 1949) ANDRÁSSY, 1959
Thornia skrjabini (TULAGANOV, 1949) ANDRÁSSY, 1986
D. spatilabium KHAN et LAHA, 1982
D. symmetricus DAS, KHAN et LOOF, 1969
Discolaimium symmetricum (DAS, KHAN et LOOF, 1969) MEHDI ALI, SURYAWANSHI et PRABHA, 1973
D. tenuis (FURSTENBERG et HEYNS, 1965) DAS, KHAN et LOOF, 1969
Discolaimium tenue FURSTENBERG et HEYNS, 1965
D. teres KHAN et LAHA, 1982

KEY TO SPECIES OF *DISCOLAIMOIDES*

1 Tail subdigitate; oesophagus enlarged near end of its anterior third. — ♀: L = 1.9—2.0 mm; a = 48—50; b = 4.8—5.1; c = 35—39; V = 45—48%. ♂ unknown. (Sri Lanka) **intrastriatus** (LOOS)
— Tail conoid or conoid-cylindroid, not subdigitate; oesophagus enlarged near middle 2
2 Tail conoid with narrowly rounded tip, 2—2.5 times anal diameter 3
— Tail conoid-cylindroid with more broadly rounded tip, 3—5 times anal diameter 11
3 Body very slender, a = 60—90 4
— Body not so slender, a = 40—60 6
4 Larger species, about 2 mm; spear 6—7 μm long. — ♀: L = 1.8—2.1 mm; a = 60—86; b = 5.1—5.8; c = 43—60; V = 50—55%; c' = 2. ♂: L = 1.7—2.1 mm; a = 67—94; b = 5.6—5.7; c = 45—56; PO: 4—5. (Spain, South Africa) **tenuis** (FURSTENBERG et HEYNS)
— Smaller species, at most 1.5 mm; spear 8—12 μm long 5
5 Vulva in 46%; a = 79. — ♀: L = 1.2 mm; a = 79; b = 4.2; c = 44; V = 46%; c' = 2. ♂ unknown. (Soviet Union: Uzbekistan) **skrjabini** (TULAGANOV)
— Vulva in 50—57%; a = 54—68. ♀: L = 1.3—1.5; a = 54—68; b = 4—5; c = 36—45; V = 50—57; c' = 2—2.5. ♂ unknown. (Holland, Switzerland, India, Vietnam) **filiformis** DAS, KHAN et LOOF
6 Spear short, 7—9 μm 7

— Spear longer, 11—16 μm 8

7 Head much wider than neck; body 1.5—1.7 mm long. — ♀: L = 1.5—1.7 mm; a = 47—56; b = 4.2—4.7; c = 39—46; V = 44—46%; c' = 2.2—2.3. ♂ unknown. (Hungary) **loofi** sp. n.

— Head hardly wider than neck; body 1.1 mm long. — ♀: L = 1.1 mm; a = 39; b = 5; c = 25; V = 50%; c' = 2—2.5. ♂ unknown. (Italy, Soviet Union [Uzbekistan], United States [Colorado, Utah], Venezuela) **gracilis** (THORNE)

8 Aperture 1/3 of spear length or shorter; lateral hypodermal glands about 80 9

— Aperture 1/2 of spear length; lateral hypodermal glands 40—60 10

9 Lips angular in outline; body 1.3—1.7 mm long. — ♀: L = 1.3—1.7 mm; a = 45—54; b = 4.3—5.0; c = 31—40; V = 43—46%; c' = 2—3. ♂ unknown. (India) **spatilabium** KHAN et LAHA

— Lips rounded in outline; body 1.1—1.3 mm. — ♀: L = 1.1—1.3; a = 34—40; b = 3.9—4.3; c = 25—31; V = 43—46%; c' = 2.5. ♂ unknown. (India) **teres** KHAN et LAHA

10 Lips very angular with strongly projected papillae; tail straight. — ♀: L = 1.4—1.8 mm; a = 45—56; b = 4.6—5.2; c = 38—47; V = 49—54%; c' = 1.7—2. ♂ unknown. (Holland, Great Britain, Hungary, Yugoslavia, Italy, Egypt) **symmetricus** DAS, KHAN et LOOF

— Lips less angular, papillae not projected; tail slightly but conspicuously bent ventrally. — ♀: L = 1.4—1.7 mm; a = 40—58; b = 4.2—5.2; c = 33—46; V = 41—51%; c' = 2.3—2.5. ♂: L = 1.5—1.6 mm; a = 31—39; b = 4.0—4.6; c = 34; PO: 7—8. (Czechoslovakia, Poland, Spain, Italy, Soviet Union [Moldavia, Uzbekistan], India, Mauritius, Egypt, Nigeria, Ivory Coast, South Africa, United States [Utah, Hawaii]) **bulbiferus** (COBB)

11 Tail 4—5 anal diameters long; body 1.4—1.5 mm. — ♀: L = 1.4—1.5 mm; a = 55—58; b = 2.4—4.6; c = 23—24; V = 47%; c' = 4—5. ♂ unknown. (Egypt, South Africa) **arcuicaudatus** (FURSTENBERG et HEYNS)

— Tail about 3 anal diameters long; body 0.9—1.2 mm. — ♀: L = 0.9—1.2 mm; a = 38—59; b = 4—5; c = 20—24; V = 49—53%; c' = 2.7—3. ♂ unknown. (India) **arcuatus** (HUSAIN et SIDDIQI)

Remarks

Discolaimoides coniocardia MONTEIRO, 1968. — No doubt that this species is equal to *D. bulbiferus* (COBB, 1906): measurements, shape of head and tail, length of spear, etc. are the same.

Discolaimoides spatilabium KHAN et LAHA, 1982 and **Discolaimoides teres** KHAN et LAHA, 1982. — It is possible that these nematodes are also conspecific; they were collected in the same farm near Delhi, India.

Genus **Discolaimus** COBB, 1913

Qudsianematidae, Discolaiminae. Body 0.8 to 4.3 mm long, fairly slender. Cuticle smooth, subcuticle occasionally striated. Head discoidal, the widest within the whole group of free-living nematodes, sucker-shaped with sunken oral field; lips well developed, consisting of six large outer and six small inner ones. Amphids caliciform. Spear stout, 11 to 43 μm long, in almost every case shorter than labial diameter; aperture large, generally occupying half the length of spear or more. Guiding ring simple. Oesophagus wider in its anterior part than usual in the family, suddenly expanded before its middle; posterior part sometimes encircled by a thin sheath. Lateral chords with large glandular bodies varying in number to 170 on each side. Vulva in 37 to 58% of body length, transverse, without inner sclerotization. Female gonads paired. Spermatozoa fusiform, spicula dorylaimid. Ventromedial supplements 4 to 18,

spaced; precloacal space present. Tail similar in both sexes, short, rounded or conoid-rounded, in general as long as anal body diameter. Males rare, known in less than 50% of species.

Type-species: *Discolaimus texanus* COBB, 1913.

A very easily recognizable genus: the large, sucker-like head proclaims the proper place of its species immediately. Beside the labial region the following characteristics may be emphasized: presence of subcuticular glands, short and large-apertured spear, long posterior part of oesophagus, unsclerotized vagina and short, rounded tail.

The *Discolaimus* species live predominantly in the soil, and occur in six continents as follows: 6 species have been observed in Europe, 11 in Asia, 9 in Africa, 4 in North America, 6 in South America and 5 in Australia. The most widely distributed species is *D. major* having been reported from 29 countries or states hitherto.

Twenty-four species:

D. acuticapitatus FURSTENBERG et HEYNS, 1966
D. affinis LOOF, 1964
D. agricolus SAUER et ANNELS, 1986
D. albarossicus MERZHEEVSKAJA, 1951
D. auritus LORDELLO, 1955
D. bicorticus FURSTENBERG et HEYNS, 1966
D. discocephalus TULAGANOV, 1949
D. elegans SAUER et ANNELS, 1986
D. gossypiorum KARIMOVA, 1957
D. intermedius HEYNS et LAGERWEY, 1965
D. krugeri FURSTENBERG et HEYNS, 1966
D. laksi KHAN et LAHA, 1982
D. levinae FURSTENBERG et HEYNS, 1966
D. major THORNE, 1939
Discolaimus arenicolus YEATES, 1967 **(syn. n.)**
D. monoplanus HEYNS, 1963
D. paramajor COOMANS, 1966
D. perplexans SIDDIQI, 1964
Discolaimus major apud ANDRÁSSY, 1959
D. pizai MONTEIRO, 1970
D. rotundicaudatus KHAN et LAHA, 1982
D. silvicolus SAUER et ANNELS, 1986
D. similis THORNE, 1939
D. tenax SIDDIQI, 1964
D. texanus COBB, 1913
Dorylaimus (Discolaimus) texanus (COBB, 1913) MICOLETZKY, 1922
Discolaimus monhystera THORNE, 1939 **(syn. n.)**
Discolaimus brevis SIDDIQI, 1964 **(syn. n.)**
D. zicsii ANDRÁSSY, 1968

KEY TO SPECIES OF *DISCOLAIMUS*

1 Large species, body 3—4 mm 2
— Smaller species, body 2.5 mm or shorter 3
2 Spear 29—38 μm; tail as long as anal diameter. — ♀: L = 2.9—3.4 mm; a = 46—54; b = 3.7—4.2; c = 65—81; V = 49—58%; c' = 1. ♂: L = 2.7 mm; a = 47; b = 4.2; c = 75; PO: 7—8. (South Africa) **krugeri** FURSTENBERG et HEYNS
— Spear 43 μm; tail conspicuously shorter than anal diameter. — ♀: L = 4.0—4.3 mm;

a = 29—33; b = 4.2—4.8; c = 80—88; V = 52—53%; c' = 0.8. ♂ unknown. (Soviet Union: Russia, Belorussia, Lithuania, Uzbekistan) **albarossicus** MERZHEEVSKAJA

3 Posterior part of oesophagus surrounded by a double sheath. — ♀: L = 1.8—2.1 mm; a = 39—46; b = 3.5—4.0; c = 68—71; V = 50—52%; c' = 1.1. ♂: L = 2.4 mm; a = 53; b = 4.2; c = 73; PO: 8. (Bulgaria, South Africa) **bicorticus** FURSTENBERG et HEYNS

— Posterior part of oesophagus without a conspicuous sheath 4

4 Spear longer than 20 μm 5

— Spear shorter than 20 μm 12

5 Body 2—2.5 mm long. — ♀: L = 1.9—2.6 mm; a = 33—52; b = 4.0—4.7; c = 55—92; V = 47—52%; c' = 0.8. ♂ unknown. (Holland, Great Britain, Poland, Switzerland, Czechoslovakia, Hungary, Bulgaria, Spain, Italy, Soviet Union [Russia, Estonia, Lithuania, Latvia, Moldavia, Georgia, Uzbekistan, Kirghizia, Kazakhstan], Mongolia, India, Zaire, South Africa, Mauritius, United States [California, Colorado, Utah], Venezuela, Australia, New Zealand) **major** THORNE

— Body shorter than 2 mm 6

6 Spear as long as labial diameter, aperture shorter than half a spear. — ♀: L = 1.7 mm; a = 52; b = 4.3; c = 78; V = 54%; c' = 1. ♂ unknown. (Congo Republic) **zicsii** ANDRÁSSY

— Spear always shorter than labial diameter, aperture as long or longer than half a spear 7

7 Tail conoid with narrowly rounded tip 8

— Tail blunt with broadly rounded tip 9

8 Tail conspicuously longer than one anal diameter; spear two-third of cephalic diameter. — ♀: L = 1.6—1.9 mm; a = 37—42; b = 3.7—5.5; c = 48—57; V = 51—53%; c' = 1.2—1.4. ♂ unknown. (Australia) **silvicolus** SAUER et ANNELS

— Tail as long as or shorter than anal diameter. — ♀: L = 1.6 mm; a = 27; b = 4.3; c = 44; V = 44%; c' = 0.9. ♂ unknown. (Brazil) **auritus** LORDELLO

9 Lips angular in outline. — ♀: L = 1.9 mm; a = 43; b = 4.1; c = 73; V = 48%; c' = 0.8. ♂: L = 1.8—2.1 mm; a = 42—46; b = 4.0—4.2; c = 65—77; PO: 11. (Soviet Union [Georgia], South Africa) **levinae** FURSTENBERG et HEYNS

— Lips rounded in outline (very closely related species) 10

10 Prerectum with a short but distinct caudal blind sack; anterior part of oesophagus with two swellings. — ♀: L = 1.3—2.0 mm; a = 26—35; b = 3.4—4.3; c = 45—72; V = 45—52%; c' = 1. ♂: L = 1.6 mm; a = 29; b = 4.0; c = 42; PO: 6. (Soviet Union [Georgia], Zaire, Brazil) **paramajor** COOMANS

— Prerectum without blind sack; anterior part of oesophagus uniformly cylindrical 11

11 Body slender (a = 40), vulva post-equatorial. — ♀: L = 1.9 mm; a = 40; b = 3.2; c = 65; V = 54%; c' = 1. ♂ unknown. (Romania) **perplexans** SIDDIQI

— Body moderately slender (a about 30); vulva pre-equatorial. — ♀: L = 1.3—1.7 mm; a = 28—32; b = 3.9—4.4; c = 59—84; V = 45—48%; c' = 0.8—1.1. ♂ unknown. (Australia) **agricolus** SAUER et ANNELS

12 Tail conoid, narrowly rounded, about 1.5 times as long as anal diameter 13

— Tail blunt, broadly rounded, about as long as or shorter than anal diameter 16

13 Body length under 1 mm 14

— Body length over 1 mm (to 2.2 mm) 15

14 Tail uniformly conoid to its rounded tip; spear 11 μm long. — ♀: L = 0.8—0.85 mm; a = 31—33; b = 3.1—3.8; c = 40—42; V = 54—58%; c' = 1.4—1.5. ♂ unknown. (Soviet Union: Uzbekistan) **gossypiorum** KARIMOVA

— Tail dorsally convex-conoid; spear 15—16 μm long. — ♀: L = 0.8 mm; a = 24; b = 3.5; c = 29; V = 46%; c' = 1.5. ♂ unknown. (Cameroon, South Africa) **monoplanus** HEYNS

15 Body longer, 1.3—2.2 mm; spear 18—20 μm; supplements 4. — ♀: L = 1.3—2.2 mm; a = 33—51; b = 3.5—5.2; c = 43—66; V = 48—58%; c' = 1.3—1.5. ♂: L = 1.5 mm; a = 40; b = 4.1; c = 43; PO: 4. (Italy, Soviet Union [Uzbekistan], India, South Africa, United States [Arizona], Venezuela) **similis** THORNE

— Body shorter, 1.0—1.2 mm; spear 14—15 μm; supplements 10. — ♀: L = 1.0—1.2 a = a = 35—39; b = 3.8—4.2; c = 40—46; V = 50—54%; c' = 1.5. ♂: L = 1.2 mm; a = 37; b = 3.8; c = 44; PO: 10. (India) **tenax** SIDDIQI

16 Aperture occupying one-third of spear length 17

— Aperture occupying half or more of spear length 18

17 Body about 1.5 mm; posterior part of oesophagus conspicuously narrowing in its middle. — ♀: L = 1.6 mm; a = 32; b = 4.2; c = 53; V = 54%; c' = 1. ♂ unknown. (Soviet Union: Uzbekistan) **discocephalus** TULAGANOV

— Body about 1 mm; posterior part of oesophagus uniform. — ♀: L = 0.8—1.1 mm; a = 25—37; b = 3.1—4.3; c = 40—52; c' = 1. ♂ unknown. (India) **laksi** KHAN et LAHA

18 Vulva anterior to mid-body (V = 37—45%). — ♀: L = 0.9—1.3 mm; a = 28—40; b = 3.4—4.4; c = 39—63; V = 37—45%; c' = 0.8—1.1. ♂: L = 1.2—1.3 mm; a = 35—41; b = 4; c = 43—56; PO: 7—11. (Holland, Czechoslovakia, Hungary, Yugoslavia, Spain, Italy, Soviet Union [Uzbekistan], United States [North and South Dakota, South Carolina, Nebraska, Utah, Iowa, Florida], Australia) **texanus** COBB

— Vulva posterior to mid-body (V = 51—58%) 19

19 Anterior body end abruptly tapered; males with 18 supplements. — ♀: L = 1.5—1.6 mm; a = 28—31; b = 3.1—3.3; c = 52—59; V = 55—58%; c' = 1. ♂: L = 1.6 mm; a = 31; b = 3.7; c = 50; PO: 18. (South Africa) **acuticapitatus** FURSTENBERG et HEYNS

— Anterior body end gradually tapering; males, if known, with 6—11 supplements 20

20 Prerectum unusually long, 5—7 body diameters; spear 17—18 μm. — ♀: L = 1.3 mm; a = 28; b = 3.6; c = 52; V = 51%; c' = 1. ♂: L = 1.5 mm; a = 26; b = 3.6; c = 69; PO: 8. (South Africa) **intermedius** HEYNS et LAGERWEY

— Prerectum short, one body diameter; spear 13—15 μm 21

21 Lateral pores arranged in three rows; tail shorter than anal body width. — ♀: L = 1.1—1.2 mm; a = 27—30; b = 3.2—3.5; c = 65—80; V = 50—53%; c' = 0.6—0.8. ♂ unknown. (Australia) **elegans** SAUER et ANNELS

— Lateral pores arranged in one or two rows; tail about as long as anal body width 22

22 Head 1.5 times as wide as spear length. — ♀: L = 1.2—1.3 mm; a = 37—41; b = 3.3—3.5; c = 59—70; V = 51—52%; c' = 0.9. ♂: L = 1.1—1.2 mm; a = 30—35; b = 3.1—3.5; c = 55—61; PO: 6—11. (Brazil) **pizai** MONTEIRO

— Head about as wide as spear length 23

23 Body longer than 1 mm. — ♀: L = 1.2 mm; a = 33—38; b = 3.8; c = 55; V = 53—55%; c' = 1.1. ♂ unknown. (Venezuela) **affinis** LOOF

— Body shorter than 1 mm. — ♀: L = 0.8—0.9 mm; a = 22—25; b = 2.9—4.5; c = 38—41; V = 51—53%; c' = 1. ♂ unknown. (India) **rotundicaudatus** KHAN et LAHA

Remarks

Discolaimus agricolus SAUER et ANNELS, 1986. — This species is possibly identical with *D. perplexans* SIDDIQI, 1964; it shows the same shape of head, oesophagus and tail, a large aperture of spear, the body is, however, not so slender and the vulva lies more anterior.

Discolaimus arenicolus YEATES, 1967. — It agrees completely (in the large body, long spear, shape of oesophagus and tail, etc.) with *D. major* THORNE, 1939, thus I regard it as a junior synonym of the latter.

Discolaimus brevis SIDDIQI, 1964. — There is hardly doubt whatever *brevis* and *D. texanus* COBB, 1913 are one and the same species (small body, similar shape of head, spear and tail, anterior position of vulva); I feel it justified to synonymize them.

Discolaimus monhystera THORNE, 1939. — Although THORNE described this species as being mono-opisthodelphic, it is very probably conspecific with *D. texanus* COBB, 1913. My arguments are as follows: 1) THORNE found immature females only; 2) the vulva of *texanus* lies also well before the mid-body; 3) an unpaired gonad would be quite unusual in the genus and none of observations has registered a similar case; 4) in his description THORNE noted by two occasions that his specimens — both the females and males — were highly similar to *texanus*; 5) really, *monhystera* agrees with COBB's species in every morphological feature.

Discolaimus mucurubanus LOOF, 1964. — Owing to the hardly expanded head, the slender anterior and the suddenly enlarged posterior portion of oesophagus I prefer putting this species to *Discolaimium*.

Discolaimus rotundicaudatus KHAN et LAHA, 1982. — Corresponds in most respects to *D. affinis* LOOF, 1964, is merely somewhat smaller and shows some differences in tail shape.

Genus **Latocephalus** PATIL et KHAN, 1982

Qudsianematidae, Discolaimininae. Body of middle length, 0.7 to 1.5 mm, slender to very slender. Cuticle smooth, lateral chords with oval glands, 30—60 on each side of body. Head offset, generally wider than adjacent body.

Amphids caliciform. Spear simple, 7 to 17 μm, aperture occupying 1/3 to 1/2 of its length. Guiding ring simple. Oesophagus enlarged near its middle, anterior region very slender, non-muscular. Dorsal gland at one to two oesophagus widths from expansion zone. Prerectum with a short caudal sack. Vulva transverse, not sclerotized, mostly anterior to mid-body (in 37—50%). Ovary unpaired, postvulval, with or without prevulval sack. Tail 2—4 times anal diameter, convex-conoid with rounded tip, more or less curved ventrally. Males unknown.

Type-species: *Latocephalus gracilis* PATIL et KHAN, 1982.

Latocephalus is closely related to *Discolaimium* THORNE, 1939 and *Discolaimoides* HEYNS, 1963, has, however, an opisthodelphic female genital organ. Since unpairity of gonads is a rare phenomenon in the family Qudsianematidae, and no intermediate or connecting forms between species with normally developed paired gonads and those with completely reduced anterior ovary exist, I consider it justifiable to separate *Latocephalus* as a valid genus.

The *Latocephalus* species are terrestrial and have been found in three continents: Asia (4 species), Africa (1 species) and South America (1 species).

Five species:

L. gracilis PATIL et KHAN, 1982
L. hemidelphus (MONTEIRO, 1970) comb. n.
Discolaimium hemidelphum MONTEIRO, 1970
L. monhystera (SIDDIQI, 1965) PATIL et KHAN, 1982
Discolaimium monhystera SIDDIQI, 1965
L. oostenbrinki (MEHDI ALI, SURYAWANSHI et PRABHA, 1973) PATIL et KHAN, 1982
Discolaimium oostenbrinki MEHDI ALI, SURYAWANSHI et PRABHA, 1973
L. smithi (HEYNS, 1963) PATIL et KHAN, 1982
Discolaimoides smithi HEYNS, 1963
Discolaimium smithi (HEYNS, 1963) TIMM et BHUIJAN, 1963

KEY TO SPECIES OF *LATOCEPHALUS*

1 A short prevulval uterine sac present (shorter than body diameter), vulva in 42—50% of body length 2
— Prevulval uterine sac absent, vulva in 38—41% of body length 3
2 Body extremely slender (a = 66—80). — ♀: L = 0.9—1.4 mm; a = 66—80; b = 4.6—5.4; c = 40—52; V = 42—48%; c' = 2.2—2.8. ♂ unknown. (India) **gracilis** PATIL et KHAN
— Body not so slender (a = 43—51). — ♀: L = 1.0—1.1 mm; a = 43—51; b = 3.6—4.5; c = 32—40; V = 47—50%; c' = 2. ♂ unknown. (Soviet Union [Uzbekistan, Kirghizia], South Africa) **smithi** HEYNS
3 Spear 13—14 μm long; tail strongly bent ventrally. — ♀: L = 0.7 mm; a = 21—32; b = 3.2—3.5; c = 15—17; V = 37—40%; c' = 3—4. ♂ unknown. (Brazil) **hemidelphus** (MONTEIRO)
— Spear 8—10 μm long; tail slightly bent ventrally
4 Tail longer, 3 times anal body diameter. — ♀: L = 1.3—1.5 mm; a = 50—58; b = 4.5—5.1; c = 28—31; V = 39—41%; c' = 3—3.3. ♂ unknown. (India) **oostenbrinki** (MEHDI ALI, SURYAWANSHI et PRABHA)
— Tail shorter, 2 times anal body diameter. — ♀: L = 1.2 mm; a = 53—58; b = 4.7—5.0; c = 38—40; V = 38—40%; c' = 2. ♂ unknown. (India) **monhystera** (SIDDIQI)

Genus **Mylodiscus** THORNE, 1939

Qudsianematidae, Discolaiminae. Body moderately long, between 1 and 2 mm, fairly robust. Cuticle with fine transverse striae. Lateral chords with glands and pores arranged in a single file, 35 on each side of body. Head offset, lips distinct; cephalic region with inner sclerotized bowl-shaped plate. Amphids stirrup-like. Spear simple, shorter than labial diameter, 10—12 μm; aperture occupying about 1/5 of spear length. Guiding ring double but thin. Oesophagus enlarged in its middle region, dorsal nucleus lying far from expansion zone. Vulva transverse, not sclerotized. Female reproductive system amphidelphic. Tail shorter than anal body diameter, rounded. Male unknown.

T y p e - s p e c i e s: *Mylodiscus nanus* THORNE, 1939.

THORNE and the subsequent authors regarded this genus as a member of the family Actinolaimidae. LOOF & COOMANS (1970) were the first who pointed to the fact that the general characteristics of *Mylodiscus* show affinities more to discolaimoid than to actinolaimoid nematodes, and they were the same (COOMANS & LOOF 1978) who definitely placed this genus under the family Discolaimidae. In fact, *Mylodiscus* shows all the important characters of Discolaiminae (now subfamily): the lateral glands and pores are present, the oesophagus has an abrupt expansion, the dorsal oesophageal gland lies far back, the vulval lips are not sclerotized and the tail is very short and rounded. The bowl-shaped sclerotized lining in head distinguishes it easily from the further genera within the subfamily.

Soil-inhabiting nematodes distributed in Asia and South America.

One species:

M. nanus THORNE, 1939

—♀: L = 1.1—1.8 mm; a = 24—29; b = 3.1—4.1; c = 46—72; V = 55—59%; c' = 0.7—0.9. ♂ unknown. (India, Sumatra, Brazil) **nanus** THORNE

Genus **Mylodiscoides** LORDELLO, 1963

Qudsianematidae, Discolaiminae. Small nematodes, shorter than 1 mm. Body moderately slender. Cuticle with fine striation. Lateral glands and pores obscure. Head well offset, broad, almost discolaimid with an inner sclerotized structure consisting of a longer posterior bowl-like and a shorter anterior thin plate. Amphids dorylaimid. Spear shorter than labial diameter, 9 μm; aperture occupying about half the length of spear. Oesophagus discolaimid. Guiding ring thin, simple. Vulva transverse, not sclerotized. Female gonads amphidelphic. Tail conoid, ventrally arcuate, 2—3 times as long as anal body diameter, with finely rounded tip. Males unknown.

T y p e-s p e c i e s: *Mylodiscoides pygmaeus* LORDELLO, 1963.

Although LORDELLO placed this genus under the family Actinolaimidae I have no doubt that it is a close relative of *Mylodiscus* THORNE, 1939, and a representative of the Discolaiminae as well. It may be distinguished from *Mylodiscus* by the presence of two sclerotized lines in head and by the conoid, ventrally hooked tail.

Terrestrial forms known in South America.

One species:

M. pygmaeus LORDELLO, 1963

— ♀: L = 0.8—0.9 mm; a = 26—36; b = 3.2—3.9; c = 15—19; V = 49—50%; c' = 2.5.
♂ unknown. (Brazil) **pygmaeus** LORDELLO

Chrysonema holsaticum (SCHNEIDER, 1925) comb. n.
(Figs 1—5)

♂: L = 1.57 mm; a = 71; b = 4.4; c = 12; c' = 7.

Body very slender, in its mid-region 22 μm wide. Cuticle smooth, thinner than 1 μm. Labial region not offset, 12 μm wide, lips amalgamated. A slightly cuticularized framework is present in the lateral lips. Amphids broad and deep. Body at posterior end of oesophagus twice as wide as head.

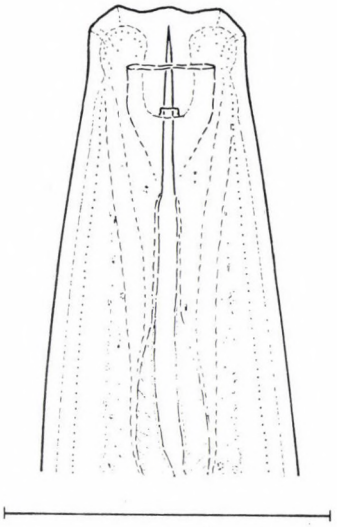
Spear very slender, 13 μm, only a little longer than cephalic diameter; aperture small, only about 1/8 of spear length. Oesophagus 353 μm long, in 46% expanded. Dorsal nucleus at one oesophagus width from the expansion zone. Cardia tongue-shaped. Prerectum beginning anterior to supplements.

Two testes; spermatozoa fusiform, with pointed tips, 9 μm long, about 2/5 of body width at the same level. Spicula dorylaimid, 25 μm long, 1/5 of tail length, with small lateral guiding pieces. Beside the usual adcloacal pair there is a ventromedial row of supplements consisting of 6 low papillae; the hindermost of them level with spicula.

Tail 130 μm long, 7 times anal body diameter, strongly curved ventrally and gradually tapering to its pointed tip. There are 5 pairs of subventral caudal papillae.

L o c a l i t y: Mt. Franklin near Canberra, Australia, *Sphagnum* moor, July 1968. Leg. J. BALOGH. This rare nematode is now reported for the first time out of Europe.

The male specimen described above corresponds to the description of SCHNEIDER very well.



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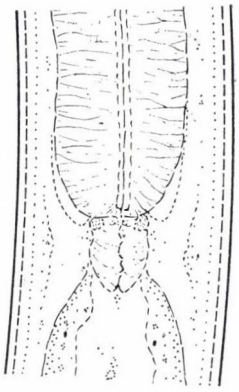

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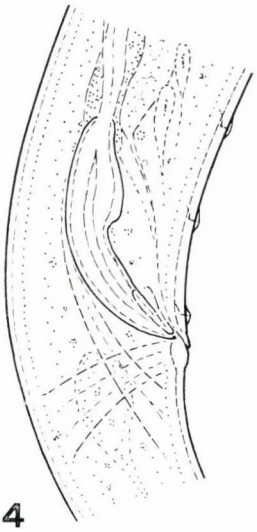

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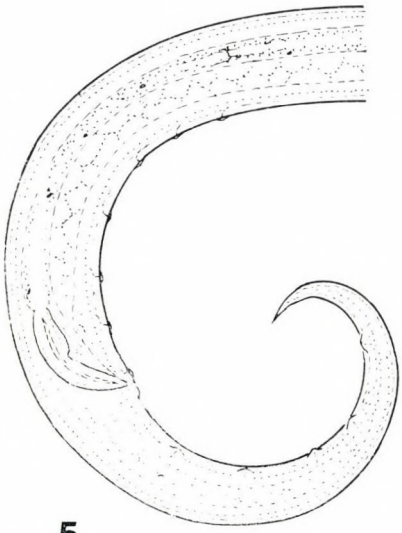

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Figs 1—5. *Chrysonema holsaticum* (SCHNEIDER, 1925) comb. n.: 1 = anterior end, with body diameter at proximal end of oesophagus (×1800); 2 = cardial region (× 1100); 3 = spermatozoa (×1800); 4 = cloacal region (×1100); 5 = posterior end (×560)

Discolaimium cephalatum sp. n.
(Figs 6—10)

♀: L = 1.40—1.45 mm; a = 48—49; b = 4.1—4.4; c = 67—70; V = 42—43%; c' = 1.

Body slender, cylindrical, 28—30 μm wide in its middle region. Cuticle very thin, less than 1 μm, smooth, subcuticle finely striated. 50—60 conspicuous sublateral glands on each side of body. Head discolaimid, much wider than adjacent neck, 14 μm wide and 5 μm high, sharply offset; lips well separate, with inner liplets. Amphids half as wide as corresponding body width.

Spear 12 μm, somewhat shorter than cephalic diameter, straight, thicker than cuticle at the same level; aperture occupying somewhat more than half a spear length. Guiding ring simple, around anterior tip of spear. Oesophagus 340 μm long, in 40% expanded. Dorsal nucleus far back, at 2—2.5 oesophagus width from the expansion zone. Oesophagus 1.3 times longer than the distance between its posterior end and vulva. Cardia drop-shaped. Intestine consisting of large cells. Both rectum and prerectum one anal diameter long.

Female gonads amphidelphic, each branch 2.4—2.8 times as long as corresponding body width. Vulva transverse, its lips not sclerotized, vagina 12 μm, spherical. Uteri without spermatozoa.

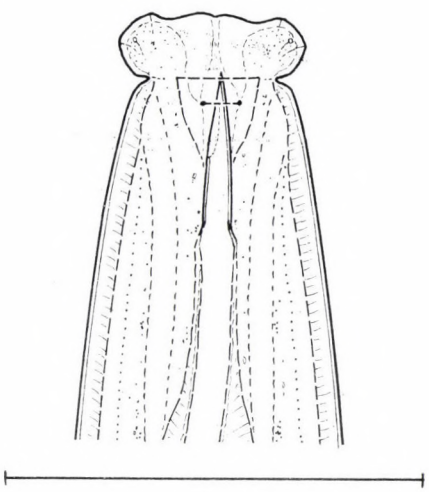
Distance between vulva and anus 40—43 times as long as tail. The latter 20—21 μm long, equal with anal diameter, broadly rounded.

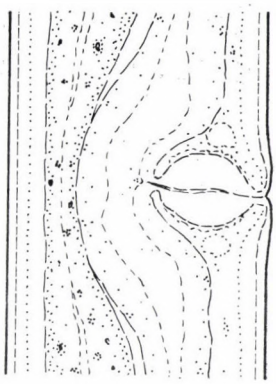
Male not found.

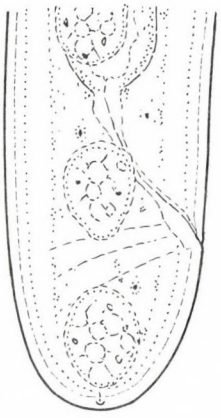
Holotype: ♀ on the slide No. A-11564. Paratypi: 1 ♀ and 1 juvenile.
Type locality: Chandigarh, India, soil around bamboo roots in the park of the Punjab University, January 1986, leg. A. Fodor.

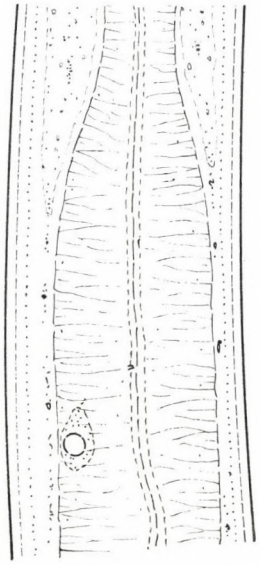
Diagnosis: *Discolaimium* with moderately long and slender body, broad and sharply separate head, large-apertured spear, far back lying dorsal oesophageal nucleus, pre-equatorial vulva, spheroid vagina and broadly rounded tail.

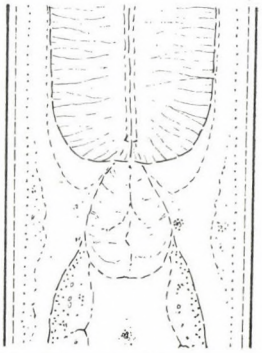
In having a comparatively short body, a short spear, a back lying dorsal nucleus and a short, rounded tail the new species resembles *Discolaimium obtusum* Husain et Siddiqi, 1967 and *D. brachyurum* Husain et Siddiqi, 1967. It differs from both of them by the large, almost *Discolaimus*-like head, the swollen vagina and the somewhat larger body. Moreover it differs from *obtusum* by the longer and straight spear and the more anterior vulva, from *brachyurum* by the more slender body and the longer tail.











Figs 6—10. *Discolaimium cephalatum* sp. n.: 6 = anterior end, with body diameter at proximal end of oesophagus (×1800); 7 = vulval region (×1100); 8 = expansion zone of oesophagus (×1100); 9 = cardial region (×1100); 10 = tail (×1100)

Discolaimoides loofi sp. n.
(Figs 11—17)

♀: L = 1.48—1.66 mm; a = 47—56; b = 4.2—4.7; c = 39—46; V = 44—46%; c' = 2.2—2.3.

Body very slender, 29—33 μm wide in its middle, not uniformly cylindrical but gradually tapering to its both ends. Cuticle 0.8—1 μm thick, subcuticle finely striated transversely. Lateral glands not as conspicuous as in other members of the genus; about 50 on each side of body. Head sharply offset, 8 μm wide, conspicuously wider than adjacent neck region but in comparison with body size fairly small. Body at proximal end of oesophagus 3.3—3.4 times as wide as head. Amphids large, almost as wide as corresponding body diameter.

Spear small, 8—9 μm, as long as labial width and as thick as cuticle at the same level; aperture a little shorter than half a spear. Guiding ring thin, at anterior tip of spear. Oesophagus 350—365 μm long, about as long as the distance between posterior end of oesophagus and vulva, in 50—55% expanded. Dorsal nucleus far back, at 2—3 oesophagus widths from the expansion zone. Cardia hemispherical. Prerectum twice as long as anal diameter, with a short caudal blind sack.

Vulva transverse, not sclerotized, vagina spherical, hardly longer than 1/3 width of body. Each gonad 5—8 times as long as body diameter. Uteri without spermatozoa.

Distance vulva-anus 20—22 times as long as tail. Tail conoid, slightly bent ventrally, 36—38 μm long, 2.2—2.3 times as long as anal body width. Tip of tail finely rounded.

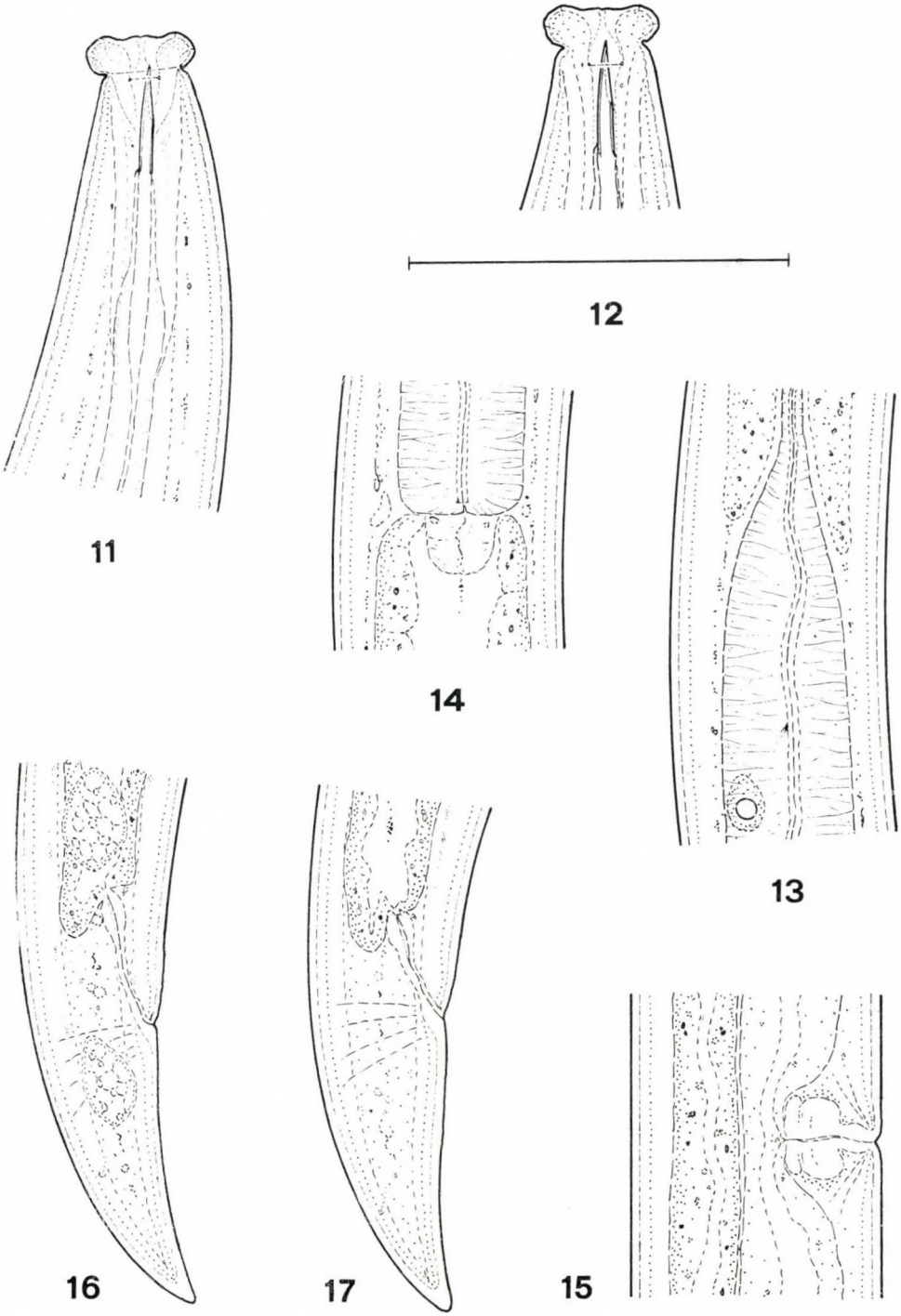
Male unknown.

Holotype: Female on the slide No. H-10459. Paratypi: 5 ♀.
Type locality: Páty, Hungary, meadow, soil around grass roots, May 1983.

Diagnosis: *Discolaimoides* with moderately long and slender body, wide and flattened head, large amphids, small spear, dorsal oesophageal nucleus of back position, swollen vagina and conoid, mid-long tail.

In its conoid, comparatively short tail, moderately slender body and short spear (shorter than 10 μm) *Discolaimoides loofi* sp. n. is close to *D. gracilis* Thorne, 1939 but may be easily separated from that in having a broader and more flattened labial region, a more posterior expanded oesophagus (expansion in 40% at *gracilis*), and a longer and slimmer body (*gracilis*: L = 1.1 mm; a = 39).

I dedicate this new species to Dr. P. A. A. Loof (Wageningen) in appreciation his merits in research of the *Discolaimium-Discolaimoides* group as well as in the whole group of the Dorylaimida.



Figs 11—17. *Discolaimoides loofi* sp. n.: 11 = anterior region (×1800); 12 = anterior end of an other animal, with body diameter at proximal end of oesophagus (× 1800); 13 = expansion zone of oesophagus (×1100); 14 = cardial region (×1100); 15 = vulval region (×1100); 16—17 = tail of females (×1100)

APPENDIX

In a recent paper (J. Agric. Sci. Mansoura Univ., 14: 418-420) ABOU EL-NAGA described a further species belonging to the subfamily Discolaiminae: *Discolaimus andrassyi* ABOU EL-NAGA, 1989.

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A SYNOPSIS OF PERILAMPUS LATREILLE WITH DESCRIPTIONS OF NEW GENERA AND SPECIES (HYMENOPTERA: PERILAMPIDAE), I.

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In the traditional blanket genus *Perilampus* LATREILLE altogether 154 available names were proposed by earlier authors. In addition, one nomia inquirenda, an erroneous subsequent spelling, and three names of junior homonymies occur. Another 13 species were originally misplaced here and subsequently removed and transferred to other genera, while 36 names were relegated in synonymy to already known species. Until this study, only 108 species of *Perilampus* were endorsed as tenable; from these, 91 known species were examined by the author; inclusive of 18 species from earlier synonymy, revised and considered valid, and of 26 new species for the science described in the present study. There are 3 new names proposed for preoccupied ones, and the group now contains 152 valid species, although they were not properly revised. During the study, an important number of basic morphological characteristics were discovered, which were not previously used in the taxonomy of the group; the possible affinities of perilampins were discussed, and it was observed that Perilampinae are not less diversified structurally than Pteromalinae, for instance, and they merit subsequent division on generic level. With the already known 6 genera, and the 26 genera proposed here as new ones, the subfamily Perilampinae now contains 32 genera and 202 species. With 165 original figures.

INTRODUCTION

The collective genus *Perilampus* LATREILLE, 1809 constitutes a medium-sized to large group within the family Perilampidae, Hymenoptera, Chalcidoidea. Some species develop as primary parasites of other insects (moths, locusts, grasshoppers, bark beetles, lacewings, sawflies, vespids), while others develop as hyperparasites in parasitic flies (tachinids, braconids, ichneumonids, and eventually perilampids) of the same hosts. This bimodal pattern of life physiognomy caused a lot of confusing interpretations in the past, because it was inherent to assume that all parasites reared from the same host pupae, collected at the same time and place, belong to a sole perilampid species, a variable one. Actually, sometimes they may be proved to belong to two or more species. There are altogether 154 earlier, available specific names of *Perilampus*, described from the entire World. Some of these names are surely invalid, and must be rejected. Three of these: *antennatus* CAMERON, 1897 nec

* The present study incorporates the results of Zoological Collectings by the Hungarian Natural History Museum in Korea, No.

WALKER, 1834; *carinifrons* MANI et KAUL, 1973 nec CRAWFORD, 1914; and *cyaneus* BRULLÉ, 1846 nec FABRICIUS, 1798, are secondary junior homonyms and must be substituted. Many others proved to be synonymous with species described earlier, and those names must be definitively rejected. However, numerous ancient names declared once as synonyms, proved to represent valid species during this study. They are reconsidered here. Some other species were initially described as *Perilampus*, and subsequently transferred to other genera. It would be useful for students if all these changes were gathered together. Therefore an annotated check-list of all species, once described as *Perilampus* is annexed below. It contains comments on their distributional data (= Distr.), host preference (= Host), and the material examined (= Exam.), with indication of the owners, museum or collection, where the respective material is deposited. In the key, measurements of body size (= L.) mean only my own data, and exclude those from literature, because in some instances, earlier records seems to be based on mixed material, and need to be revised before they are considered again. The same statement is held also for the host records. Not always were the reared perilampids identified by a specialist, and such a record may refer to other closely related species. Hence the check-list contains only host data selected deliberately by me. For better orientation during the identification, very general distributional data are also included in the key, but which refer to a main geographic area and not to faunistical region. For sake of brevity, the different new genera proposed, together with the species studied, are included in only one comprehensive key. No trials are made to include species not personally examined in the key, although some of the omitted ones were revised recently. In some instances, no type material was available, and the respective species were treated in the key on the basis of identified material, which may be or may be not consistent with the type of that species. No attempt was made in the course of this work to deal with detailed questions of morphology. Rather, the terminology and understanding of morphology in general acceptance by chalcidid taxonomists is followed. I preferred prepectus instead of postspiracular sclerite, scapulae instead of lateral areas of mesocutum, and first large tergite of the abdomen as to be the second tergite beyond the petiolus.

All drawings were made with pencil and later inked. They are only diagrammatic figures, illustrating structures, and can not be used as a basis for deduction of phylogenetic relationships within the group. The order of illustrations is determined basically by the order in which the species are reached in the accompanying key. Thus, their arrangement does not necessary indicate taxonomic groupings.

Where not otherwise stated, new genera and species names should be regarded as arbitrary combinations of letters. Such names should be treated as noun, gender masculine.

F o r m a t a n d s c o p e — This work primarily concerned only those members of the genus *Perilampus*, that were submitted for identification to the Department of Plant Protection, Israel. However, in the course of the work it became evident that no species of this genus had been recorded from Israel yet, and that some of the Israeli material represented undescribed species. In order to avoid ambiguous description of new taxa comparative material were gathered and studied. I made a comprehensive key for personal use only, to all *Perilampus* species known to me, regardless of their geographic distribution. During this time, it accumulated a lot of new data concerning stability and variability of individual features. I discovered some fine characters previously not used in separating perilampid species. During that period, the genus *Perilampus* was divided into some satelite genera, such as *Steffanolampus*, *Burksilampus* or *Krombeinius*, and I have also some morphologically outstanding species, such as *bouceki*, *pappi*, *rainerius* described below, which merit generic status. And thus, the scope of this paper was extended gradually beyond the objective initially purposed, and beyond the conventional limits of the East Mediterranean region, to include those species as well with which I am familiar from Asia, Africa, Australia and America, since future revision will surely deal with these forms. Unfortunately, I do not have enough type material at my disposal, to enable me in elaborating the complete revision of the genus. This work was undertaken only in an effort to reduce problems of identification and to improve the basis of classification within the genus.

T a x o n o m i c l i t e r a t u r e — The taxonomic literature on *Perilampus* dates from 1905, when GUSTAV MAYR made many of the initial contributions to the knowledge of the European species, giving a key for eight described and one new species. Most of the North American species have been studied by CRAWFORD (1814) and SMULYAN (1936); those of Australia by RIEK (1966); of South America by CAMERON (1909) and GIRAULT (1911—1913b); of Oriental region by ROHWER (1921, 1923); of India by MANI et al. (1973, 1974); and of Africa by RISBEC (1956), and so on. Concerning the Palaearctic fauna, NIKOLSKAYA (1952) added descriptions of 13 new species (altogether 24 species dealt with), but primarily she presented reviews and new distribution records. Unfortunately, her species are very difficult to recognize because of their laconic diagnoses, the types are unavailable for study, and many earlier species are omitted from the key, suggesting that her species might be the same as the omitted ones. STEFFAN (1952) keyed and re-defined 12 European species, adding many new taxonomic characters. BOUČEK (1956, 1983) treated many species, and together with STEFFAN, contributed to the present knowledge of the Palaearctic species of *Perilampus* most significantly.

Sources of mareriał — The bulk of the material presented here constitutes the large, unpublished collection of the Hungarian Natural History Museum, Budapest. I name it so and not as unidentified, because the perilampid specimens were gathered together tediously by the late Dr. Lajos Biró, excellent explorer and specialist of microhymenoptera. Most of the material, collected by him in Papua-New Guinea, Australia, Asia Minor and Balkan Peninsula, were accurately labelled with new names, and this betrayed the intention of Biró to publish them. I state that these species were actually new to science all that time during the first decade of our century. However, when Biró returned from his Papuan trips and presented his first manuscript on new species of *Atta* ants, dedicating three of them to national heroes of the Hungarian people — for that reason the contemporary head of department interdicted the publication flatly — and Biró did not publish any more new species of any group, and the faunistical notes elaborated later by him, appeared mostly on his own expenses (Dr. L. Móczár's pers. comm.).

Smaller amount of species were received from other museums and collections, in loan or as a gift, the name of them is mentioned under the acknowledgements. It is worthwhile presenting here, that my study of these small insects was begun in 1962, and about 950 specimens, chiefly from East- and Central-Europe, and the Middle East, but also from Africa, Australia and America were assembled. More than half of the specimens were of my own collecting. Also available for study was the former collection, improvedly surnamed here "Museum Tepliz-Schönau, Böhmen" (the veritable name recall dissonant allude of pre-war state); and which was purchased by me in 1971. It consists near exclusively of some forest insects collected by Dr. V. Kosteletzky and parasitic wasps of Rev. T. A. Marshall collection. This was sold at the beginning of the century, and contains numerous ancient material loaned to Marshall, such as of Latreille, Nees, Walker, Förster, Ratzeburg, Mayr, Kieffer and others. Finally, I gathered some further information on types not available for study, through examination of certain characters by colleagues.

Host relationships — Although to a biological control worker the species of *Perilampus* appear very distinctive in ecology and behaviour, identification of adults by structure and colour is more difficult. Frankly, all species are of the same basic constitution, the differences are so minute ones, that they are neglected in descriptions. Males, on the whole, have many more taxonomically useful structural characters than females. The difficulty in defining species within the genus is due to some objective defficiences, partly due to the paucity of specimens available for study, partly due to the minor distinctness between the taxa, as this occur in the related family Pteromalidae, and partly due to the fact that species of a perilampid reared from

very different hosts (belonging to different insect orders), resemble each other very much; while others, reared from the same host, are structurally separable. The problem is complicated subsequently by the fact, that in the same host one species of *Perilampus* develops as a primary parasite, and the other as a hyperparasite. After rearings, they are identified frequently as specimens of a "very variable species". For instance, *P. batavus* SMITS VAN BURGST and *P. aquilius* NIKOLSKAYA are primary parasites (according to HARMAN et KULMAN, 1973; and unpublished observation of the author, respectively), while *P. tristis* MAYR is a secondary one, through braconids and ichneumonids, in the same codling moth, *Cydia pomonella* LINNÉ. These three species are usually treated as synonyms, but actually they are very different; but it happens frequently all black species of the Old World are determined as *P. tristis*, which is a relatively rare species. The same situation occurs in the case of the aggregate of *P. hyalinus* SAY. All specimens, either reared from noctuid pupae, grasshopper eggs or sawflies, are identified as *hyalinus*. I am convinced, that the cummulated date on host preference concern not only one but a group of related species. According to BURKS (1979) *hyalinus* "may be a species complex, rather than a single species; careful rearings have produced specimens, at present indistinguishable, that are either primary or secondary parasites". This viewpoint is strengthened by the existence of two distinct kinds of larvae of this "species", figured by PARKER (1924, Figs 57, 60).

The fact that specimens of perilampids from different host belong to different species is accepted easily, but the fact, that specimens reared from the same host at the same time may belong to two species, encounters skepticism in part of the students. One can conclude that they differ habitually, depending on whether developing directly on the host or via a primary parasite. However, it must be mentioned that there are a very different species, belonging to the *hyalinus*-group, which also develop on the same codling moth, hence having nothing in common with the *aquilius-tristis-fulvicornis* aggregate, and therefore they can not be a variant of the same species. Although clear-cut resolution of this problem may come only from ethological and experimental researches (such as of TRIPP 1962), a preliminary requisite of it is a comprehensive key, with which a worker can identify, as accurately as possible, his specimens. This paper is a contribution toward this end.

C o n j e c t u r a l d i s t i n c t n e s s — The problem of so called 'indistinguishable species" (see above) must be discussed apart. This concerns especially the *laevifrons* aggregate, which was intensively studied in this respect by many authors, such as MAYR (1905), HELLÉN (1924), STEFFAN (1952), KERRICH (1958), SZCZEPANSKI (1959), GRAHAM (1970), BOUČEK (1983). Succintly, it was found (KERRICH 1958) that the Central- and North-West European species of *P. laevifrons* DALMAN group is highly homogenous and

no discontinuity occurs between the taxa, when only two characters, namely the size of clypeus and supraclypeal area, are considered. Formerly, these two features were considered as "good specific characters", owing to the extremely expanded scape and deeply impressed front in the males of *P. lacunosus* NIKOLSKAYA. When KERRICH investigated and surveyed the occurrence of these characters in a great amount of available material statistically, those characters appeared to be very inefficient in separating the species. Therefore such features are not regarded in the present study as being of specific rank in this group, as they are ambiguous, not easy to define, and it is especially so in the case of the supraclypeal area and in the case of males with the facial impression strongly developed. After all studies dealing with this group, the distinctness between *P. laevifrons* DALMAN and *P. aureoviridis* STEPHENS, is generally accepted as valid, all other species of the aggregate, such as *P. cuprinus* FÖRSTER, *chrysopae* CRAWFORD, *lacunosus* NIKOLSKAYA, *emarginatus* THOMSON and *masculinus* BOUČEK, has been disputed, gradually but drastically rejected. According to KERRICH (1958), these are sibling species, but this suggestion probably needs further investigation and is not considered here. Inversely, from an examination of specimens of each of them, representing a wide geographical range, I have concluded, that all the seven species above are distinct and may be separated by means of their features, regardless of the shape of the supraclypeal area. By no means, these are very closely related species. The difficulty, however, with which two species can be separated, is conjectural, and depends primarily on the item that how many species are discovered from that group. If all continental faunas were studied better all species of *Perilampus* (s. l.) would be difficult to separate.

N o m e n c l a t u r a l o u t g r o u p i n g -- For the species alone, in this study I endeavoured to discover every available species group name, which has been either latent for a long time, or suppressed in synonymy, though represented valid species. Some of the early synonyms seem to be questionable, at least those ones by DALLA TORRE (1898), because, I think so, they were not established as a result of accurate comparison of the respective types. Once stated, they persisted in literature through tradition, although, some cotypes of *Förster*, for instance, I saw, contest the validity of these synonyms. By no means, the definite status of these questionable names could be decided only after examination of the respective lectotypes, but until that time, I prefer using the former name instead of description of a new, almost certainly synonymous name.

For the generic separation, although I am neither adept of splitting such a compact genus as *Perilampus*, nor of the luxurious prolification of the new generic-group names, in this instance, however, an introduction of some ordering division of the existing scheme seems to be justified. This is because

the yet described genera allied to *Perilampus* are not stronger in the characters with which they were segregated, than the persuasive grouping herewith encountered. The opinion differs for the proposed classification. For details, see *Afroperilampus* RISBEC, 1956 established for *A. meloui* RISBEC, 1956 and was transferred to synonymy with *Perilampus* by BOUČEK (1971), or *Steffanolampus* PECK, 1974 for *Perilampus salicetum* STEFFAN, 1952, on which BOUČEK (1978) states that it "is very close to *Perilampus*", and *Burksilampus* BOUČEK, 1978 proposed for *Chrysolampus anobii* BURKS, 1969 and on which DARLING (1986) declare "is closely related to the large cosmopolitan genus *Perilampus*". That is true for each of the cases. Similarly it is true, that all species of Pteromalinae (Pteromalidae) are closely related, but it does not necessarily means that all of them belong to the same genus. Nevertheless, all genera of Perilampidae are closely related, and moreover, they are also related more or less to many genera of Pteromalidae, Eurytomidae, Eucharitidae and even Torymidae or Chalcididae, and there were trials to put all these families into the same basket. On the weight of their internal structure and composition, the perilampids are not less variate and diversified than most of the above mentioned families.

C l a d i s t i c r e l a t i o n s h i p s — Since the present work did not particularly deal with the cladistic scheme of classification of the perilampids, only reluctant information is mentioned here, which helps in using and understanding the construction of the key. For comparison, out of the genera newly established and existent genera allied to *Perilampus*, it was considered a generalized eurytomid, such as *Eurytoma cypriaca* MASI (Eurytomidae), a family considered by authors to be more primitive, with both tendency of phytophagous and parasitic habits; and a generalized eucharitid, such as *Aperilampus discolor* WALKER (Eucharitidae), which probably evolves better than perilampids, with exclusive parasitic habits; and a sister-genus of *Perilampus* represented by *Euperilampus lepreos* WALKER (Perilampidae). Representatives of the compared genera were partially figured for better understanding. For exemplification let us consider one character: the shape of axillula. This is narrow, elongated, with parallel or subparallel margins (Fig. 19), and then called digitiform or simply finger-like, that is the same. Or, it may be triangular in shape (Fig. 35), and then simply called triangular. Sometimes the apex of triangle is truncate (Fig. 23), but basically is the same and not finger-like. For the analysis we observed the following: *Eurytoma* has a finger-like axillula (Fig. 1), and *Aperilampus* has a triangular one (Fig. 23). If it is accepted that *Eurytoma* is comparatively more primitive than *Aperilampus* which is comparatively evolved, then the finger-like axillula is the primitive character state and the triangular axillula is the derived character state. The finger-like axillula occurs in the genus *Eurytoma*, in the *Taltonos*

hyalinus (SAY) comb. n. (Fig. 18), in *Durgadas pappi* gen. et sp. n. (Fig. 28), in *Balintos parvus* (HOWARD) comb. n., and in *Goyurfis platigaster* (SAY) comb. n., as well as in the species belonging to these new genera established here. At the same time, the axillula is broadly triangular — with no transitory state discovered so far —, in all other genera, including *Afroperilampus maurus* (WALKER) comb. n., *Perilampus violaceus* (FABRICIUS), and *Euperilampus lepreos* (WALKER). In this instance, the distinctness between primitive character state, viz. the finger-like axillula, and the derived character state, viz. triangular axillula, is relatively simple to observe, although this character has not been exploited for clarification of cladistic relationships of the perilampids yet. Other characters, however, such as the bicarinulate and sulcate posterior margin of pronotal disc, were not discovered earlier, neither for the use of separating species, nor for that of higher classification. Its significance in development is more sophisticated to interpret. This character does not occur in *Eurytoma*. Therefore it is an ancient feature, probably present in the common ancestor of both *Eurytoma* and *Perilampus* (s. l.), yet entirely vanished in *Eurytoma* and in many genera of Perilampinae. It is retained in the genera *Taltonos*, *Durgadas* and *Balintos*, which possess finger-like axillula; it is vanished in median half in the genus *Goyurfis*, of the same group. However, it is present again in the African genus and species *Tiboras maurus* (WALKER) comb. n., which have triangular axillula; then vanishes entirely in the bulk of the genera, being substituted by the blade-like posterior margin of pronotal disc, except in two species of higher perilampids.

Generally speaking, the evolutionary trend of *Perilampus* (s. l.) seems to be from the direction of *hyalinus*-type to *tristis*-type. This includes transformations, such as: reduction of body size with more than half of the original; change from the wholly metallic body pattern to wholly black; reduction of costulate fronto-vertex to highly polished fronto-vertex; lost of anterad protruding head with deeply impressed scrobal depression, and substituted with flat, short and lenticular head, with no scrobal depression at all; joining of the freely movable prepectus with adjacent pronotal panel; shortening of the scutellum from sharply produced over the abdomen up to near in the same plane with propodeal declivity. Within this trend, there are clear-cut specializations and ramifications toward better adaptations to parasitic habits. These may be, for instance, the different tubercles on thoracic dorsum, destined for easier emergence from host cocoon, and the bulging scutellar disc, with keel-shaped marginal rim, for emergence from locust egg chorion. Succintly, the main character states considered to be primitive (or derived), are as follows: head with antennal scrobe carinate (ecarinate); axillula finger-like (triangular); malar space simple (sulcate); malar space as long as or longer than front margin of malar cavity (shortened to be half as long); posterior pronotal edge sulcate and bicarinulate (blade-like); disc of mesoscutum with

umbilicate punctures (cross-sulcate); mesoscutum not tuberculate (tuberculate); scutellum not tuberculate (tuberculate); prepectus not consolidated to pronotal panel (consolidated); scutellar frenum not developed (developed); propodeal declivity vertical (diagonally oblique); propodeal disc margined below by a plical crest (not margined); nucha semicircularly protruding (nucha flat); propodeal disc margined on sides with rugose rim below the

Table 1

Distribution of selected apomorphous features within demonstrative genera

Genera \ Character state	Axillula digitiform	Scrobal cavity carina-framed	Pronotal margin bicarinulate	Malar space sulcate	Mesoscutum costulate	Plicae carinulate	Colouration melanistic
Eurytoma	+	+	−	−	−	−	+
Taltonos	+	+	+	−	−	+	−
Durgadas	+	+	+	+	+	+	+
Goyurfis	+	+	+	+	−	+	+
Tiboras	−	+	+	+	−	+	+
Afroperilampus	−	+	+	+	−	+	+
Nilgator	−	+	+	+	−	+	−
Perilampus	−	−	−	+	−	+	−
Dekterek	−	−	−	+	−	+	+
Lufarfar	−	−	−	−	−	−	+
Kekender	−	−	−	−	−	−	−
Euperilampus	−	+	−	−	+	−	−
Aperilampus	−	+	−	−	−	−	−

spiracle (not margined at all); lower edge of propleura simple (tuberculate), and so on. All these character states were tabulated for the genera established here. However, such a large tabulation is difficult to follow and seems at most to be useful for separation of the taxa, while the key serves for this purpose. It was more appropriate to illustrate phlyetic relationships using selected apomorphous features for selected genera only (Table I). Only for these selected features, the species *Durgadas pappi*, appear to be the most protean and generalised, having all character states positive, while the species *Kekender bouceki* is the most evolved, all character states are negative. Genera, such as *Eurytoma*, *Perilampus*, *Aperilampus* etc., occupy intermediate states.

It is underlined here, that after GAHAN (1922) the genera *Epiperilampus* GIRAULT, *Perilampomyia* GIRAULT, *Perilampoides* GIRAULT, *Neoperilampus* GIRAULT, *Perilampella* GIRAULT, *Euperilampus* GIRAULT, etc. are not considered here as true perilampids.

Results — The genus *Perilampus* LATREILLE, regarded in the past as a blanket genus for a very large member of species, very often structurally different ones, but with same bulky and stout constitution of the body. Altogether 159 earlier names were proposed, but not all of these are available. From these, the name *Chalcis violacea* "PANZER" of GAHAN and FAGAN (1923) is still to be a nomia inquirenda. The name *Perilampus platygaster* RILEY, 1870 and of many other forthcoming authors, is an erroneous subsequent spelling for *P. platigaster* SAY.

As many as 36 names were considered synonymous with already known species by earlier authors, but this conclusion was accurately documented by study of the corresponding type-specimens only in few cases. From these, 18 names remained in synonymy. They are: *Perilampus aciculatus* PROVANCHER, *auriceps* WALKER, *australiensis* GIRAULT, *bakeri* CRAWFORD, *cupreovarius* GIRAULT, *entellus* WALKER, *femoralis* WALKER, *frater* GIRAULT, *laevicephalus* CRAWFORD, *miltoni* GIRAULT, *mittagogensis* GIRAULT, *pallipes* CURTIS, *queenslandensis* GIRAULT, *reliquus* GIRAULT, *saintjusti* GIRAULT, *tasmaniensis* GIRAULT, *testaceitarsis* CAMERON and *scaber* NIKOLSKAYA.

A number of 18 species that were once placed in synonymy, are considered here as valid: *Perilampus antennatus* WALKER, *batavus* SMITS VAN BURGST, *capitatus* SMULYAN, *chlorinus* FÖRSTER, *cristatus* FÖRSTER, *cuprinus* FÖRSTER, "*cyaneus*" BRULLÉ, *cyaneus* FABRICIUS, *emarginatus* THOMSON, *inaequalis* FÖRSTER, *italicus* FABRICIUS, *lacunosus* NIKOLSKAYA, *nigellus* NIKOLSKAYA, *nigricornis* WALKER, *nigriventris* FÖRSTER, *selectus* WALKER, *splendidus* DALMAN and *violaceus* FABRICIUS.

At least 13 species were mistakenly placed once in the genus *Perilampus*, until recent revisionary studies of numerous specialists, and they were removed and now ranged in their adequate genera: *Perilampus alexinus* WALKER, *brasiliensis* ASHMEAD, *brevicornis* RISBEC, *discolor* WALKER, *gloriosus* WALKER, *laevis* PROVANCHER, *lepreos* WALKER, *megalaspis* CAMERON, *obscurus* WALKER, *salicetum* STEFFAN, *spinosus* GIRAULT et DODD, *tapiae* RISBEC, *triangularis* SAY.

Moreover, a great number of fundamental morphological features were discovered during this study, such as: presence of pronotal sulcus, tuberculate prosternum, covered pro-mesonotal spiracle, absence of plical carina, excavated scapulae, undivided axillae, lack of axillo-scutellar groove, undeveloped marginal fringe of forewing, reduced mesosternal pad, contracted scuto-scutellar groove, furrowed mesepimeron, and so on — imposed and facilitated the reduction of intrinsic heterogeneity of the genus. Besides of the already known 7 genera of Perilampinae: *Afroperilampus* RISBEC (2 species), *Burksilampus* BOUČEK (2 species), *Monacon* WATERSTON (26 species), *Steffanolampus* PECK (1 species), the 26 new genera being proposed here (with their types in bracket), are as follows: *Bagdasar* new (*amnonius* new); *Balintos* new (*parvus*

HOWARD); *Bukbakas* new (*microgastris* FERRIÈRE); *Dekterek* new (*granulosus* CRAWFORD); *Durgadas* new (*pappi* new); *Ecalibur* new (*robertsoni* CRAWFORD); *Fifirtiz* new (*noemi* NIKOLSKAYA); *Fulaytar* new (*singaporensis* ROHWER); *Goyurfis* new (*platigaster* SAY); *Ihrambek* new (*chrysonotus* FÖRSTER); *Itonayis* new (*micans* DALMAN); *Kekender* new (*bouceki* new); *Lufarfar* new (*rainerius* new); *Mivarhis* new (*laevifrons* DALMAN); *Naspoyar* new (*fulvicornis* ASHMEAD); *Nilgator* new (*mirabeaui* GIRAULT); *Olarlar* new (*aeneus* ROSSI); *Pondoros* new (*tristis* MAYR); *Sicatang* new (*catilus* new); *Taltonos* new (*hyalinus* SAY); *Tiboras* new (*maurus* WALKER); *Tondolos* new (*tasmanicus* CAMERON); *Vadramas* new (*nigriviridis* GIRAULT); *Vaktaris* new (*auratus* PANZER); *Zuglavas* new (*stygicus* PROVANCHER); *Yertatop* new (*emersoni* GIRAULT).

Three of the species described earlier were junior secondary homonymies, and a replaceement names are proposed here: *Goyurfis dobnos* ARGAMAN, nom. n. for *Perilampus antennatus* CAMERON, 1897 nec WALKER, 1834; *Perilampus uris* ARGAMAN, nom. n. for *Perilampus carinifrons* MANI et KAUL, 1973 nec CRAWFORD, 1914; and *Taltonos sirsiris* ARGAMAN, nom. n. for *Perilampus cyaneus* BRULLÉ, 1846 nec FABRICIUS, 1798.

The following 26 species are described here as new to science: *Afroperilampus delbotor* sp. n.; *A. horocos* sp. n.; *A. hurap* sp. n.; *A. liliae* sp. n.; *Bagdasar amnonius* sp. n.; *Bukbakas casevitzi* sp. n.; *Durgadas pappi* sp. n.; *Fifirtiz mavricus* sp. n.; *F. turpiculus* sp. n.; *Kekender bouceki* sp. n.; *Lufarfar nimrodus* sp. n.; *L. rainerius* sp. n.; *Olarlar cocegus* sp. n.; *Pondoros kittenbergeri* sp. n.; *P. moczari* sp. n.; *Sicatang catilus* sp. n.; *S. picpus* sp. n.; *Taltonos azureus* sp. n.; *T. birous* sp. n.; *T. dumcas* sp. n.; *T. jolaus* sp. n.; *T. tutubas* sp. n.; *T. xirgus* sp. n.; *Vadramas tetar* sp. n.; *Vaktaris ganuz* sp. n.; *V. ilvauber* sp. n. All genera and species examined are enumerated in the key below.

* * *

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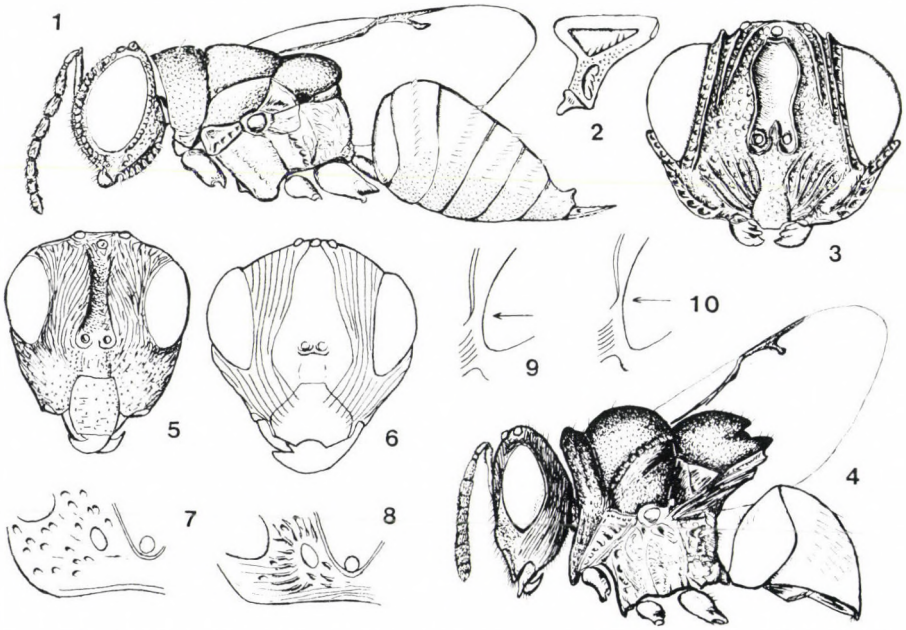
KEY TO SPECIES AND GENERA ALLIED TO *PERILAMPUS* S. L.

1 (78) Head carinated; the scrobal cavity delimited dorso-laterally and separated from fronto-vertex by a contiguous carina, completely developed from around of median ocellus up to the level of antennal toruli, or more (Figs 14, 21, 26); the carina very often sharp, with outer side sulcate, rarely delicate or reduced to a sharp edge of the depression (Fig. 5), or eventually concealed between numerous other carinules of the same strength or weaker (Figs 67, 70). Frontal margin of prepectal triangle



Figs 1—3. *Eurytoma cypriaca* (Eurytomidae, ♀ from Cyprus): 1 = body, 2 = prepectus, 3 = head. Figs 4—5. *K. bouceki* ♂: 4 = body, 5 = head. Fig. 6. *E. lepreos* ♂: head. Fig. 7. *Taltonus birous* ♀: detail of vertex. Fig 8. *T. dumcas* ♀: detail of vertex. Fig 9. *T. reticulatus* ♂: lower edge of scrobal carina. Fig 10. *T. hyalinus* ♂: lower edge of scrobal carina

not bordered anteriorly neither by crest nor by a vertical row of large punctures (Fig. 20). Apex of scutellum always produced over the abdomen (Figs 4, 18, 28).

(3) Lower corner of propleura, the transverse pad of mesosternum before mid coxa, and the supracoxal flange of lateral propodeum inflated, more or less incrassate, and produced in a ventrally directed, blunt or acute tubercle. Discal areas of propodeal declivity not enclosed ventrally by a plical carina. Nucha plane, not projecting out from the general surface. Malar space rather long, without longitudinal sulcus (Figs 4—5). Prepectal triangle unusually large, practically extend on the whole interval between tegula and front coxa (Fig. 4). Legs extremely long and narrow. Mesoscutum humped, scutellum double hunched (Fig. 4) (genus: *Kekender* gen. n.). ♀ unknown. ♂ head and thorax covered with golden-frost glaze; abdomen black with oily lustre; funicle, clava and legs honey-yellow to pale testaceous. L.: 4.1 mm. — Africa **Kekender bouceki** sp. n.

3 (2) Propleura, mesosternum and propodeum without such a tubercle. Lateral areas of propodeal declivity always enclosed ventrally by a strong plical carina. Nucha convex, emerge. Mesoscutum not humped (Fig. 18). Scutellar disc evenly curved, often may have one sole abrupt tubercle (Fig. 35). Legs considerably much shorter than above.

4 (53) Axillulae finger-like, i.e. lateral carina of scutellum meeting or transecting axilla on its lower third and running horizontally backward, parallel to the marginal rim of scutellum (Fig. 19).

5 (40) Posterior border of pronotal disc sulcate and bicarinulate on its entire course, from one spiracle to other (Figs 14—15).

6 (39) Lateral carina of scutellum transecting axilla on its lower third.

7 (38) Lower half of outer eye orbit surrounded by a tiny crest traversing malar space obliquely, reaching ventrally up to apex of clypeal lobe; many another carinules of genae are similarly contiguous on the face, so that malar space compact, without longitudinal sulcus (Fig. 16) (genus: *Taltonos* gen. n.). The scrobal carina of position fronto-orbital, i.e. diverging ventrad and approximating inner orbit of eye (Fig. 21). Entirely metallic species, at most with limited black markings here and there.[1]

8 (11) Anterior pronotal margin situated almost in the same plane on its entire extension, with no noticeable sinus before spiracle; not suddenly narrowed below and lateral pronotal panel adjacent to prepectus still to be half as broad as the width of pronotal disc opposite to the spiracle (Fig. 42) (species-group: *reticulatus*).

9 (10) Inner half of scapulae and bottom of mesoscutal punctures entirely metallic. Adorbital crest of outer orbit of eye conspicuously diverging dorsad so that at midheight of eye situated three times as far from eye margin as from lower corner (Fig. 62). Sensorial area of ♂ 0.2× scape length (Fig. 13). Abdomen rather densely clothed with long hairs, many of them longer than width of hind tibia. Middle of pronotal disc with three regular rows of large punctures in ♂, only two in ♀. Notaulix uniformly impressed, deep throughout. ♂ gold-green, front and vertex brassy, interspaces of thoracic dorsum violaceous. ♀ head black; front, vertex, temples, pronotum, scapulae and apex of scutellum golden-purple to fiery red, the remainder of thorax gold-green squash with blue and violet (Figs 9, 42, 45). L.: 3.0—4.0 mm. — C. and S. America **Taltonos reticulatus** (CAMERON, 1904) comb. n.

10 (9) Inner half of scapulae and bottom of mesoscutal punctures entirely black. Adorbital crest of outer orbit parallel to eye margin (Fig. 63). ♂ unknown. Abdomen with moderately dense and shorter hairs, none of them longer than width of hind tibia. Middle of pronotal disc with two rows of large punctures. Notaulix groove-like only on posterior two-thirds of scapulae, or less, anteriorly effaced and the place obscured by large punctures. Head black; front, vertex and thoracic dorsum homogenous bronzy. L.: 2.5 mm. — C. and S. America **Taltonos laeviceps** (CAMERON, 1905) comb. n.

11 (8) Anterior pronotal margin bisinuate laterally, with a weak to sharply concave depression before pronotal spiracle, and with a triangularly acute lobe opposite to upper top of prepectus; and suddenly narrowed below, so that lateral pronotal

[1] Sexual dimorphism rather strongly accentuated. As a whole, at first sight, males of this genus are rather uniform in shape and colour pattern, while females appears to be variate and diverese. Actually, the males possess more reliable features and only this sex may be identified confidently.

panel adjacent to prepectus only about one third as broad as width of pronotal disc opposite to spiracle (Fig. 41) (species-group: *hyalinus*).

12 (15) Ocelli in a very flat triangle, i.e. anterior margin of lateral ocelli situated distinctly behind than median ocellus (easy to constate), while posterior end of scrobal carina falling in the same line with middle of lateral ocelli (laborious to appreciate) (Fig. 44). ♂ unknown.

13 (14) Outer orbit behind lower half of eye with a rather wide and shallow adorbital sulcus, diverging dorsad (cf. Fig. 64), edge of which blunt, not crest-like. Front and vertex without definite wrinkles around lateral ocelli, instead with many dimpled, moderately large setiferous punctures (cf. Fig. 7). Axillae not separated from lateral scutellum by a foveolate groove, indeed the punctures randomly disposed there. Entirely bluish, with indigo shine dorsally and gold-green laterally (Fig. 44). L.: 5.5 mm. — S. America **Taltonos tutubas** sp. n.

14 (13) Outer orbit behind lower half of eye with rather deep adorbital sulcus, parallel to eye margin (cf. Fig. 63), inner wall of which excavated within, producing a sharp, crest-like edge. Front and vertex with definite wrinkles around lateral ocelli, punctures scarcely visible (cf. Fig. 8). Axillae separated from lateral scutellum by a foveolate groove, twice as wide as the nearest punctures. Head and thoracic dorsum gold-green; front, pronotum and scapulae partly brassy. L.: 3.0 mm — N. America **Taltonos regalis** (SMULYAN, 1936) comb. n.

15 (12) Ocelli in a line, i.e. anterior margin of lateral ocelli situated well before than median ocellus (easy to constate), while posterior end of scrobal carina situated in the same line with hind corner of lateral ocelli (laborious to appreciate) (Fig. 43). Sensorial area of ♂ 0.3—0.4× scape length (Fig. 17).

16 (29) Emargination of anterior pronotal margin sharp, the triangular lobe acute above (almost 90° on ♂, about 100° in ♀ (Fig. 41); and, the separation between inner polished and outer umbilicately punctate half of scapulae also sharp, without row of shallow punctures between them.

17 (20) Marginal rim of scutellum, in dorsal view of thorax, excavated laterally under a long arch of circle, slightly but conspicuously concave (Figs 59—60).

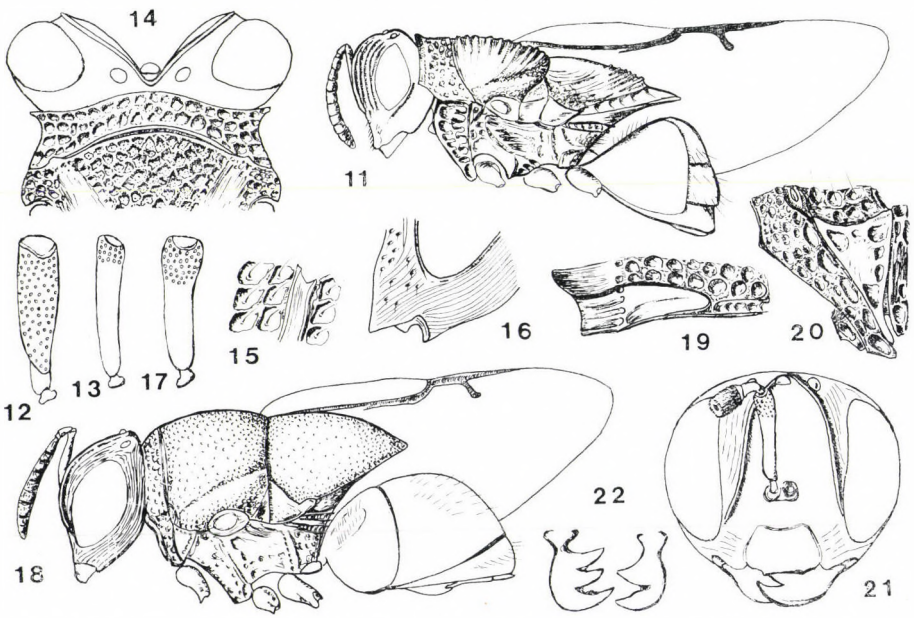


Fig 11. *Euperilampus lepreos* ♂: body. Fig 12. *Goyurfis mexicanus* ♂: scape. Fig 13. *Taltonos reticulatus* ♂: scape. Figs 14—16. *T. hedychroides* ♀: 14 = head and anterior portion of thorax, 15 = detail of pronotal sulcus, 16 = malar space. Fig 17. *T. hyalinus* ♂: scape. Fig. 18. *T. sirsiris* ♀: body. Figs 19—21. *T. hyalinus* ♂: 19 = axillula, 20 = prepectus, 21 = head. Fig 22. *Kekender bouceki* ♂: mandibles

18 (19) Sides of scutellum sharply converging, positioned one to other in a rectangle (Fig. 59); apical sector of scutellum short and wide; dorsal disc of scutellum longitudinally impressed, flat to concave. Face between inner orbit and clypeus with about 20 uniformly strong, oblique carinules, most of them complete. Clypeal disc polished, with rather scattered setiferous punctures, separated by 2—5× their own diameter. Hind corner of genae metallic. Entirely light-blue, save front, vertex, pronotum and scutellum gold-green (Fig. 56). L.: 3.5 mm. — S. America
Taltonos azureus sp. n.

19 (18) Sides of scutellum moderately converging, positioned one to other in an acute angle (about 70°) (Fig. 60); apical sector of scutellum long and narrow; dorsal disc of scutellum convex. Face with only 9 oblique carinules. Clypeal disc densely, near rugosely punctate. Hind corner of genae black. Entirely gold-green, except vertex and a stripe on scapulae golden purple, anterior half of mesoscutum violaceous (Fig. 48). L.: 3.8 mm. — S. America **Taltonos xirgus** sp. n.

20 (17) Marginal rim of scutellum, in dorsal view of thorax, perfectly straight (Fig. 61); converging under a rectangle (a bit less in some males, but more than 80°). Face with never more than 10 oblique carinules, but sometimes only with four.

21 (22) Scutellum bicolorous; a median longitudinal stripe gold-green, the broad lateral areas black to violaceous; and, apical ring of hind tibia intensively yellow on a distance as long as width of tibia. Clypeal disc moderately punctate, interspaces at least as wide as the punctures themselves. Mostly gold-green, with brassy lustre on upper front, and on vertex in large specimens; anterior half of mesoscutum black in ♀, violaceous in ♂ (Figs 41, 43, 46). L.: 3.0—5.0 mm. — S. America
Taltonos americanus (GIRAULT, 1912) comb. n.

22 (21) Scutellum unicolorous; both median and lateral areas have the same basic metallic lustre, although a stripe mesad is more splendid golden; and, hind tibia entirely metallic, a streak of green- or blue-violaceous tint actually reach up to apical incission of dorsal edge of tibia.

23 (24) Adorbital crest of outer orbit of eye conspicuously diverge dorsad, so that at mid-height of eye situated five times as far from eye margin as it is at the lower corner (Fig. 64). Genae rather shortly, arcuately converg inwardly. Vertex and thoracic dorsum of ♀ clothed with dark, almost black pubescence. Face of ♂ with only four entire, oblique carinules (Fig. 65). Thorax, abdomen and legs of ♀ predominantly dark blue; with gold-green shine on head and violaceous on abdomen. ♂ black with mesoscutum and scutellum violaceous; upper front, vertex, pronotum, marginal rim of scutellum, side of abdomen, and femora brassy to gold-green. L.: 3.0—4.5 mm. — C. America **Taltonos albitarsis** (CAMERON, 1904) comb. n.

24 (23) Adorbital crest of outer orbit of eye perfectly parallel with the margin of eye (cf. Fig. 63). Genae straight or almost so, weakly converg ventrad. Vertex and thoracic dorsum either with cast shaded, or with pale yellowish-white and gold-shiny pubescence. Predominantly gold-green. ♂ unknown.

25 (26) Middle of pronotal disc with randomly disposed punctures, some ones among the rows so that appear to have three irregular rows (Fig. 14). Median longitudinal stripe of scutellar disc lustreless, while lateral areas brillant golden-green. Ocelli large, major diameter of lateral ocellus 1.3× as long as distance between median and lateral ocellus; ocello-ocular line only 1.4× as long as diameter of lateral ocellus. Upper front with low and weak wrinkles. Thoracic dorsum with pale pubescence. Body gold-green; posterior half of mesoscutum, median stripe of scutellum, and posterior half of third tergite bluish (Figs 15—16). L.: 4.5 mm. — Ceylon
Taltonos hedychroides (WALKER, 1871) comb. n.

26 (25) Middle of pronotal disc with two transverse rows of large, rather regular punctures (cf. Fig. 39). Median longitudinal stripe of scutellar disc brillant golden, while lateral areas lustreless; i.e. interspaces cross-sulcate. Ocelli small, major diameter of lateral ocellus 0.9—1.0× as long as distance between median and lateral ocellus; ocello-ocular line 2.0× as long as diameter of lateral ocellus.

27 (28) Upper front and vertex with sharp and acute wrinkles (Fig. 8). Thoracic dorsum dark pubescent. Clypeal disc with rather shallow and scattered punctures, appear to be punctureless. Entirely gold-green, abdomen bluish, femora and tibiae bluish with vivid indigo lustre. L.: 3.5 mm. — S. America **Taltonos dumcas** sp. n.

28 (27) Upper front and vertex with low and blunt wrinkles (Fig. 7), almost unemerged from general surface. Thoracic dorsum pale pubescent. Clypeal disc with moderately deep and dense punctures. Entirely gold-green, including legs; upper front brassy. L.: 3.5—4.5 mm. — S. America **Taltonos birous** sp. n.

29 (16) Emargination of anterior pronotal margin weak, the triangular lobe rather weak and blunt (of about 160° or more, Fig. 20); and, the separation between inner polished and outer umbilicately punctate half of scapulae gradual, with intermediate row(s) of rather shallow punctures, near always whole disc of inner half shallowly punctate, and appear to be corrugated, better visible in oblique light.

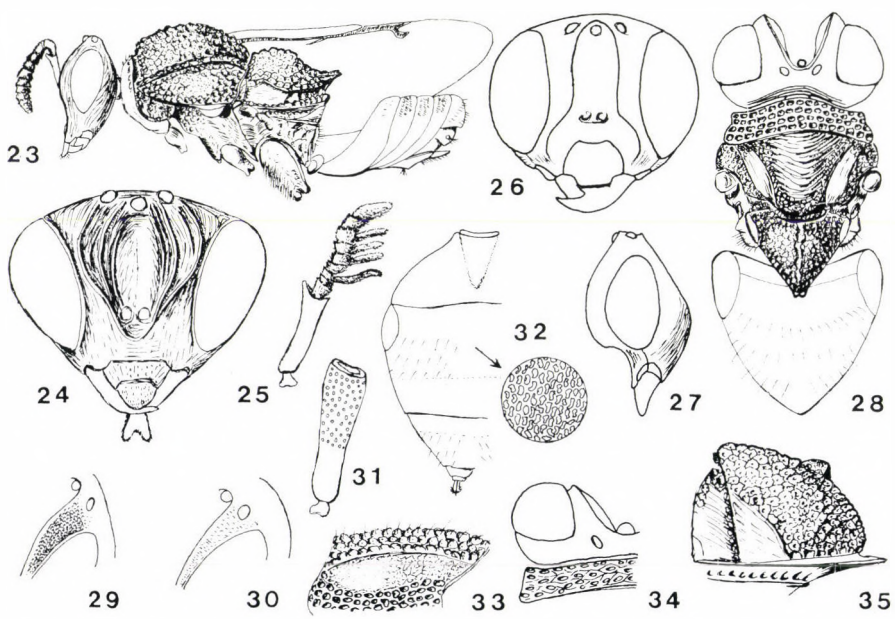
30 (33) Scrobal carina developed ventrally only up to level of antennal toruli (*carolinensis*), or if continued in a tiny crest (*paraguayensis*), this reaching at most upper half level of supraclypeal area.

31 (32) Upturned, blade-like edge of scutellar rim complete throughout (Fig. 61), rim without apical incission. Interpunctal spaces of mesoscutum and scutellum unusually flattened and polished. Middle of pronotal disc with three transverse, almost regular rows of large punctures. Head black, upper front and vertex golden-purple, thoracic dorsum bluish with brassy squash, abdomen gold-green. L.: 3.5 mm. — S. America
Taltonos paraguayensis (GIRAULT, 1911) comb. n.

32 (31) Upturned blade-like edge of scutellar rim present only on the sides, evanescent apically; the rim with weak but conspicuous apical incission. Interpunctal spaces of mesoscutum and scutellum unusually sharp and acute, cross-sulcate. Middle of pronotal disc with two transverse, quite regular rows of large punctures. Black, with gold-green squash; upper front brassy, interspaces of thoracic dorsum bronzy; abdomen black, with greenish lustre. L.: 2.0 mm. — N. America
Taltonos carolinensis (SMULYAN, 1936) comb. n.

33 (30) Scrobal carina developed ventrally well below level of antennal toruli, and continued in a tiny crest curved invardly, traceable up to basal third of clypeus (cf. Fig. 65).

34 (35) Ventral aspect of ♀ scape subapically with a dense patch of minute punctures (Fig. 58). Upper front with low wrinkles, far separated from lateral ocellus. Thoracic dorsum dark pubescent. Entirely green-bluish, upper front brassy (Fig. 57). L.: 5.0 mm. — S. America **Taltonos jolaus** sp. n.



Figs 23—25. *Aperilampus discolor* (Eucharitidae, from Port Natal, South Africa): 23 = ♀ body, 24 = ♀ head, 25 = ♂ antenna. Figs 26—28. *Durgadas pappi:* 26 = ♂ head in facial view, 27 = ♂ head in lateral view, 28 = ♀ body. Fig 29. *Goyurfis subcarinatus* ♀: front. Fig 30. *G. crawfordi* ♀: front. Fig 31. *G. ocellatus* ♂: scape. Fig 32. *Afroperilampus tassoni* ♂: sculpture of abdomen. Fig. 33 *A. delbotor* ♀: scapulae. Fig 34. *G. carinifrons* ♂: detail of head and pronotal disc. Fig 35. *Nilgator mirabeaui* ♂: scutellum, in lateral view

35 (34) Ventral aspect of ♀ scape entirely polished, dense patch of minute punctures occurring only in males. Upper front with moderately sharp to very sharp wrinkles; many of them closely approximating, some of them actually touching the lateral ocellus. Thoracic dorsum pale pubescent.

36 (37) In ♂ middle of pronotal disc with three transverse, regular rows of mostly pentagonal, large punctures. Sensorial area 0.4× scape length. Occiput inflated, bulging, in dorsal view of head situated on the same level with outer contour of eye, and staying parallel on a considerable distance beyond eye. Head and sides of thorax gold-green to bluish; thoracic dorsum mainly black, with dark blue longitudinal stripe mesad on mesoscutum, scutellum and abdomen. In ♀ middle of pronotal disc deeply emarginate behind, and with only two rows of large punctures. Inner half of scapulae and posterior upper edge of hind tibia entirely metallic. Body wholly steel-bluish, with indigo squash on thoracic dorsum and abdomen (Figs 18, 37, 47). L.: 3.8—5.5 mm. — N. America (= *cyaneus* BRULLÉ, 1846 nec FABRICIUS, 1798)
Taltonos sirsiris nom. n.

37 (36) Middle of pronotal disc in both sexes weakly emarginate behind, with two rows of transverse, rather regular, mostly quadrate, large punctures (Fig. 39). In ♂ sensorial area scarcely 0.2—0.3× scape length (Fig. 17). Occiput strongly converging, and in dorsal view of head much narrower than bulging eyes. Entirely gold-green, with brassy lustre, including sides of mesoscutum and scutellum, except vertex and inner half of scapulae black in both sexes, and hind tibia with a broad apical yellow ring (Figs 10, 19—21, 38). L.: 3.8—5.5 mm. — N. America
Taltonos hyalinus (SAY, 1828) comb. n.

38 (7) Lower half of outer eye orbit not margined by any crest (Fig. 27). Malar space longitudinally divided by a narrow, deep sulcus (♀), or only two carinae (♂) but also by two different kinds of sculpture: obliquely wrinkled genae and subrugose to vertically carinulate side of face. Scrobal carina of head of position fronto-scrobal, i.e. parallel, not approximating inner eye orbit, save its apical tiny crest (Fig. 26). Predominantly black species, at most with limited metallic lustre (genus: *Durgadas* gen. n.). Mesoscutum transversally crested, except its extreme posterior stripe (Fig. 28). Lateral pronotal panel adjacent to prepectus with two rows of large punctures. Sensorial area of ♂ 0.3× scape length. Black, front of ♂ contrastingly brassy. L.: 3.7—4.3 mm. — S. America **Durgadas pappi** sp. n.

39 (6) Lateral carina of scutellum meeting axilla only on its posterior margin; axilla entire, rather long (genus: *Balintos* gen. n.). Malar space divided longitudinally by an ill-defined suture, delimited behind by the obliquely wrinkled genae and before by the densely papillate side of face. Anterior pronotal margin bisinuate sublaterally, i.e. deeply impressed both opposite to notaulix and pronotal spiracle, the space between them in form of acute, triangular tooth. Scrobal carina of position fronto-orbital, ventrally diverging and very closely approximating inner eye orbit. Upper front on both sides of scrobal carina covered with vertical carinules (Fig. 36). ♂ unknown. Inner half of scapulae with dull, papillate microreticulation. Entirely back, funicle and clava pale ferruginous. L.: 2.2 mm. — W. Indies
Balintos parvus (HOWARD, 1896) comb. n.

40 (5) Posterior border of pronotal disc sulcate and bicarinulate only on its extreme quarter, opposite to scapulae; in its median half, between notaulices, the sulcus evanescent and margin of the disc tiny, blade-like (Fig. 40), i.e. the rim vanished or invaginated, not visible, against upturned and exteriorized in the above treated genera (genus: *Goyurfis* gen. n.). Malar space always divided longitudinally between lower eye corner and mandibular condyle by a suture, delimited on the sides by different kinds of sculpture. Scrobal carina situated fronto-orbital, ventrally diverging and very closely approximating inner orbits. Sensorial area of ♂ 0.3—0.9× scape length (cf. Figs 12, 17). Predominantly black species, entirely devoid of metallic lustre, except appendages.

41 (48) Inner half of scapulae brillant, either polished and shining, and shallowly punctate or impunctate; or else, delicately alutaceous here and there. Face between inner orbit and clypeal disc always with irregular rugulae, wrinkles or dimpled punctures (species-group: *mexicanus*).

42 (43) Middle of pronotal disc with four transverse rows of regular, polygonal punctures (Fig. 40). Ocello-ocular line always less (♀: 0.9×, ♂: 0.4×) than largest diameter of lateral ocellus. Funicle yellowish. Sensorial area of ♂ occupies nearly entire scape except a small basal portion as wide as long. L.: 3.0—3.6 mm. — N. America
Goyurfis mexicanus (CAMERON, 1897) comb. n.

43 (42) Middle of pronotal disc at most with three transverse rows of large punctures or the disc covered with transversally ovoidal punctures, not in rows, randomly disposed (Fig. 34). Ocello-ocular line equal to, or greater than, largest diameter of lateral ocellus. Funicle dark or at most narrowly ferruginous ventrally.

44 (45) Upper front between scrobal carina and inner eye orbit densely covered with small, individualy convex papillae, the overall aspect dull without shine (Fig. 29). Posterior half of scapulae with sharp longitudinal carina, separating inner polished area from outer umbilicately punctate sector. Sensorial area of ♂ 0.7× scape length. L.: 2.5 mm. — N. and S. America

Goyurfis subcarinatus (CRAWFORD, 1914) com.

45 (44) Upper front between scrobal carina and inner eye orbit with extremely shallow. alutaceous sculpture, set off only in oblique light, and appear to be polished and shining (cf. Fig. 30). Scapulae without longitudinal carina, separation of inner and outer areas smooth.

46 (47) Pronotal disc especially sublaterally, with unusual transversally ovoidal and widely spaced punctures, having numerous interspaces nearly to actually as wide as diameter of a puncture (Fig. 34). Face lateral to clypeal disc with weak sculpture, solely consisting of piliferous, dimpled punctures. Disc of mesoscutum anteriorly with some coarse transverse rugae between the punctures, i.e. not constituted from the edge of punctures but isolated. Inner half of scapulae polished and shining, with rare shallow punctures. Sensorial area of ♂ 0.4× scape length. Head and thorax with weak, diffuse, oily-bluish metallic lustre. L.: 2.3—3.0 mm. — N. and S. America **Goyurfis carinifrons** (CRAWFORD, 1914) comb. n.

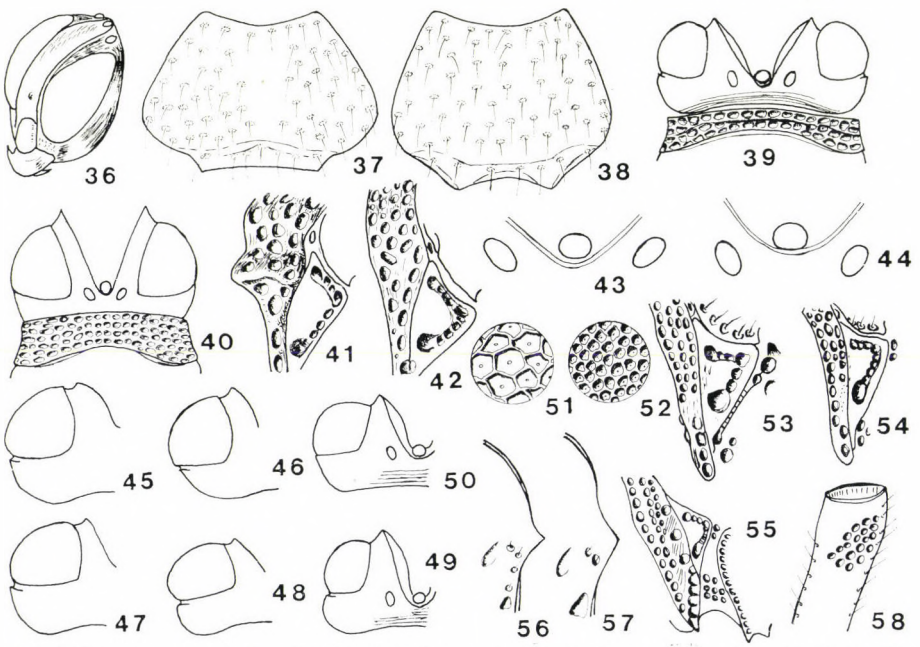


Fig 36. *Balintos parvus* ♀: head. Fig 37. *Taltonos sirsiris* ♀: clypeus. Figs 38—39. *T. hyalinus* ♀: 38 = clypeus, 39 = head and pronotum. Fig 40. *Goyurfis mexicanus* ♀: head and pronotum. Fig 41. *Taltanos americanus* ♀: lateral pronotal margin. Fig 42. *T. reticulatus* ♀: lateral pronotal margin. Fig 43. *T. americanus* ♀: ocelli. Fig 44. *T. tutubas* ♀: ocelli. Fig 45. *T. reticulatus* ♀: left side of head. Fig 46. *T. americanus* ♀: left side of head. Fig 47. *T. sirsiris* ♂: left side of head. Fig 48. *T. xirgus* ♂: left side of head. Fig 49. *Afroperilampus horocos* ♂: left side of head. Figs 50—51. *A. delbotor* ♀: 50 = left side of head, 51 = detail of mesoscutal punctation. Fig 52. *A. nesiotes* ♀: detail of mesoscutal punctation. Fig 53. *V. igniceps* ♀: prepectus. Fig 54. *Vaktaris ilvauber* ♀: prepectus. Fig 55. *Nilgator mirabeaui* ♀: prepectus. Fig 56. *Taltonos azureus* ♀: pronotal spine in facial view. Figs 57—58. *T. jolaus* ♀: 57 = pronotal spine in facial view, 58 = apex of scape, ventral aspect

47 (46) Pronotal disc with closely compact and regular rows of pentagonal punctures, interpunctal spaces narrowly crest-like. Face lateral to clypeal disc with dull alutaceous sculpture. Disc of mesoscutum without rugae, interspaces narrow, crest-like. Inner half of scapulae alutaceous here and there. Sensorial area of ♂ 0.6× scape length. Entirely black, except scape and femora bluish to violaceous. L.: 3.0 mm. — N. America (= *antennatus* CAMERON, 1897 nec WALKER, 1839)
Goyurfis dobnos nom. n.

48 (41) Inner half of scapulae dull, shagreened. Face between inner orbit and clypeal disc always with individually convex papillae exclusively and uniformly covered, except some intermixed setiferous punctures (species-group: *platigaster*).

49 (50) Posterior half of scapulae with sharp longitudinal carina, separating inner, shallowly engraved area from outer, deeply sculptured sector. In facial view of head. upper margin of median ocellus situated below the level of lateral ocelli (Fig. 30). Distance between lateral ocelli equal to ocello-ocular line. L.: 2.5—2.8 mm. — N. and S. America **Goyurfis crawfordi** (SMULYAN, 1936) comb. n.

50 (49) Scapulae without longitudinal carina, separation of inner and outer areas smooth. In facial view of head, upper margin of median ocellus situated between lateral ocelli. Distance between lateral ocelli twice the ocello-ocular line.

51 (52) Apical margin of clypeus perfectly straight. In ♂, sensorial area 0.8× scape length; scape conspicuously angular on inner side at apical one-fourth, with a longitudinal sulcus in middle, and the base subacutely protruding (Fig. 66). In ♀ (very difficult to separate it from the next species), ocelli relatively large, distance between lateral ocelli 2.4× the largest diameter of one of them. L.: 2.0—2.5 mm. — N. America
Goyurfis platigaster (SAY, 1836) comb. n.

52 (51) Apical margin of clypeus shallowly emarginate, concave. In ♂, sensorial area 0.6× scape length; scape simple (Fig. 31). In ♀, ocelli relatively small, distance between lateral ocelli 3.1× the largest diameter of one of them. L.: 2.0—3.7 mm. — N. and S. America **Goyurfis ocellatus** (SMULYAN, 1936) comb. n.

53 (4) Axillulae broadly triangular in shape, i.e. lateral carina of scutellum transect or meeting axilla on its upper third, and running about perpendicularly to ventral margin of scutellum (Fig. 35). Malar space always with well developed sulcus between lower corner of eye and mandibular condyle. Sometimes black but prevalently fully metallic coloured species.

54 (61) Coarse carinules of upper front primitively retained and very often developed in parallel costulae contiguous on the face (cf. Figs 67, 70). Posterior margin of pronotal disc simple, blade-like. Inner half of scapulae strongly sculptured, dull. Third tergite of abdomen conspicuously pin-punctate (Figs 73—75). Fully metallic species with at most limited areas of black colouration.

55 (56) Scrobal carina normally developed, sharp and acute above, entirely surrounding from behind the median ocellus; and of position fronto-orbital, diverging ventrad, closely approximating inner orbits and terminating a little below of antennal toruli. Coarse carinules of upper front terminating also on inner orbit. Middle of scutellar disc with an acute tubercle (Fig. 35) (genus: *Nilgator* gen. n.). Surface of axillula polished and shining. Front unusually narrow. Sensorial area of ♂ 0.6× scape length. Prepectal triangle not margined anteriorly. Entirely green to bluish. Third tergite, except apically, rather densely pin-punctate (Fig. 75). L.: 3.5—6.0 mm. — Australia and Papua New Guinea
Nilgator mirabeaui (GIRAULT, 1930) comb. n.

56 (55) Scrobal carina cut off above, i.e. meeting anterior margin to anterior one third of median ocellus, not surrounding it from behind; and of position fronto-scrobal, parallel ventrad and limited to median area of face. Carinules of upper front developed in parallel costulae, very often contiguous on front, not terminating at inner orbit (Figs 67, 70). Middle of scutellar disc without tubercle. Surface of axillula rugose. Front of normal width.

57 (58) Prepectal triangle of extremely reduced size (Fig. 68), occupies about one third of distance between tegula and front coxa; at most carinulately bordered anteriorly, without vertical row of punctures. Malar sulcus obscured by coarse carinules. Costulae of fronto-vertex not quite regular, abundantly interspersed with large punctures (Fig. 67), and not contiguous ventrally up to clypeal disc, shortened. Apex of scutellum almost vertical, not nearly produced over the abdomen (genus: *Yertatop* gen. n.). Scrobal cavity polished and shining. Posterior half of third abdominal tergite with rather minute pin-punctures, disposed to form small, regular circles, inner shining diameter of which equal with thrice a puncture (Fig. 101).

Head and thorax bronzy-violaceous, abdomen gold-green. L.: 2.5—3.0 mm. — Australia **Yertatop emersoni** (GIRAULT, 1930) comb. n.

58 (57) Prepectal triangle of normal size, occupies more than one half of the distance between tegula and front coxa; with a vertical row of punctures anteriorly. Malar sulcus sharply defined. Costulae of fronto-vertex acute, parallel, and contiguous from the ocellar triangle up to clypeal disc. Apex of scutellum conspicuously produced over the abdomen. Scrobal cavity with dull coriaceous sculpture or punctate, not shining (genus: *Tondolos* gen. n.).

59 (60) Female[2] with scrobal carina much stronger and higher than other carinules of front, well distinct even in lateral view of head. Scrobal depression narrower, the minimum distance between scrobal carinules before median ocellus distinctly less than its own transverse diameter. Bottom of scrobal cavity more shining, less punctate, but with numerous irregular, arcuate carinules which originate from around of antennal toruli. Front and vertex gold-green. Male with sensorial area a little more than half length of scape. Clypeus roughly transversally costulate. Third tergite opaque, pin-punctures rather dense both medially and on the sides (Fig. 73). Front and vertex bluish-green. Thoracic dorsum in both sexes dark violaceous to blackish. Ventral stripe of hind femur violaceous to indigo. L.: 4.0—4.5 mm. — Australia **Tondolos cairnsensis** (GIRAULT, 1913) comb. n.

60 (59) Female[2] with scrobal carina identically weak to other carinules of the front. Scrobal depression broader, the minimum distance between scrobal carinules before median ocellus, in dorsal view of head, about 1.5× its own transverse diameter. Bottom of scrobal cavity densely punctate, not shining, with no trace of carinules. Front and vertex purple-cupreous. Male with sensorial area about 0.2× scape length. Clypeus almost shining and punctate. Third tergite more shining and loosely punctate in mesal half, especially anteriorly, and densely on side quarter (Fig. 74). Front and vertex greenish-brassy. Thoracic dorsum in both sexes bronzy- to purple-violaceous, with bottom of punctures light bluish to greenish. Ventral stripe of hind femur brown to pale castaneous. L.: 2.5—4.25 mm. — Australia **Tondolos tasmanicus** (CAMERON, 1911) comb. n.

61 (54) Coarse carinules of upper front entirely vanished; surface practically smooth, polished and shining, at most covered with sparse, rather shallow setiferous punctures. Scrobal carina always of position fronto-orbital, diverging ventrad and closely approximating inner orbit of eye, dorsally surrounding median ocellus from behind (Fig. 125). Prepectal triangle large, occupies more than half distance between tegula and front coxa; its anterior margin not bordered by vertical row of large punctures. Sensorial area of ♂ 0.2—0.4× scape length. Apex of scutellum well produced over the abdomen. Surface of axillula smooth.

62 (65) Lateral pronotal panel adjacent to prepectus with only one row of unusually large, lenticular punctures (Fig. 106). Scutellum rather broadly sessile, its anterior margin articulating to mesoscutum (i.e. through scuto-scutellar groove), conspicuously larger than width of dorsal triangle of axillae.

63 (64) Posterior border of pronotal disc sulcate and bicarinulate on its entire course, from one spiracle to other (genus: *Tiboras* gen. n.). Middle of pronotal disc wide, with about four transverse rows of relatively small punctures, and where only three occur in a row, there an impunctate space situated beyond it, which is as wide as a row of punctures; without crest between the rows. Adorbital sulcus of outer orbit of eye rather blunt and widened. Apical margin of clypeus concave; clypeal disc and face without any punctures. Third tergite of abdomen, except apical one-fifth, with fine, regular, moderately deep engraved alutaceous sculpture (Fig. 107). ♂ not seen. Entirely black (Fig. 106). L.: 4.6 mm. — S. Africa **Tiboras maurus** (WALKER, 1852) comb. n.

64 (63) Posterior border of pronotal disc blade-like throughout (genus: *Fulaytar* gen. n.). Middle of pronotal disc narrow, with only two transverse rows of large punctures, and a sharp crest between the rows. Adorbital sulcus of outer orbit extremely narrow and rather acutely margined by a tiny crest, traceable from malar space up to the vertex and gradually converging to eye margin dorsad. Apical margin of clypeus convex; clypeal disc and face sparsely punctate. Third tergite of abdomen

[2] Because BOUČEK (1988) assumes that these two species may eventually be proved to be identical, judging after the slight differences given in the key of RIEK (1966), their separation here is more detailed than needed.

except apical one-third, covered with minute, fairly dense, lanceolate punctures (Fig. 100). ♂ unknown. Head, pronotum and scapulae olivaceous-green; inner half of scapulae metallic, brassy behind; bottom of punctures on mesoscutum and scutellum black, interpunctal spaces violaceous; abdomen black; funicle and clava ferruginous. L.: 3.5 mm. — SE. Asia

Fulaytar singaporensis (ROHWER, 1922) comb. n.

65 (62) Lateral pronotal panel adjacent to prepectus with two rows of moderately large punctures opposite to prepectal triangle, often with one row and a foveolate groove below it. Scutellum narrowly articulating to mesoscutum (Fig. 87), conspicuously less than dorsal triangle of axillae. Posterior border of pronotal disc blade-like throughout. Adorbital sulcus of outer eye orbit rather blunt and widened, edgeless (genus: *Afroperilampus* RISBEC, 1956).

66 (67) Apical margin of clypeus concave. Mesoscutum and scutellum covered with flat-bottomed punctures, interpunctal spaces linear, one-sixth or less as wide as the punctures. Forewing membrane with unusually short and sparse pubescence, setulae shorter than distance between them. ♂ unknown. Entirely black, except posterior row of punctures of pronotal disc dark green; femora and tibiae with slight bluish lustre. L.: 3.5—3.8 mm. — E. Africa **Afroperilampus hurap** sp. n.

67 (66) Apical margin of clypeus straight or convex. Mesoscutum and scutellum with lenticular or flat-bottomed punctures. Forewing membrane densely pubescent, setulae usually much longer than the distance between them.

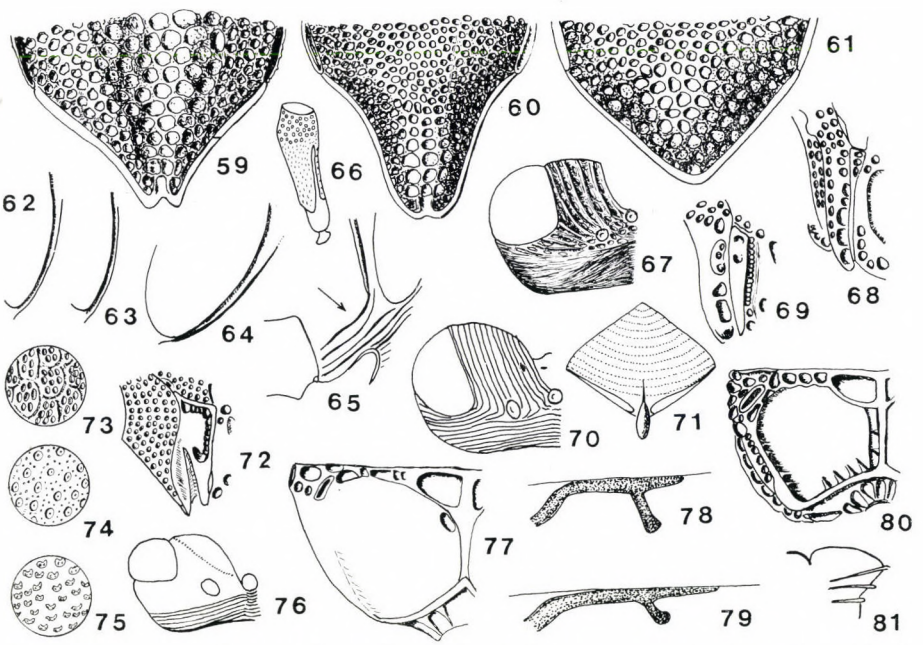


Fig 59. *Taltonos azureus* ♀: apex of scutellum. Fig 60. *T. xirgus* ♂: apex of scutellum. Fig 61. *T. paraguayensis* ♀: apex of scutellum. Fig 62. *T. reticulatus* ♀: adorbital sulcus. Fig 63. *T. laeviceps* ♀: adorbital sulcus. Figs 64—65. *T. albitarsis* ♀: 64 = adorbital sulcus, 65 = ♂ face with thiny crest of scrobal carina. Fig 66. *Goyurfis platigaster* ♂: scape. Figs 67—68. *Yartatop emersoni* ♀: 67 = left side of head, 68 = prepectus. Fig 69. *Durgadas granulosus* ♀: prepectus. Fig 70. *Taltonos tasmanicus* ♀: left side of head. Fig 71. *Itonayis nigellus* ♀: prosternum. Fig 72. *Ecalibur robertsoni* ♂: prepectus. Fig 73. *Tondolos cairnsensis* ♂: microsculpture of third tergite. Fig 74. *T. tasmanicus* ♂: microsculpture of third tergite. Fig 75. *Nilgator mirabeaui* ♂: microsculpture of third tergite. Figs 76—78. *Lufarfar rainerius* ♀: 76 = left side of head, 77 = left half of propodeum, 78 = forewing marginalis. Figs 79—80. *Fifirtiz glabrifrons* ♀: 79 = forewing marginalis, 80 = left half of propodeum. Fig 81. *Naspoyar minutus* ♀: contour of scutellum in lateral view

68 (69) Apical margin of clypeus arcuately convex. Inner half of scapulae black, although framed outwardly with gold-green; surface polished and shining, covered with distant, shallow punctures, visible only in oblique light. Mesoscutum and scutellum covered with shallowly lenticular, umbilicate punctures (Fig. 52). Entirely black; upper front, vertex, pronotum and scapulae with weak gold-green lustre; temples, pleural side of thorax and femora slightly bluish. (Fig. 84). L.: 5.5 mm. — SE. Asia
Afroperilampus nesiotes (CRAWFORD, 1911) comb. n.

69 (68) Apical margin of clypeus perfectly straight. Inner half of scapulae either entirely metallic or else, if black, then alutaceous (Fig. 33) or cross-sulcate, not wholly polished.

70 (75) Base of mandible broadly metallic or brillant dark brown with indefinite violaceous shine, but never pale and concolorous with the apex. Occiput and vertex of male with dark-brown to deep-black hairs; and, third tergite of abdomen almost entirely dull, sculptured, out of the usual setiferous punctures (Fig. 85). In female the vertex pale pubescent, abdomen polished but scapulae black. Mesoscutum and scutellum in both sexes covered with relatively small, uniform, lenticular to modarately flat-bottomed punctures.

71 (72) Anterior two-third of abdominal tergite of ♂ relatively shining, rather delicately cross-lineate, alutaceous (Fig. 85), of ♀ polished. Head in dorsal view, have the occiput less wide than eye, less bulging; side of head bisinuate: eye protuberant, narrowed at junction with occiput, which again protuberant (Fig. 49). Entirely black; with vague bluish iridescence on pleural region of ♀; in ♂ pronotum, mesoscutum and outer half of scapulae with weak golden casting on interpunctal spaces. L.: 3.5—4.5 mm. — E. Africa
Afroperilampus horocos sp. n.

72 (71) Anterior two-thirds or half of third abdominal tergite of ♂ opaque, dull, rather densely pin-punctate at least on the sides (Fig. 32).

73 (74) Head bulky, in dorsal view occiput bulging and diverging (Fig. 149); head distinctly wider behind eyes than at level of them. Foremost crest of occipital declivity separated from median ocellus by a distance about equal to its own diameter. Upper front rather densely, inner declivity of scrobal cavity and face sparsely, covered with numerous shallow punctures. Inner half of scapulae polished but covered with scattered, both minute and shallow large punctures. Mesoscutum and scutellum with small punctures, ovoidal in outline and flat-bottomed, interspaces low. Third tergite (Fig. 32) pin-punctate anteriorly, inclusive on its mid-line. Head and pronotum blue to greenish; thoracic dorsum otherwise black, only inner half of scapulae gold-green. Abdomen bluish to violaceous. ♀ not seen. L.: 3.3—3.8 mm. — Australia
Afroperilampus tassoni (GIRAULT, 1922) comb. n.

74 (73) Head thickset, transverse (Fig. 125), in dorsal view occiput a little parallel behind eyes then converge; head distinctly narrower behind eyes than at level of them. Foremost crest of occipital declivity actually touching median ocellus. Upper front, scrobal cavity and face polished and shining, practically punctureless. Inner half of scapulae obliquely sulcate. Mesoscutum and scutellum covered with polygonal punctures, with lenticular bottom, interspaces acute. Third tergite pin-punctate anteriorly on the sides, and smooth or indistinctly alutaceous medially. Entirely black, except pronotum and outer half of scapulae tinged with bronzy, and a median stripe of mesoscutum with steel-bluish. ♀ not known. L.: 3.2 mm. — N. Africa
Afroperilampus liliae sp. n.

75 (70) Base of mandible yellow to testaceous, concolorous with the apex, and at most with vague, light metallic shine. Occiput and vertex clothed with white hairs. Third tergite of abdomen entirely polished and shining, save the usual setiferous punctures on the sides (Fig. 86). Scapulae in both sexes entirely metallic. Mesoscutum and scutellum covered with relatively large, flat-bottomed punctures. Head, in dorsal view, have the occiput narrower than eye, uniformly and loosely convergent; eye and occiput forming a contiguous curve (Figs 50, 87).

76 (77) In ♀ (♂ not seen) scrobal carina rather tiny but acute, traceable up to level of antennal toruli; from the level of upper-inner corner of eye, there is a second carina developed, of the same design as the scrobal one, and running closely parallel to it, but this being contiguous ventrally, after joining the inner adorbital sulcus, up to the malar sulcus. Posterior half of mesoscutum and mesal stripe of scutellum with unusaully large punctures, comparable with size of an ocellus; interpunctal spaces uneven, not quite one quarter as wide as the punctures (Fig. 87). Head and thoracic dorsum golden, with purple squash; abdomen bluish-green; femora and tibiae violaceous; funicle and clava yellowish. L.: 3.7 mm. — S. Europe to C. Asia
Afroperilampus eximius (MASI, 1932) comb. n.

77 (76) In both sexes, scrobal carina more protruding, simple, traceable almost to base of clypeus. Mesoscutum and scutellum with rather regular, flat-bottomed punctures, not greater than half-ocellar diameter, but interpunctal spaces less than one-sixth as wide as the punctures. Head, abdomen and femora bluish; thorax, including inner half of scapulae, greenish, with brassy lustre here and there. Funicle and clava yellowish in ♀, dark brown to black dorsally in ♂ (Figs 33, 50—51, 86). L.: 2.5—3.2 mm. — E. Africa **Afroperilampus delbotor** sp. n.

78 (1) Head not carinated; scrobal cavity not separated from fronto-vertex by a contiguous carina (Fig. 118); sometimes the transition sharp, even crest-like, but not laterally sulcate on the outer side to have an acute edge, i.e. to be a true carina (Figs 126—128) in other instances the crest almost carina-like, but this is limited to the upper front, and that remains of scrobal carina does not reach ventrad up to level of inner orbits, but may be prolonged there in a blunt ridge (Fig. 152). Prepectus either free, bordered or not anteriorly by a row of large punctures (Figs 90, 98, 155), or else, immovably sudate to lateral pronotal panel (Fig. 111). Axillula always triangular in shape, never finger-like. Malar space longitudinally sulcate, often the sulcus rather shallow or even indistinct, but the malar space never obscured by oblique costulae (Figs 98, 116, 130, 155). Mesoscutum always covered with umbilicate punctures never transversally crested. Occasionally, middle of mesoscutum (Figs 102—103), or of the scutellum (Fig. 99), may be provided with a prominent tubercle.[3]

79 (80) Disc of the scutellum subapically truncate, the truncation carinulate, so that the marginal rim of scutellum positioned dorsally, as a transverse carina (Fig. 98), and the subapical crest (that midway between dorsellum and apex of scutelum) substituting the vanished apex, forming an apparent apex, while the former an apparent frenal crest; so that, at first sight, arising as scutellum with frenum, as in Pteromalidae, for instance. Propodeum very obliquely declivous; long and narrow, arcuately convex; the distance between propodeal spiracle and median longitudinal carina of propodeum equal to the length of the carina (genus: *Itonayis* gen. n.). Upper margin of prepectus straight (Fig. 90); the prepectal triangle large, equilateral, occupying almost entire distance between tegula and front coxa (Fig. 98); all three sides uniformly bordered by a blunt crest and a row of large punctures. Face and upper front obliquely wrinkled. Propodeum rugosely reticulate. Head and thorax gold-green, thoracic dorsum with bronzy lustre. L.: 3.0—3.5 mm. — Europe to C. Asia **Itonayis micans** (DALMAN, 1820) comb. n.

80 (79) Disc of scutellum without frenal crest. Propodeal declivity vertical; short and wide, plane, the distance between propodeal spiracle and median carina 1.5—2.0× as long as the carina; surface of lateral discal areas at most moderately sculptate. Upper margin of prepectus from slightly to strongly concave; prepectal triangle narrower and shorter, very often prolonged in an acute lobe toward the pro-mesonotal spiracle.

81 (88) Middle of mesoscutum with a distinct smooth tubercle, hind side of which vertical (Figs 102—103) (genus: *Vaktaris* gen. n.). Sensorial area of ♂ 0.4× scape length.

82 (85) Forewing with complete marginal fringe and dorsal aspect of costal cell hairy. Outer face of hind tibia entirely pilose. Pronotal disc bronzy-green.

83 (84) Prepectal triangle short and broad (Fig. 53), its vertical row of punctures about 1.3× as long as the horizontal row. Head entirely fiery purple-red, bottom of the large punctures on thoracic dorsum light azure-blue, interpunctal spaces themselves cupreous. Inner half of scapulae black. Abdomen dark steel-blue. L.: 5.0 mm. — S. America **Vaktaris igniceps** (CAMERON, 1909) comb. n.

84 (83) Prepectal triangle elongated (Fig. 54), its vertical row of punctures about 2.0× as long as the horizontal row. Head, thorax and abdomen gold-green. A broad transverse stripe on thorax, which cover anterior half of mesoscutum and scapulae, including their inner half, purple- to cupreous (Fig. 157). L.: 3.0 mm. — C. America **Vaktaris ilvauber** sp. n.

85 (82) Forewing without marginal fringe and dorsal aspect of costal cell glabrous. Outer face of hind tibia with glabrous longitudinal stripe. Pronotal disc purple-red.

86 (87) Third tergite of abdomen highly polished and shining, except for the usual, small and isolated piliferous punctures on the sides. A broad longitudinal stripe on outer aspect of hind tibia glabrous. Disc of scutellum flattened dorsally (Fig. 102), with

[3] The following couplets, up to 110 (157) contain small, highly specialised genera, manifesting remarkable, outstanding features; they are treated here deliberately and not in their natural sequence, to avoid exuberant prolongation of the key.

transversally scamose rugosities. Head and pronotum golden purple, the remainder of thorax bluish. Abdomen gold-green. L.: 2.5—5.0 mm. — Europe and W. Asia **Vaktaris auratus** (PANZER, 1798) comb. n.

87 (86) Third tergite of abdomen densely pin-punctate (Fig. 108). Glabrous stripe on hind tibia limited to its basal half only. Disc of scutellum not flattened (Fig. 103), covered with rather regular umbilicated punctures. Head, pronotum, sides of mesoscutum, scapulae, prepectus and sides of second tergite golden-purple. Mesoscutum mesad and disc of scutellum violaceous. Abdomen gold-green dorsally. L.: 3.5—3.7 mm. — W. Asia **Vaktaris ganuz** sp. n.

88 (81) Middle of mesoscutum without any tubercle.

89 (90) Disc of scutellum with a distinct smooth tubercle (Fig. 99), hind side of which arcuately declivous, and punctate like rest of the disc. Antenna with anellus unusually long for the genus, almost as long as thick (Fig. 115). Vertex, in facial view of head, deeply concave (genus: *Bagdasar* gen. n.). Black, vertex golden, thoracic dorsum dark olive-green. Funicle honey-yellow, with last two segments of clava contrastingly black (Fig. 115). Legs honey-yellow, with no metallic lustre, except fore femur slightly violaceous. L.: 4.0 mm. — S. Africa **Bagdasar amnonius** sp. n.

90 (89) Disc of scutellum without any tubercle, anellus much wider than long, vertex convex.

91 (94) Lateral lobe of scapulae deeply emarginate anterad to tegula, producing and acute, backward directed a peg-like structure (Fig. 104); lateral margin of scapulae unusually depressed behind, not carinately margined, or if a weak carina somewhat traceable (formed by dull edge of large punctures), then it is low and incomplete (for the bottom of those punctures) (genus: *Zuglavas* gen. n.).

92 (93) In ♀ (♂ not seen) funicle not clavate, only very slightly widened apically, all segments 1—7 quadrate. Disc of scutellum convex, with zig-zag-shaped median, impunctate subcarina; punctures on the disc large, there are only about 9 punctures in

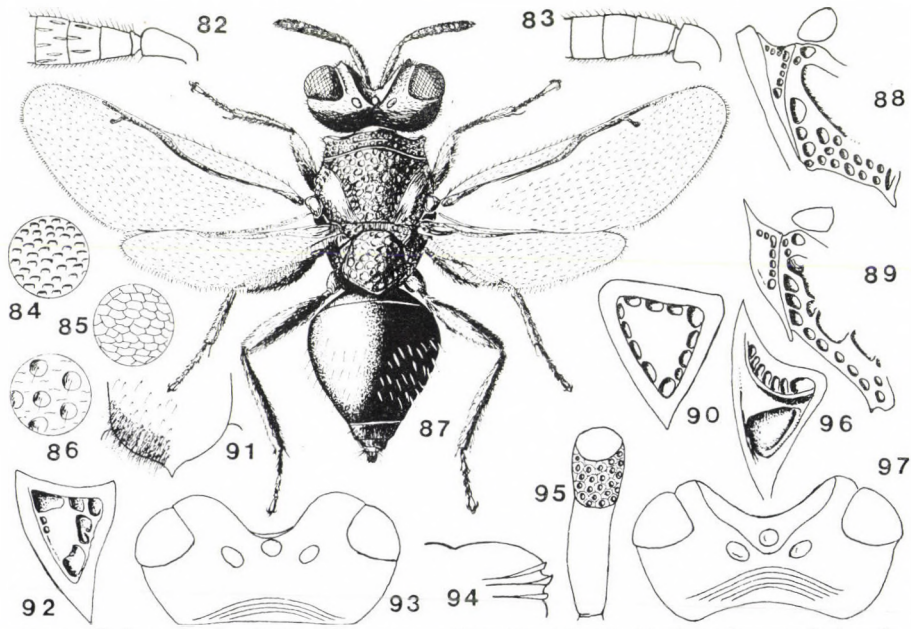


Fig 82. *Bukbakas pupulus* ♀: basal segments of funicle. Fig 83. *Pordoros batavus* ♀: basal segments of funicle. Fig 84. *Afroperilampus nesiotes* ♀: microsculpture of third tergite. Fig 85. *A. horocos* ♂: microsculpture of third tergite. Fig 86. *A. delbotor* ♂: microsculpture of third tergite. Fig 87. *A. eximius* ♀: habitus. Fig 88. *Mivarhis masculinus* ♀: mesosternal declivity. Fig 89. *M. laevifrons* ♀: mesosternal declivity. Fig 90. *Itonayis micans* ♀: prepectus. Fig 91. *Bukbakas casevitzi* ♂: clypeus. Fig 92. *Fifirtiz kim* ♂: prepectus. Figs 93—95. *Sicatang catilus* ♂: 93 = head, 94 = contour of scutellum in lateral view, 95 = scape. Fig 96. *Fifirtiz noemi* ♂: prepectus. Fig 97. *Perilampus violaceus* ♀: head

a transverse row. Entirely black, with rather diffuse grayish metallic tinge on facial aspect of head and on thoracic dorsum, including inner half of scapulae. Interpunctal spaces of posterior half of mesoscutum and scutellum microfoveolate, the bottom of these minute depressions (sub-greenish)-golden-brassy. Funicle and legs mostly pale yellow, with black shade within the funicular segments (Fig. 104). L.: 2.5 mm. — N. America **Zuglavas stygicus** (PROVANCHER, 1888) comb. n.

93 (92) In ♀ (♂ not seen) funicle conspicuously clavate, much thicker apically than proximally, only segments 1—4 quadrate, 5—7 distinctly transverse. Disc of scutellum with flat platform mesad, which is strongly enlarged behind, without median subcarina; punctures of the disc relatively small, there are about 12 punctures in a transverse row. Colour pattern as in *stygicus*. L.: 2.5 mm. — N. America **Zuglavas prothoracicus** (SMULYAN, 1936) comb. n.

94 (91) Lateral lobe of scapulae, anterad to tegula, blunt to oblong, but never acute; lateral margin of scapulae before and above tegula, straight to slightly arcuate, situated on the same plane throughout; the disc of the scapula separated from tegular groove by a sharp carina, which well arised above of the general surface.

95 (100) Spiracle between pro- and mesonotum indistinct, covered, the notal sclerites not emarginate there as usual. Upper border of prepectus meeting directly and perpendicularly the pronotum (genus: *Ihrambek* gen. n.). Malar space rather long, face broader than clypeus. Prepectus narrow, less than the adjacent pronotal panel, but extremely long; its vertical row of punctures three times as long as the horizontal row; anterior margin of prepectal triangle also bordered by a complete row of large punctures.[4] Sensorial area of ♂ 0.5× scape length.

96 (97) Ocello-ocular area plane, with no impression, i.e. no thiny furrow between lateral ocellus and closest eye margin; ocellar triangle and upper front before it without distinct sculpture, save to the minute, usual piliferous punctures. In ♀, angle formed between vertical and horizontal carina of malar cavity, including the mandibular condyle above, rather acute. Genae with large, conspicuously dimpled punctures. Radial knob of forewing without uncus. Black, vertex and thoracic dorsum brassy-green. L.: 3.0 mm. — N. America and W. Asia **Ihrambek anomocerus** (CRAWFORD, 1914) comb. n.

97 (96) Ocello-ocular line with impression connecting lateral ocellus to eye, ocellar triangle and upper front before it with numerous large, moderately dense, shallow punctures. In ♀, angle formed between vertical and horizontal carina of malar cavity obtuse, in ♂ acute. Genae aciculate, without distinct punctures.

98 (99) In ♀ upper front anterad of ocellar triangle with only shallow punctures. Head broader than high, 1.25× in ♀ and 1.16× in ♂. First segment of funicle in ♀ 1.3× as long as thick. Radial knob of forewing with sharply acute uncus. Black, thoracic dorsum with metallic green sheen. Vertex of ♀ violaceous, of ♂ black (Fig. 110). L.: 1.2—3.0 mm. — Europe **Ihrambek chrysonotus** (FÖRSTER, 1859) comb. n.

99 (98) In ♀. upper front anterad of ocelar triangle with numerous short but sharply acute wrinkles among the shallow punctures. Head in ♀ (♂ not seen), as broad as high. First segment of funicle quadrate. Radial knob of forewing rounded, without uncus. Entire head, thorax, and in less extent the abdomen dark greenish-olivaceous (Fig. 71). L.:. 2.3 mm. — C. Asia and ?Europe **Ihrambek nigellus** (NIKOLSKAYA, 1952) comb. n.

100 (95) Spiracle between pro- and mesonotum well distinct, exteriorized, the notal sclerites emarginate there; usually the prominent whitish tube of spiracle slightly overhung behind a shining carinular lobe of scapulae. Antero-upper corner of prepectus always produced in a shining, triangularly curved lobe toward the spiracle. Malar sulcus not longer than combined width of antennal toruli.

101 (190) Anterior margin of prepectal triangle separated well and entirely from the adjacent pronotal panel, by a distinct suture; sometimes the anterior margin of the triangle also incrassate, forming an inflated, blunt vertical crest; often the anterior margin paralleled by a vertical (complete or incomplete) row of punctures; when, however, neither crest nor punctures occur on the triangle and uncertain — then the lateral pronotal panel adjacent to triangle and have a complete row(s) of punctures just

[4] If spiracle not very distinct or uncertain, and cheeks also elongated in unusual manner, but prepectal triangle not bordered by anterior row of large punctures, and consolidated to lateral pronotal panel, and body also intensively metallic, see *Dekterek kaszabi* (BOUČEK), couplet 213 (212).

anterad to middle of triangle; but never an interspace between those punctures on lateral panel, connected through a shining belt to the centre of prepectal triangle; and never with large punctures situated halfway between lateral pronotal lobe and prepectal triangle. Mostly metallic coloured, rarely small and entirely black species. Length of malar sulcus variable.

102 (109) The horizontal pad before mid coxae unusually wide, comparable with bredth of front femur (Fig. 155). Hind coxa smooth; outer aspect of hind femur, on lower half, with a broad glabrous stripe from base to apex. Thoracic dorsum with rather irregular, dimpled punctures. Prepectal triangle large, three times as long as vertical shining lower brace of prepectus; with all three sides carinulately margined and punctate (genus: *Olarlar* gen. n.). Sensorial area of ♂ about 0.6 × scape length. Malar sulcus as long as front margin of malar cavity Anterior upper corner of mesepimeron with only one large subtegular pit.

103 (104) Vertex behind median ocellus devoid of any sculpture on a distance equal to diameter of an ocellus, polished and shining. Interpunctal spaces of mesoscutum comparable with size of punctures. Head gold-green, thorax and abdomen bluish-violaceous. (Fig. 126). L.: 4.0 mm. — S. Africa **Olarlar cocegus** sp. n.

104 (103) Vertex behind ovelli without noticeable shining area, space filled with rugosities and occipital carinules penetrates onto ocellar triangle. Interpunctal spaces of mesoscutum less than half diameter of punctures.

105 (106) In ♂ adorbital ridge of inner eye orbit polished and shining, with no trace of longitudinal costulae (Fig. 137). In ♀ funicle and clava reddish-ferruginous, first segment

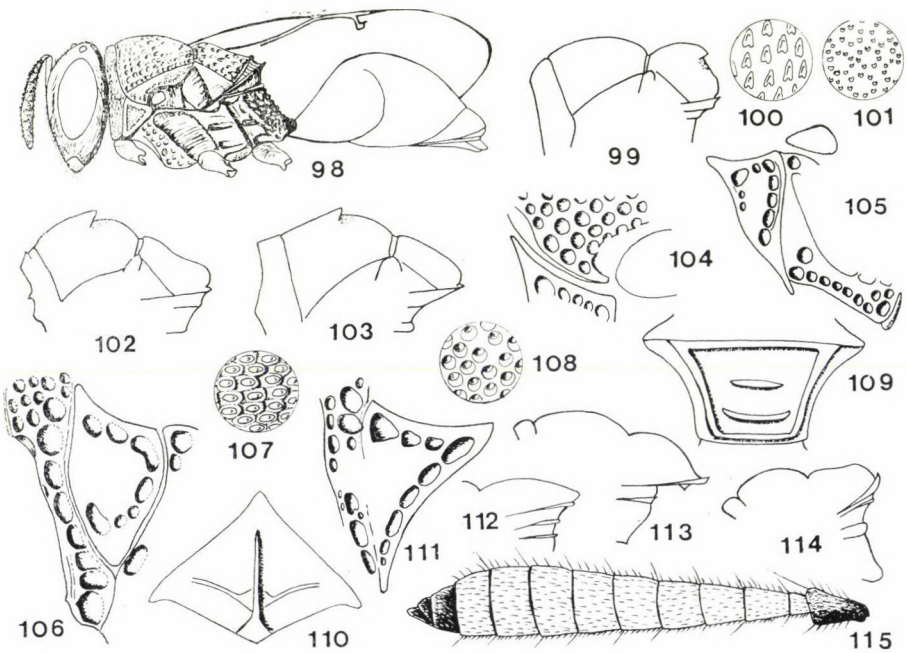


Fig 98. *Itonavis micans* ♀: body. Fig 99. *Bagdasar amnonius* ♀: contour of thoracic dorsum. Fig 100. *Fifirtiz singaporensis* ♀: microsculpture of third tergite. Fig 101. *Yertatop emersoni* ♀: microsculpture of third tergite. Fig 102. *Vaktaris auratus* ♀: contour of thoracic dorsum. Fig 103. *V. ganuz* ♀: contour of thoracic dorsum. Fig 104. *Zuglavas stygicus* ♀: lateral lobe of scapulae. Fig 105. *Burksilampus ruschkai* ♂: prepectus and anterior end of mesosternum. Figs 106—107. *Tiboras maurus* ♀: 106 = prepectus, 107 = microsculpture of third tergite. Fig 108. *Vaktaris ganuz* ♂: microsculpture of third tergite. Fig 109. *Burksilampus ruschkai* ♂: abdominal petiole. Fig 110. *Ihrambek chrysonotus* ♀: prosternum. Fig 111. *Pondoros tristis* ♀: prepectus. Fig 112. *Bukbakas aquilius* ♀: contour of scutellum in lateral view. Fig 113. *Fifirtiz turpiculus* ♂: contour of thoracic dorsum in lateral view. Fig 114. *F. noemi* ♂: contour of thoracic dorsum in lateral view. Fig 115. *Bagdasar amnonius* ♀: flagellum

of funicle 1.6× as long as thick, and seventh segment of funicle 1.6× as wide as first segment; median ocellus separated from lateral ones by a low, blunt and settled ridge (Fig. 164); venation of forewing yellowish. Head and abdomen, in both sexes, blue to blue-green, thorax green, green-brassy to bronzy (Fig. 155). L.: 2.5—3.5 mm. — S Europe to ?Caucasus **Olarlar aeneus** (ROSSI, 1790) comb. n.

106 (105) In ♂ adorbital ridge of inner eye orbit with a bunch of about 5—6 fine but cuttingly acute carinules (Fig. 138), reaching from ocello-ocular line below to level of antennal toruli or more, beyond the densely punctate area of front. In ♀ funicle and clava deep black, first segment of funicle 1.2× as long as thick, seventh segment 1.2× as wide as first one; median ocellus separated from lateral ones by an oblique, sharp and acute keel (Fig. 165); venation of forewing brownish.

107 (108) In ♂ lateral ocellus encircled inwardly by a regular row of 10 large, umbilicate punctures (Fig. 139). In ♀ adorbital ridge of inner eye orbit provided with some, about 4—5 delicate but acute costulae (cf. Fig. 138), extending along two-thirds of orbits, or less. Head black, sides of body bluish; vertex, thoracic dorsum and apex of abdomen golden-bronzy. L.: 3.7—4.0 mm. — S. Europe **Olarlar italicus** (FABRICIUS, 1793) comb. n.

108 (107) In ♂ inner frame of lateral ocellus polished, or with coarse rugulae, eventually with foveolae (not more than three), but with no trace of large row of umbilicate punctures (Fig. 140). In ♀ adorbital ridge of inner eye orbit with no trace of any costulae (cf. Fig. 137). Head black, with dark green to brassy or golden-purple vertex, abdomen black and green; thoracic dorsum brassy-green to bronzy or golden-purple. L.: 3.5—4.5 mm. — Eurasia **Olarlar splendidus** (DALMAN, 1822) comb. n.

109 (102) The horizontal pad before mid coxae narrow to rather narrow, keel-shaped; if broader and bicarinate, then at most as wide as front tibia (Fig. 116). Hind coxa very often with a longitudinal groove on the outer aspect. Lower outer half of hind femur wholly pilose or glabrous on a short distance at the base. Thoracic dorsum more densely and less deeply punctate, punctures with sharp contours (Figs 141—143). Prepectal triangle either without punctures along anterior margin (Fig. 116) or if these occur, then they are much smaller than those on other sides of triangle. Anterior upper corner of mesepimeron with two large subtegular pits; or occasionally only one, but then upper front entirely sculptureless.

110 (157) Upper front anterad of lateral ocellus always provided with irregularities, coarse rugulae, wrinkles or costulae of different extent (Fig. 129); although sometimes only the edge of relatively large punctures compressed and joined in forming a hard ridge. Face between malar sulcus and side of clypeal lobe dull, with wrinkles or rugulae, occasionally only in its extreme inner corner (Fig. 129). In some large females, however, the large punctures on upper front may be so extensively dispersed, that these not form discerneable wrinkles, then the uncertainty could be avoided with using of the following combination of characters (not generally valid ones, only hold for these large females!): median ocellus always separated from lateral ocelli by a sharp but short oblique carina (cf. Figs 152, 165) often only as long as an ocellus, but usually longer; hind femur, in lateral view, strongly narrowed from middle toward the base, but subparallel from middle toward the apex; so that at apical one third very much broader than at basal one third. Mostly entirely metallic species, with head near entirely metallic on front, vertex, genae and temples.

111 (134) Malar sulcus as long as front margin of malar cavity (Fig. 116). (genus: *Perilampus* LATREILLE, 1809).

112 (117) Antero-lateral pronotal margin with triangular lobe opposite to spiracle rather sharp and acute, spiniform. Ocelly situated in one line, i.e. median ocellus positioned more vertical, and its anterior margin not advanced before than the anterior margin of lateral ocelli. Mesoscutum and scutellum with flat-bottomed punctures, interpunctal spaces everywhere in form of narrow crest, merely cross-sulcate. Anterior margin of prepectal triangle smooth, without keel or row of punctures. Lateral pronotal panel adjacent to prepectus carinulately separated from pronotal declivity (species-group: *ruficornis*). Funicle of ♀ entirely testaceous. Sensorial area of ♂ 0.5× scape length.

113 (114) Inner half of scapulae entirely black, although framed on outer side by a golden-purple stripe. Apex of scutellum, in lateral view of thorax, regardless to the marginal rim, distinctly produced over the abdomen; with about one third of length of scutellar disc exceed the vertical level of dorsellum-nucha. Black; vertex and thoracic dorsum deep bronzy to cupreous; scrobal ridge brassy; hind femur dark olivaceous-green; hind tibia bluish, with violaceous squash. L.: 4.5—5.5 mm. — E. and SE. Asia **Perilampus inimicus** CRAWFORD, 1910

114 (113) Inner half of scapulae entirely metallic. In lateral view apex of scutellum, regardless of marginal rim, not produced over the abdomen, at most a little exceed the level of dorsellum, but not that of nucha (Fig. 116).

115 (116) Disc of scutellum loosely descend posteriorly and meeting its marginal rim directly (Fig. 116). Lower third of eye, in lateral view of head, situated on the same level with face in ♀; it is strongly bulging and situated much anterad than face in ♂. Abdomen entirely metallic, bluish to violaceous. Sides of scutellum, in dorsal view of thorax, remarkably arcuate and widened posterad. Head and thorax of ♂ bluish-green. Vertex of ♀ and thoracic dorsum brassy to brassy-green. Hind femur and tibia bluish, with violaceous lustre. L.: 4.2—4.6 mm. — Europe and Asia
Perilampus ruficornis (FABRICIUS, 1793)

116 (115) Disc of scutellum more horizontal and abruptly declivous apically, with a vertical edge about as high as diameter of an ocellus. Lower third of eye, in lateral view of head, situated beyond the level of face. Abdomen entirely black dorsally, with a weak metallic shine laterally. Sides of scutellum, in dorsal view of thorax, perfectly straight and parallel. Head bluish, thorax green, hind tibia light brown. L.: 3.5 mm. — E. Asia **Perilampus japonicus** ASHMEAD, 1904

117 (112) Antero-lateral pronotal margin with triangular lobe opposite to spiracle rather small, broadly rounded, blunt and inconspicuous. Ocelli situated in a flat triangle, i.e. median ocellus positioned more horizontal, and its anterior margin always well advanced forward the line connecting anterior margin of lateral ocelli. Mesoscutum and scutellum with lenticular punctures, interpunctal spaces everywhere broad and polished (Figs 141—142); in posterior half of mesoscutum very often much broader than in anterior half (except in *cyaneus* male less evidently, but it have the anterior margin of prepectal triangle sharply bordered both with keel and complete row of large punctures). Occasionally prepectal triangle with incomplete bordering ante-

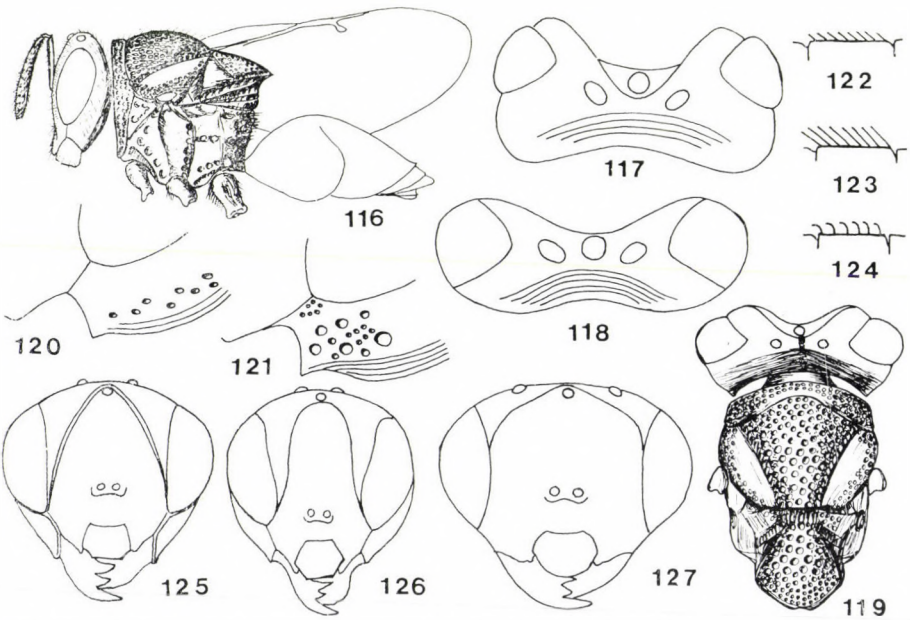


Fig 116. *Perilampus ruficornis* ♀: body. Fig 117. *P. prasinus* ♀: head in dorsal view. Fig 118. *Mivarhis umbo* ♀: head in dorsal view. Fig 119. *Lufarfar rainerius* ♀: head and thorax. Fig 120. *Fifirtiz neglectus* ♂: gena and malar sulcus. Fig 121. *Perilampus selectus* ♀: gena and malar sulcus. Fig 122. *Mivarhis inaequalis* ♂: pubescence of an intermediar flagellar segment. Fig 123. *M. laevifrons* ♂: pubescence of an intermediar flagellar segment. Fig 124. *M. nigriventris* ♂: pubescence of an intermediar flagellar segment. Fig 125. *Afroperilampus liliae* ♂: head in facial view. Fig 126. *Olarlar cocegus* ♀: head in facial view. Fig 127. *Fifirtiz noemi* ♂: head in facial view

riorly, then lateral pronotal panel not carinately separated from pronotal declivity (species-group: *violaceus*). Funicle of ♀ dorsally deep black, at most ventrally narrowly ferruginous. Sensorial area of ♂ at most 0.4×, or 0.6× scape length, but never 0.5×.

118 (127) Head and thoracic dorsum clothed with pitch-brown hairs (best seen on occipital declivity and inner half of scapulae); mandible, legs and lateral propodeum pale pubescent. Mostly dark bluish species, with weak greenish lustre on mesoscutum, or violaceous on head and thorax, but head with front and face always dark blue to black, but never gold-green. Sensorial area of ♂ at most 0.4× scape length.

119 (120) Scutellum in both sexes, viewed dorsally, subcircular in shape, at most as long as wide, or less (Fig. 141); its sides a weakly arcuate, but as wide anteriorly as posteriorly; the disc of scutellum rather strongly flattened dorsally, and almost situated in one plane, except a narrow stripe on the sides declivous; the disc usually with a longitudinal impression mesad, and with two rows of punctures at bottom of impression conspicuously smaller than sideward of them. Metoscutum also very flattened. Punctures and interpunctal spaces of mesoscutum and scutellum mostly regular in shape and arrangement; not extremely small, septate interspaces of randomly enlarged brillant ones occur; although both punctures and interspaces increase in size gradually posterad. Forewing membrane in both sexes with strongly fumose cloud under marginal vein. Body entirely dark blue to violaceous, with mesoscutum and scutellum very often green or brassy-green. L.: 3.5—4.5 mm. — Europe
Perilampus violaceus (FABRICIUS, 1804)

120 (119) Scutellum in both sexes, viewed dorsally, distinctly longer than wide (Fig. 142) (except in *cyaneus* ♀); its sides near straight and diverging posterad, it is a little narrower anteriorly than posteriorly; viewed laterally, disc of scutellum bulging, sometimes rather strongly; or dorsally evenly curved, not flat, or occasionally flat (in *cyaneus* ♀ only). Mesoscutum never flattened. Punctures and interpunctal spaces of mesoscutum and scutellum either rather regular in shape and arrangement, but then interspaces quite narrow, mere septa; or else they increase in size gradually posterad, and then interspaces randomly widened and brillant. Forewing membrane vitrous or fumose.

121 (124) Interpunctal spaces[5] of mesoscutum and scutellum, greater in ♀ than in ♂, everywhere wide, one third to about as wide as punctures themselves; highly polished and shining (Fig. 142). In ♀, first segment on funicle distinctly longer than thick.

122 (123) Occiput, in dorsal view of head, bulging and rather strongly developed; laterally extended almost to the same level as eye, posteriorly prolonged and apparently longer than eye. Sensorial area of ♂ well 0.4× scape length. First segment of funicle in ♀ 1.6× as long as wide and 6.5× as long as the anellus. Dark blue; with vertex, mesoscutum and scutellum gold-green, apical half of abdomen bluish-green (♀), or brassy (♂). Forewing membrane strongly fumose. L.: 3.5—4.0 mm. — Europe
Perilampus chlorinus FÖRSTER, 1859

123 (122) Occiput, in dorsal view of head, parallel sided, distinctly much narrower than level of eye, and apparently shorter than eye. Sensorial area of ♂ a little less than 0.3× scape length. First segment of funicle in ♀ 1.3× as long as wide and 4.0× as long as anellus. Entirely bluish-green, with weak golden on thoracic dorsum and abdomen. Forewing membrane weakly fumose (Fig. 142). L.: 3.0—4.0 mm. — Europe
Perilampus antennatus WALKER, 1833

124 (121) Interpunctal spaces of mesoscutum and scutellum of ♂ rather uniformly narrow, acutely keel-shaped throughout, mere vertical septa, one-quarter or less of diameter of punctures (Fig. 143); weakly shining or without shine. In ♀, however, interspaces much widened and polished, but first segment of funicle not longer than thick, quadrate, and only 2.6× longer than anellus. Sensorial area of ♂ 0.4× scape length.

125 (126) Forewing membrane perfectly hyaline, vitrous. In ♂ punctures of mesoscutum (and scutellum) pentagonal, as a whole large, flat-bottomed; interpunctal spaces without shine (Fig. 143); disc of pronotum without distinct crest between two rows of punctures; inner half of scapulae smooth. In ♀ disc of scutellum strongly flattened dorsally;[6] vertex with shallow depression of ocello-ocular line terminating laterally exact-

[5] Separation of the species *antennatus*, *chlorinus*, *cyaneus* and *nigricornis*, as encountered here, were burdened and stressed by the circumstance that only very ancient specimens were available, in fairly deficient condition.

[6] Do not be confused with ♀ of *P. violaceus*, which possess also strongly flattened scutellum, but whose wings are rather dark brown fumose.

ly at top of eye corner. Both sexes dark blue, here and there with indigo squash; with weak green on mesoscutum; apical half of abdomen blue (♀) or brassy (♂); hind femur with indigo lustre. L.: 3.7—3.9 mm. — Europe

Perilampus cyaneus (FABRICIUS, 1798)

126 (125) Forewing membrane slightly but conspicuously infuscated on a stripe along marginal vein. In ♂ punctures of mesoscutum hexagonal, as a whole small, distinctly smaller than those of scutellum, and are lenticular (those of scutellum flat-bottomed); interpunctal spaces slightly shining; disc of pronotum with sharp crest between the two rows of punctures; inner half of scapulae almost entirely covered with shallow punctures. In ♀ disc of scutellum evenly arcuate; vertex with shallow depression of ocello-ocular line terminating laterally much ventrad of eye top and being contiguous with adorbital sulcus. Entirely gold-green; front and face black, middle of mesoscutum brassy; hind femur bluish (♂) or violaceous (♀). L.: 3.3—3.8 mm. — E. Asia

Perilampus nigricornis WALKER, 1833

127 (118) Head and thoracic dorsum everywhere clothed with white, to light yellowish-white hairs. Mostly gold-green, or green to glittering bluish-green species, but head always light green or gold-green on front and face, never dark blue or mostly black. Sensorial area of ♂ 0.6× scape length.

128 (131) Carinae of malar cavity globally straight, curved on hind quarter only; positioned one against other under a right-angle; the joining point of them sharp, angular conspicuously cornered outwardly (Figs 144—145). The horizontal pad of mesosternum in front of mid coxae always blunt anteriorly, with no acute transverse crest,

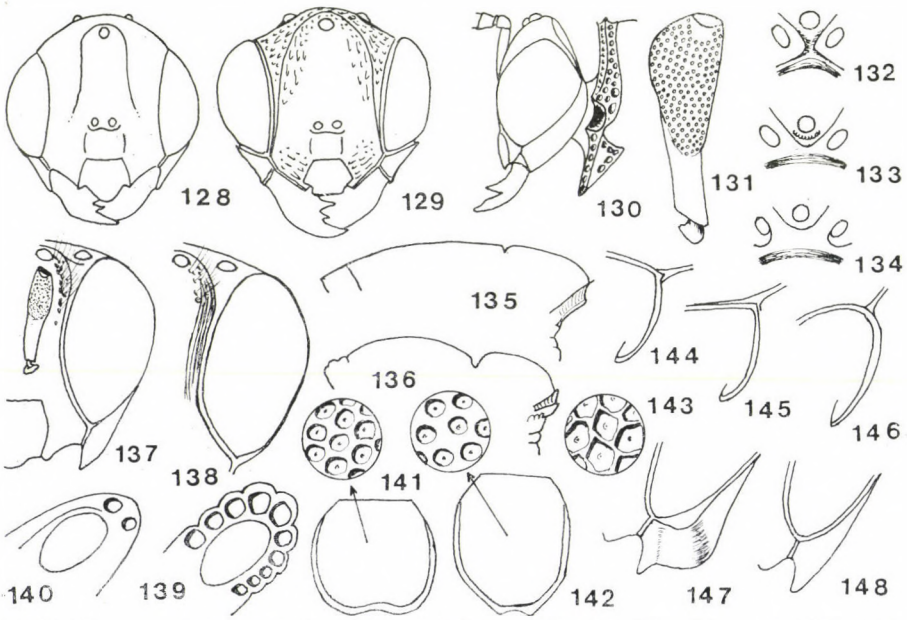


Fig 128. *Sicatang picpus* sp. n. ♀: head in facial view. Fig 129. *Mivarhis aureoviridis* ♂: head in facial view. Fig 130—131. *Vadramas tetar* ♂: 130 = head and pronotom in lateral view, 131 = scape. Fig 132. *V. polypori* ♂: ocellar triangle. Fig 133. *V. maceki* ♂: ocellar triangle. Fig 134. *V. cephalotes* ♂: ocellar triangle. Fig 135. *Naspoyar fulvicornis* ♂: contour of thoracic dorsum. Fig 136. *Bukbakas casevitzi* ♂: contour of thoracic dorsum. Fig 137. *Olarlar aeneus* ♂: left side of head in sublateral-facial view. Figs 138—139. *O. italicus* ♂: 138 = left side of head in sublateral-facial view, 139 — depression of lateral ocellus. Fig 140. *O. splendidus* ♂: depression of lateral ocellus. Fig 141. *Perilampus violaceus* ♀: shape and sculpture of scutellum. Fig 142. *P. antennatus* ♀: shape and sculpture of scutellum. Fig 143. *P. cyaneus* ♂: sculpture of scutellum. Fig 144. *P. prasinus* ♀: malar sulcus and carinae of malar cavity. Fig 145. *P. selectus* ♀: malar sulcus and carinae of malar cavity. Fig 146. *P. nitens* ♀: malar sulcus and carinae of malar cavity. Fig 147. *P. tristis* ♀: gena and malar space. Fig 148. *P. moczari* ♀: gena and malar space

as posteriorly. Tibial groove of mesepimeron, under tegula, extensively golden and entirely cross-sulcate. Interpunctal spaces of mesoscutum roughly of the same size throughout. Forewing membrane slightly fumose on a stripe along the marginal vein.

129 (130) Malar sulcus stand erecting to corner of malar cavity (Fig. 144). Sides of clypeal lobe straight, with its maximum width situated close to the lower corner. Median carina of prosternum developed only posteriorly, between the pits (cf. Fig. 71). Entirely gold-green (Fig. 117). L.: 3.7—5.0 mm. — E. Asia
Perilampus prasinus NIKOLSKAYA, 1952

130 (129) Malar sulcus directed ventrally subparallel with front margin of malar cavity (Fig. 145). Sides of clypeal lobe strongly arcuate, with its maximum width situated close to middle. Median carina of prosternum completely developed on the whole disc (cf. Fig. 110). Entirely gold-green (Fig. 121). L.: 3.6—4.0 mm. — C. and E. Asia
Perilampus selectus WALKER, 1874

131 (128) Carinae bordering malar cavity evenly arcuate, the branches positioned one against other under a conspicuously acute angle; the joining point smooth, not differentiated through angulation and not cornered outwardly (Fig. 146). The horizontal pad of mesosternum in front of mid coxae always sharp anteriorly, having a strong and acute transverse crest, as posteriorly. The tibial groove of mesepimeron, under tegula, not nearly golden and have moderately large shining areas above. Interpunctal spaces of mesoscutum conspicuously narrower anteriorly than posteriorly.

132 (133) Disc of axillula remarkably polished and shining, at most slightly surrounded by some short rugosities just at its anterior corner. Entirely bluish-green, with weak golden tint on vertex, pronotum, scutellum and scapulae. Forewing membrane with a rather large fuscous cloud in middle, (Fig. 146). L.: 4.5—4.7 mm. — Europe
Perilampus nitens WALKER, 1834

133 (132) Disc of axillula remarkably rugoso-reticulate, with some strong oblique wrinkles on posterior half, reaching from side to side (sharper in ♂, weaker in ♀). Colouration as above but with spots of very flagrant cupreous, fiery red lustre on vertex, pronotum, scapulae and scutellum in ♂; and on vertex and pronotum in ♀. Forewing membrane with a narrow fuscous stripe along the marginal vein. L.: 4.0—4.7 mm. — Europe
Perilampus cristatus FÖRSTER, 1859

134 (111) Malar sulcus half as long as front margin of malar cavity (Figs 153—154). (genus: *Mivarhis* gen. n.). Sensorial area of ♂ 0.7× scape length.

135 (136) Abdomen with relatively long and distinct (Fig. 109) petiole.[7] Prepectal triangle large, sharply bordered on all sides both by keel and row of large punctures (Fig. 105). Scape of ♂ of unusual shape, double twisted, with sensorial area micropunctate on outer side only and above (species-group: *ruschkai*). Head and thorax, including sides, near entirely gold-green with bluish squash. L.: 2.8 mm. — Europe
Burksilampus ruschkai (HELLÉN, 1924) comb. n.

136 (135) Abdomen with short, transverse petiole. Prepectal triangle narrow, scarcely bordered anteriorly (Figs 88—89). Scape of ♂ normal, sometimes inflated and expanded apically, but never twisted in the middle.

137 (144) Inner half of scapulae always entirely metallic; if a little dark somewhat translucent in the anterior corner, and the status uncertain (in ♂ of *aureoviridis* only), then blowed with golden, and appear to be strongly metallic in oblique light, and dark spotted in incident light. The outer orbit behind lower half of eye, only with weak adorbital sulcus, edge of which blunt and roundly faded outwardly. In ♂, lateral discal areas of propodeal declivity highly polished and shining, practically sculptureless. In ♀, median longitudinal carina of propodeum low, strongly confined to the median groove, so that in lateral view of declivity, the carina not visible from the side (species-group: *aureoviridis*).

138 (139) Declivity of mesosternum separated from mesepimeron by two complete and regular rows of large punctures (Fig. 88). Occipital declivity of ♂ with dark brown to black hairs. Upper front, in both sexes, entirely covered with sharp longitudinal carinules, reaching ventrally up to the level of antennal toruli. Scape of ♂ not conspicuously expanded apically, and face sideward of supraclypeal area only slightly impressed. Head of ♂ bluish, thoracic dorsum green-olivaceous. Head and thorax of ♀ green-brassy. L.: 2.5—3.0 mm. — Europe
Mivarhis masculinus (BOUČEK, 1956) comb. n.

[7] This species seems to belong to the genus *Burksilampus* BOUČEK, 1978, type of which was not examined and compared here for this task.

139 (138) Declivity of mesosternum separated from mesepimeron by only one row of large punctures (Fig. 89); the second row not indicated at all, or if partially, randomly developed (in ♀ *aureoviridis* solely), then broadly incomplete medially. Occipital declivity in both sexes with snow-white hairs.

140 (141) Genae broadly polished and shining beyond horizontal carina of malar cavity (Fig. 154), with no striolations reaching this carina at all on the disc, except narrowly on its extreme hind corner. Inner orbit of eye low, smoothly, evenly arcuate toward the front, without perpendicular ridge. Upper front with rather delicate (♀), or stronger (♂) longitudinal costulae reaching ventrally up to antennal toruli (in European females only, while they being near entirely vanished everywhere in Mongolian females). Scape of ♂ strongly expanded apically, and face sideward to supraclypeal area with extremely deep impressions. Head and thorax green, mesoscutum and scutellum with bronzy lustre. L.: 2.0—2.8 mm. Europe and Asia
Mivarhis lacunosus (NIKOLSKAYA, 1952) comb. n.

141 (140) Genae dull, longitudinally striolated just begining from horizontal carina of malar cavity (Fig. 153). Inner orbit of eye emerging in a sharp ridge and subcarinate. Longitudinal costulae of front developed on a very limited, triangular area along upper third of eye, terminating far above of the antennal toruli.

142 (143) In ♀ (♂ unknown) ocelli large, the distance between median and lateral ocellus equal to the major diameter of median ocellus. Prepectal triangle short and broad, its vertical row of punctures as long as horizontal row. Vertex, genae, temples narrowly, thoracic dorsum and sides golden-purple. Supraclypeal area well delimited, higher than wide, black, sculptureless. Femora and tibiae black, with metallic lustre. L.: 3.0 mm. — Europe **Mivarhis cuprinus** (FÖRSTER, 1859) comb. n.

143 (142) In ♀ ocelli small, the distance between median and lateral ocellus 1.6× diameter of median ocellus. Prepectal triangle long and narrow, vertical row of punctures 1.5× as long as horizontal row. Vertex, genae and temples narrowly gold-green. Thoracic dorsum and sides brassy. Supraclypeal area well delimited, wider than high, bluish-violaceous, sparsely punctate. Femora and tibiae brown, with violaceous-golden lustre. In ♂, scape slightly but conspicuously expanded apically. Head bluish, thorax greenish, scutellum with bronzy lustre, (Fig. 129). L.: 2.6—3.3 mm. — Europe
Mivarhis aureoviridis (STEPHENS, 1833) comb. n.

144 (137) Inner half of scapulae entirely black or at least with a large black spot anteriorly, which progressively became metallic (bluish or greenish) on the extreme posterior corner. The outer orbit behind lower half of eye with rather deep adorbital sulcus, inner wall of which excavated within, producing an unusually sharp and narrow edge. In ♂, lateral discal area of propodeal declivity always dull, rugose and carinulate or roughly aciculate. In ♀, median longitudinal carina of propodeum high, sharp and prominent, so that in lateral view of the declivity well visible from the side (species-group: *laevifrons*).

145 (146) Genae polished and shining, with some sparse punctures and white hairs, but entirely devoid of any trace of vertical striolations. Vertex very delicately sculptate. Head black, a little bluish on vertex and a narrow stripe on outer orbit of eye. Thoracic dorsum golden to gold-green, with rounded and polished, relatively wide interpunctal spaces. ♂ not seen, (Fig. 118). L.: 2.2 mm. — C. Asia
Mivarhis umbo (NIKOLSKAYA, 1952) comb. n.

146 (145) Genae entirely or almost entirely (then densely punctate) vertically sulcate, sometimes very strongly so; these one-side-engraved striolations terminating on horizontal carina of malar cavity. Vertex much more conspicuously sculptate.

147 (148) In ♀ (♂ not seen[8]), horizontal carina of malar cavity joining the vertical carina under an acute angle (about 70°). Clypeal disc relatively narrow, at its maximum 1.3× as wide as front margin of malar cavity. Longitudinal costulae on upper front rather weak and extend up to level of upper third of eye. Black; vertex, clypeus and genae with bluish lustre. Thoracic dorsum dark green-brassy, here and there with bluish squash. L.: 2.5 mm. — Asia **Mivarhis bellus** (NIKOLSKAYA, 1952) comb. n.

148 (147) In ♀, horizontal carina of malar cavity, at least on its anterior half, join the vertical carina under a right angle or even obtuse; some European males, however, approximates well the condition of acute angle. Clypeal disc broader, about 1.7× as wide

[8] It is not stated in the original description by NIKOLSKAYA (1952), whether she described a male as well, because neither sex was indicated. When the male is studied, the definitive status of this species may be ascertained.

as front margin of malar cavity. Longitudinal costulae of upper front, at least anterad of lateral ocellus, very much stronger.[9]

149 (152) In ♂ interpunctual spaces of scutellar disc rather strongly widened and flattened, many of them approximating or exceeding half diameter of a puncture; moderately small secondary punctures on each of intervals, around which the space is cross-sulcate radiantly (Figs 158—159). Funicle with obliquely staying, subdecumbent, but otherwise straight hairs (Figs 122—123). In ♀ the ridge separating median ocellus from scrobal cavity entirely adhered to the ocellus. In both sexes abdominal petiole, with triangularly upturned, subacute lamella.

150 (151) Antennal funicle covered with extremely short, inconspicuous pubescence, scarcely emerging from the general surface (Fig. 122). Scape of ♂ strongly expanded on apical half. Lateral pronotal panel adjacent to prepectus, with one regular row of punctures anteriorly, and a foveolate groove posteriorly, both about of the same width; separated by a shining, cross-sulcate ridge between them. Prepectal triangle equilateral. Propodeum with lateral discal area of ♂ rugosely-reticulate. In both sexes

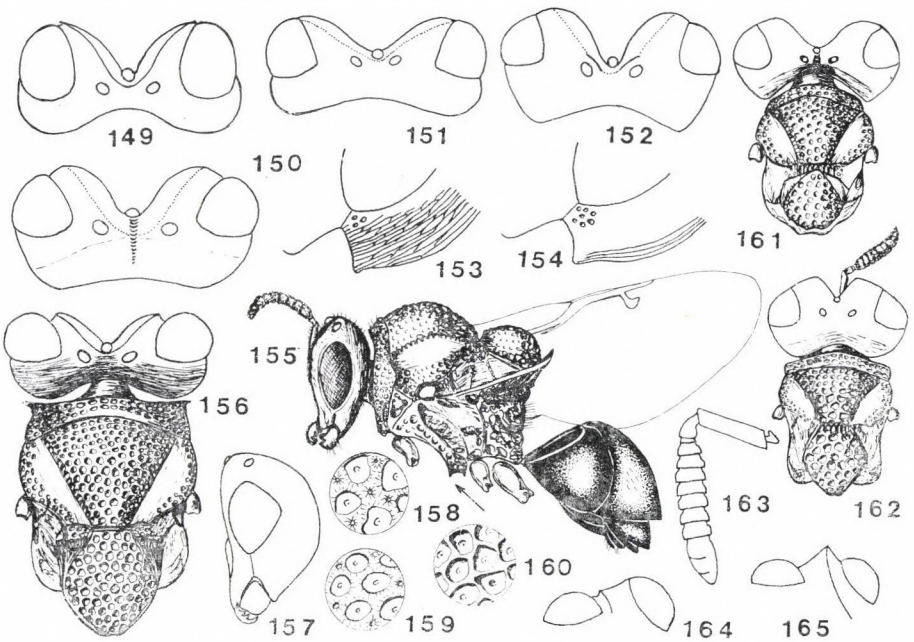


Fig 149. *Afroperilampus tassoni* ♂: head in dorsal view. Fig 150. *Perilampus moczari* ♀: head in dorsal view. Fig 151. *Vadramas levifacies* ♀: head in dorsal view. Fig 152. *Perilampus inimucus* ♀: head in dorsal view. Fig 153. *Mivarhis emarginatus* ♀: malar space. Fig 154. *M. lacunosus* ♀: malar space. Fig 155. *Olarlar aeneus* ♂: body in lateral view, arrow indicates the mesosternal pad in fron of mid coxae. Fig 156. *Ecalibur robertsoni* ♂: head and thorax. Fig 157. *Vadramas ilvauber* ♀: head in lateral view. Fig 158. *Mivarhis laevifrons* ♂: sculpture of scutellum. Fig 159. *M. inaequalis* ♂: sculpture of scutellum. Fig 160. *M. emarginatus* ♂: sculpture of scutellum. Fig 161. *Vadramas saleius* ♀: head and thorax. Figs 162—163. *Sicatang picpus* ♀: 162 = head and thorax, 163 = antenna. Fig 164. *Olarlar aeneus* ♀: ridge between median and lateral ocellus. Fig 165. *O. splendidus* ♀: ridge between median and lateral ocellus

[9] Species from the couplet 149 (152), up to the couplet 156 (155), are extremely difficult to separate. Their (non-)distinctness has already been discussed by MAYR (1905), KERRICH (1958), GRAHAM (1970), BOUČEK (1983) and others. The differences that occur between species are weak, but seemingly constant. The weakest point of this key situated between these two couplets, because there are no proof, however, that sexes associated here upon external features actually belong together, and it is questionable if they are consistent with the type of the respective species whatsoever.

malar sulcus, pass above of the corner or malar cavity. Head and thorax of ♂ green-brassy, thorax of ♀ green-cupreous (Fig. 159). L.: 3.3—3.5 mm. — Europe
Mivarhis inaequalis (FÖRSTER, 1859) comb. n.

151 (150) Antennal funicle covered with extremely long and conspicuous pubescence (less emerging in ♀) (Fig. 123). Scape of ♂ at most slightly widened apically. Lateral pronotal panel adjacent to prepectus, below the level of prepectal triangle, with some coarse carinules anteriorly and with a regular row of punctures posteriorly, narrower than anterior part and with no separation between them. Prepectal triangle longer than wide (Fig. 89). Propodeum of ♂ with lateral discal area alutaceous. In both sexes, malar sulcus, fitting exactly to the corner of malar cavity. Head and thorax black, with bluish squash in ♂, greenish with cupreous in ♀ (Fig. 158). L.: 3.3—3.5 mm. — N. Europe **Mivarhis laevifrons** (DALMAN, 1822) comb. n.

152 (149) In ♂ interpunctal spaces of scutellar disc narrow, linear, mere septa, never attain the size of one quarter of bredth of a puncture (Fig. 160); either polished and shining, or simply cross-sulcate, but secondary punctures occuping only accidentally on intervals. Funicle with moderately long, basally semierect to erect, apically strongly recurved hairs (Fig. 124). Scape strongly expanded on its apical half in ♂. In ♀ the ridge separating median ocellus from scrobal cavity isolated more than its own bredth from the ocellus, in form of a delicate carina. Abdominal petiole, in both sexes, with short, upturned ridge, which is trapezoidal or semicircular in shape. Malar sulcus fitting directly to corner of malar cavity.

153 (154) Apex of clypeal disc protruding, weakly but constantly rounded, convex In ♂ (♀ not seen) head and thoracic dorsum with light bluish squash. L.: 2.2 mm. — N. America and ?Middle East **Mivarhis chrysopae** (CRAWFORD, 1914) comb. n.

154 (153) Apex of clypeal disc straight, truncate. Head and thorax green, bronzy or at most with dark bluish squash.

155 (156) Disc of scutellum with interpunctal spaces polished and shining (Fig. 160). A broad stripe of front and face wholly, densely punctate; interrupted narrowly, transversally, at level of antennal toruli, on a distance about as wide as width of funicle. Upper front, vertex and disc of scutellum clothed with brownish pubescence. Head and thorax green, with brassy shine; vertex, clypeus and scapulae of ♂ with weak bluish tint. L.: 2.5—3.6 mm. — Europe
Mivarhis emarginatus (THOMSON, 1875) comb. n.

156 (155) Disc of scutellum with interpunctal spaces cross-sulcate, intervals rugged in profile (in ♂), or even (in ♀). Front and face punctate only on their extreme upper and lower corner, respectively; a broad distance between them, about three times funicle-width, entirely punctureless (♀), or provided with only one regular row of punctures, contiguous along inner eye orbit (♂). Upper front, vertex and disc of scutellum clothed with white pubescence. Head green, with brassy lustre, thoracic dorsum cupreous (Fig. 124). L.: 2.4—3.1 mm. — Europe and Middle East
Mivarhis nigriventris (FÖRSTER, 1859) comb. n.

157 (110) Upper front anterad of lateral ocellus entirely devoid of coarse tegumental sculptures of any kind (Figs 127—128); except for the blunt angulation of vertex into the relatively shallow scrobal cavity; and for the usual, rather scattered, minute and shallow setiferous punctures. Face between malar sulcus and side of clypeal lobe polished, at most sparsely punctate, but with no wrinkles. In ♀ it exists never any carina between median ocellus and lateral ones. Entirely metallic or mostly black coloured species; with head near always black, rarely metallic, or often only spotted with metallic on the vertex, but these spots are small, at most comparable with size of an ocellus.

158 (175) Pad of the vertex normally developed; the horizontal sector beyond median ocellus (smooth or transversally carinulate) at least as long as, to much longer than, major diameter of median ocellus (Figs 132—134). Head not extremely comprimated antero-posteriorly; ocelli very often arranged in a triangle, rarely in a line. Distance between lateral ocelli 1.0—1.5× as long as ocello-ocular line. In facial view of head, either the fronto-orbital or the fronto-scrobal type (Fig. 128) of scrobal cavity traceable.[10] Outer orbit beyond lower half of eye with relatively shallow, edgeless adorbital sulcus. Mostly black, very rarely wholly metallic coloured species.

[10] The reader endorse the nuance that there is no sharply defineable scrobal carina developed, as in the comparatively primitive genera, only its overall shape is traceable through a subsistent ridge; which merits to be pursued from taxonomical and hereditary reasonings.

159 (170) Malar sulcus as long as front margin of malar cavity.[11] Head rougly saddle-shaped in dorsal view, with relatively deep scrobal cavity. In facial view of head, the protean fronto-orbital type of scrobal cavity retained: the blunt ridge separating front from scrobal depression approximatively V-shaped, starting from the median ocellus, gradually diverging, reaching the ridge of inner eye orbit below mid-height of eye (genus: *Vadramas* gen. n). Vertex polished, cross-carinulate or longitudinally sulcate beyond median ocellus. Anterior margin of prepectal triangle either unbordered, or bordered by a keel, with no compact row of large punctures. Sensorial area of ♂ 0.4—0.7× scape length.

160 (165) Anterior margin of prepectal triangle sharply bordered by a strong keel. Median ocellus framed behind by a deep, V-shaped, sometimes foveolate groove (Figs 132—134), remains of the vanished scrobal carina: top of which often contiguous on the vertex in a longitudinal sulcus, and bottom of which usually transversally septate.[12] Scape of ♂ ventrally strongly flattened in apical half; subapically expanded and somewhat scull-shaped, as apically becoming rounded (cf. Fig. 131); sensorial area rather deeply, almost rugosely micropunctate (species-group: *cephalotes*). Mostly black species with dark steel-bluish appendages. Occiput and vertex dark pubescent. Ocelli in a triangle; distance between lateral ocelli 1.12—1.23× as long as ocello-ocular line.

161 (162) Longitudinal sulcus of vertex deep,[13] contiguous, anteriorly connecting to the V-shaped groove of median ocellus (Fig. 132). Subapical carina of scutellum sharply protuberant and situated on the same level behind the marginal rim of scutellum. Radial knob of forewing with an acute uncus. Sensorial area of ♂ 0.4× scape length. Entirely black; interpunctal spaces of mesoscutum and of male scutellum dark steel-blue, of female scutellum bronzy with blue and cupreous squash. L.: 2.2—3.3 mm. — Europe **Vadramas polypori** (Bouček, 1971) comb. n.

162 (161) Longitudinal sulcus of vertex not quite reaching groove of median ocellus, being separated from it by a bulging, polished stripe of vertex (Figs 133—134). Subapical carina of scutellum only faintly indicated, far more slightly protuberant than marginal rim of scutellum. Radial knob of forewing rounded, with no trace of uncus. Sensorial area of ♂ at least 0.6× scape length.

163 (164) The V-shaped scrobal groove encircling median ocellus strongly developed behind, reaching same line with posterior margin of lateral ocelli (Fig. 133). Thorax rather long and narrow, strongly compressed from sides. Sensorial area of ♂ 0.7× scape length. Funicle of ♂ relatively long, first segment longer than thick, segments 2—4 quadrate, following ones transverse. Entirely black, interpunctal spaces of mesoscutum and scutellum dark steel-bluish to violaceous. L.: 3.0 mm. — Europe **Vadramas maceki** (Bouček, 1956) comb. n.

164 (163) The V-shaped scrobal groove encircling median ocellus delicate, reaching behind at most mid-line of lateral ocelli (Fig. 134). Thorax normal, not compressed from sides. Sensorial area of ♂ 0.6× scape length. Funicle of ♂ shorter, first segment quadrate, following ones gradually more and more transverse. Entirely black, interpunctal spaces of mesoscutum and scutellum dark steel-bluish. L.: 2.7 mm. — Europe **Vadramas cephalotes** (Bouček, 1956) comb. n.

165 (160) Anterior margin of prepectal triangle not margined at all. Median ocellus not framed behind by a residual scrobal groove (Fig. 161), but it may be connected to thiny transverse costulae or very often by polished surface. Vertex without longitudinal sulcus (Fig. 151), except in *saleius* (Fig. 161), but there it is not transversally septate on dorsal vertex (only on the occipital declivity). Scape of ♂ cylindrical, not conspicuously flattened; sensorial area sparsely micropunctate. Occiput and vertex clothed with dark or pale pubescence.

166 (167) Large species, with apex of scutellum strongly produced over the abdomen, with near one half of its dorsal length, and hind tibia entirely dark metallic coloured.

[11] To be keept as an approximative appreciation, i.e. inclusive for the case of 0.85 to fully one times; while reciprocally held for the antithesis, 170 (159), when only half as long, i.e. actually may be 0.30 to 0.65 times as long, but not overlapping transitory.

[12] Importance of this character state is enhanced further in the species-group of *Pondoros tristis* (Mayr).

[13] A very detailed separation of these three species (*cephalotes*, *maceki* and *polypori*) are given in Bouček (1971). Here the accent is put on the separation of the males, because this was undescribed for *cephalotes* hitherto.

Transverse carinules of vertex penetrates into ocellar triangle, actually touching median ocellus behind. Lateral pronotal panel adjacent to prepectus, with two rows of large punctures anterad of prepectal triangle. (species-group: *levifacies*). Occiput and vertex dark pubescent. Interpunctal spaces of mesoscutum and scutellum rather narrow, acute. Ocelli in an extremely flat triangle, distance between lateral ocelli 1.5× ocello-ocular line. Vertex perfectly smooth, with no trace of any wrinkles between ocelli (Fig. 151). Sides of hind femur, in lateral view, strongly converging from middle toward both base and apex.[14] Entirely black; clypeus, supraclypeal area, upper front and vertex bluish-green; temples, side of thorax, a stripe on pronotum, outer half of scapulae, femora and tibiae blue; mesoscutum and scutellum deep violaceous, near black. L.: 4.5 mm. — Australia

Vadramas levifacies (GIRAULT et DODD, 1915) comb. n.

167 (166) Small species, with apex of scutellum situated at same level with propodeal declivity; and hind tibia entirely yellowish to brownish but not dark metallic. Transverse carinules of vertex far removed from ocellar triangle, and situated beyond median ocellus as far as its own major diameter, or more. Lateral pronotal panel adjacent to prepectus with only one row of large punctures anterad of prepectal triangle. Occiput and vertex pale pubescent. Interpunctal spaces of mesoscutum not in form of septa, flat or wide. Ocellar triangle not so flat or not flat at all.

168 (169) Vertex between lateral ocelli perfectly flat; they are separated by 1.6× length of ocello-ocular line (viz. majority of specimens from Argentina, but only 1.4× in a ♂ from Brasil, and 1.7× in a ♀ from Costa Rica); ocellar triangle moderately flat. Lateral pronotal panel adjacent to prepectus with only one row of extremely large punctures anterad of prepectal triangle, each of about one half diameter of an ocellus; the row sometimes a little spoiled within.[15] Malar sulcus very weakly impressed, sometimes almost indistinct, but often very sharp and deep. Second tergite of abdomen, on each side of the disc, with dense patch of pale pubescence (species-group: *nigriviridis*). Interpunctal spaces of mesoscutum and scutellum high and narrow; one quarter to one third of diameter of a puncture; conspicuously cross-sulcate, uneven. Black; head dark olivaceous-green to oily-bluish-brown. Thoracic dorsum bronzy to cupreous-green, in ♂ more dark green. Funicle, clava and tibiae mostly yellowish. Hind femur brown basally and with weak metallic lustre. L.: 1.9—2.9 mm. — C. and S. America

Vadramas nigriviridis (GIRAULT, 1912) comb. n.

169 (168) Vertex between lateral ocelli very deeply longitudinally impressed (Fig. 161); bottom of the sulcus polished and shining, not transversally septate. Distance between lateral ocelli 0.92× ocello-ocular line; ocellar triangle not flattened at all. Lateral pronotal panel adjacent to prepectus with a row of only three punctures anterad of prepectal triangle; of abouth one quarter as wide each as an ocellus. Second tergite of abdomen entirely glabrous (species-group: *saleius*). Interpunctal spaces of mesoscutum and scutellum as wide as punctures themselves; smooth and shining, cross-carinulate only on the anterior third of mesoscutum; both punctures and interpunctal spaces increase in size posterad. Entirely deep black, mesoscutum and scutellum with dark brassy lustre; funicle and clava yellow; legs and abdomen yellowish-brownish and castenous. ♂ not seen. L.: 2.5 mm. — Australia

Vadramas saleius (WALKER, 1839) comb. n.

170 (159) Malar sulcus only half as long as front margin of malar cavity. Head roughly saddle-shaped in dorsal view, with relatively deep and wide scrobal depression, which is approximately V-shaped but on way to be vanished; or else, head roughly half-spheroidal in dorsal view, with relatively shallow and narrow scrobal depression,

[14] Some aberrant females with rather scattered punctures on upper front and without definite ridges among them, of *Perilampus inimicus*, *P. japonicus* and *P. ruficornis* may eventually arrive here in key; but they differ in having shorter scutellum, a sharp keel between ocelli, and in shape of hind femur — thus turn to couplet 112 (117). The reader surely will realize that in the couplet 110 (157), the sculpture of upper front is not a generic character, but only technical means to separate the group of genera *Perilampus-Mivarhis* from the group of genera of *Vadramas-Fifirtiz*.

[15] Owing to these bulky punctures, their intervals are similarly not of tidy size, and may suggest transitional bridge amidst panel and triangle, as occur in the genera *Ecalibur* and *Naspoyar* (see below), both containing species of densely pubescent second tergite. However, the prepectus not sudate to the panel and thus the species better placed here.

which is approximately U-shaped, starting from the median ocellus, running parallel and not diverging toward inner orbits, i.e. is of fronto-scrobal type.

171 (172) Head roughly saddle-shaped in dorsal view. In facial view, the scrobal depression of fronto-orbital type, V-shaped, ventrally diverge and approximates inner orbit at level of malar space. Scape (Fig. 131), of ♂ as described for *cephalotes*, see couplet 160 (165); sensorial area 0.6× scape length. ♀ unknown.[16] Prepectal triangle unbordered anteriorly. Pronotal disc anterad of spiracle with large, deep, ovoidal groove, greater than lateral ocellus (Fig. 130). Mesosternum in front of mid coxae rather narrow, crest-like. Ocelli in a very flat triangle, almost in a line; distance between lateral ocelli 1.7× as long as ocello-ocular line; transverse costulae of vertex penetrates into ocellar triangle, touching the median ocellus. Lateral pronotal panel with one row of large punctures anterad of prepectal triangle. Body black; clypeus, upper front, vertex and thoracic dorsum dark green, mesoscutum with bronzy lustre; femora and tibiae yellow, without dark metallic colouration. Funicle and clave yellow, dorsally infuscated. L.: 2.0 mm. — C. America
Vadramas tetar sp. n.

172 (171) Head roughly half-spheroidal in dorsal vies (Figs 93, 162), with moderately deep scrobal cavity. In facial view (Fig. 128), the scrobal depression of fronto-scrobal type, U-shaped, descend in parallel rami, along middle of front, not approximates at all inner orbit of eyes. Scape of ♂ cylindrical, sensorial area 0.3× scape length (Fig. 95). Prepectal triangle unbordered anteriorly. Lateral pronotal panel separated from anterior declivity by a sharp carina; with only one row of large punctures anterad of prepectal triangle. Mesosternum in front of mid coxae with horizontal pad as wide as fore tibia, bordered both anteriorly and posteriorly by distinct transverse carinules (genus: *Sicatang* gen. n.). Ocellar triangle not flattened; transverse costulae of vertex far removed from median ocellus, by a distance about twice its own major diameter.

173 (174) In ♀ (♂ unknown) antennae, including scape, pale yellow; all funicular segments twice as wide as long (Fig. 163). Lateral ocelli separated by a distance equal with ocello-ocular line (Fig. 162). Declivity of mesosternum separated from mesepimeron by one regular row of large punctures; tibial groove of mesepimeron mirror-like, entirely polished and shining, with no trace of any sculpture. Radial knob of forewing round, with no detectable uncus. Entirely black; interpunctal spaces of mesoscutum and scutellum with indefinite steel-bluish squash; legs yellowish brown, without metallic lustre; venation of forewing yellow (Fig. 128). L.: 1.5 mm. — E. Asia
Sicatang picpus sp. n.

174 (173) In ♂ (♀ unknown) antennae deep black, scape with bluish lustre; first segment of funicle longer than thick, second quadrate, the following ones transverse, but at most one-and-half times as wide as long. Lateral ocelli separated by a distance 1.4× length of ocello-ocular line (Fig. 93). Declivity of mesosternum separated from mesepimeron by two rows (the lower one interrupted for a distance of a puncture) of large punctures; tibial groove of mesepimeron entirely dull, transversally costulate and shagreened. Radial knob of forewing with sharply developed uncus. Entirely black; clypeus and supraclypeal area bluish-green; interpunctal spaces of mesoscutum and scutellum bronzy; femora and tibiae castaneous, with slight metallic lustre; venation of forewing dark-brown almost black (Figs 94, 95). L.: 2.0 mm. — Asia Minor
Sicatang catilus sp. n.

175 (158) Pad of the vertex entirely vanished; occiput declivous just beyond the median ocellus, practically with no horizontal sector, or if any, it is less than half as long as major diameter of median ocellus. Head lenticular, extremely comprimated anteroposteriorly, with scrobal depression rather shallow, evanescent. Ocelli always arranged in a line. Distance between lateral ocelli often 1.3×, usually 1.5—2.0× as long as ocello-ocular line. In facial view of head, an unusual, so called vertexo-orbital type of shallow scrobal cavity developed: the blunt ridge separating vertex from scrobal cavity roughly T-shaped; without median brace, starting from the median ocellus, abruptly diverge, tangential to lateral ocelli, reaching inner orbital ridge a little below to upper top of eye. (Fig. 127). Outer orbit beyond lower half of eye, with deep and acute, sharply edged adorbital sulcus (genus: *Fifirtiz* gen. n.). Malar sulcus half- or fully as long as front margin of malar cavity. Sensorial area of ♂ 0.3—0.4×

[16] Generic status of this species is unclear. Until female is not discovered, this outstanding male seems to belong with *Vadramas*.

scape length. Mostly black to moderately metallic coloured species; occasionally wholly metallic.

176 (179) Malar sulcus only half as long as front margin of malar cavity.[17] Declivity of mesosternum separated from mesepimeron by two regular rows of large punctures, sometimes (in *neglectus* only), pairs of punctures being joined, forming an extremely large fovea with flat bottom. Sensorial area of ♂ 0.4× scape length. Thorax entirely black, with no metallic lustre. Scape of ♀ always yellow (species-group: *minutalis*).

177 (178) Distance between lateral ocelli, in both sexes, 2.0× as long as ocello-ocular line. In ♀, first segment of funicle a little longer than thick, 2 – 5 quadrate, 6 – 7 transverse. In both sexes, tibial groove of mesepimeron shagreened and cross-carinulate. Radial knob of forewing with small, subacute uncus. Outer aspect of hind coxa simple. Entirely black; femora and tibiae castaneous. L.: 2.2 – 2.6 mm. — Europe

Fifirtiz minutalis (STEFFAN, 1952) comb. n.

178 (177) Distance between lateral ocelli, in ♀ (♂ not seen) only 1.5× as long as ocello-ocular line. Segments 1 – 2 of funicle much longer than thick, 3 – 5 quadrate, 6 – 7 transverse. Tibial groove of mesepimeron polished and shining. Radial knob of forewing rounded, with no uncus. Outer aspect of hind coxa with a shallow longitudinal groove, delimited posteriorly by a tiny crest. Entirely black; femora and tibiae dark brown, almost black (Fig. 120). L.: 2.6 mm. — Europe

Fifirtiz neglectus (BOUČEK, 1956) comb. n.

179 (176) Malar sulcus fully as long as front margin of malar cavity. Declivity of mesosternum separated from mesepimeron by only one regular row of large punctures. Sensorial area of ♂ 0.3× scape length. Thoracic dorsum with weak to rather strong metallic lustre. Scape of ♀ always black with strong metallic lustre. (species-group: *noemi*)

180 (181) Scutellar disc, in lateral view of thorax, horizontal on basal two-thirds and abruptly, almost vertically declivous on apical one third. Lateral ocelli separated by 1.3× length of ocello-ocular line. Entirely black; with weak green-bluish to dark bluish lustre on pronotum, mesoscutum, scutellum, outer half of scapulae, femora and tibiae; funicle yellow, with clava slightly infuscated. Clypeus of ♀ 1.5× as long as supraclypeal area. ♂ not seen. (Figs 79 – 80). L.: 1.9 mm. — Australia

Fifirtiz glabrifrons (RIEK, 1966) comb. n.

181 (180) Scutellar disc, in lateral view of thorax, arcuately and obliquely declivous, from base to apex, uniformly throughout. Lateral ocelli separated by a distance at least 2.0× as long as ocello-ocular line. Clypeus as long as supraclypeal area.

182 (183) Apex of scutellum, in lateral view of thorax, with no declivity below the marginal rim, which stay perpendicularly to the plane of dorsellum-propodeum (Fig. 113). Lateral ocelli in ♂ (♀ unknown) separated by a distance 2.5× as long as ocello-ocular line. Entirely black; thoracic dorsum with interpunctal spaces everywhere bronzy, except inner half of scapulae black; femora and tibiae light brown, with violaceous lustre; funicle and clava reddish-testaceous ventrally, infuscated dorsally. L.: 2.0 mm. — Middle East

Fifirtiz turpiculus sp. n.

183 (182) Apex of scutellum, in lateral view of thorax, with oblique declivity below the marginal rim, staying in about 135° to the plane of dorsellum-propodeum (Fig. 114).

184 (185) Lateral ocelli, in ♀ (♂ unknown) separated by a distance 2.0× as long as ocello-ocular line. Entire head, thorax (including inner half of scapulae), abdomen, femora and tibiae intensively and uniformly fiery golden-purple; save apical third of abdomen, femora and tibiae with supplementary gold-green squash in oblique light; while mesoscutum darkened to violaceous. Interpunctal spaces of mesoscutum narrow, about one-quarter as wide as the punctures; many of them vanished and punctures are joining in irregular pairs. Interpunctal spaces of scutellum 0.3 – 0.5× as wide as the punctures; middle of the disc with a broad, impunctate, longitudinal

[17] A special care is needed when one appreciate this rapport. Owing to the very small size of the species, naked-eye estimation may be deceptive. Personally myself, know only two character states: malar sulcus fully as long, or half as long, as front margin of malar cavity. However, in some unverified literature citations tolerable deviations being mentioned; for such eventualities of unstandard conditions see footnote 11. I assume, however, that such measurements of other students may probably refer to the case, when the malar sulcus runs above and a little parallel with front margin of malar cavity, which is gradually narrowing until vanashed, and thus is very difficult to appreciate precisely and being not considered here; we only dealt with the distance between lower corner of eye and angulation of malar cavity.

stripe. Funicle and clava testaceous. Venation of forewing pale yellow. L.: 2.5 mm. — Middle East **Fifirtiz mavricus** sp. n.

185 (184) Lateral ocelli, in both sexes, separated by a distance 2.4—2.6× as long as ocello-ocular line. Facial aspect of head never golden-purple, but black or often dark bluish, only the vertex of male sometimes with a spot of reduced size green or brassy. Mesoscutum with sharply separated punctures, never confluent; scutellum without median impunctate stripe from base to apex. Abdomen black on great extent or entirely.

186 (187) Prepectal triangle bordered on all three sides by a complete row of large punctures; middle of the triangle evenly rugose, without trace of any crest. Mesoscutum and scutellum with interpunctal spaces rather uniform in size, about one-fifth or less the diameter of the punctures; highly polished and shining, moderately flattened. Inner half of scapulae black, except thoracic dorsum bronzy-breen to purple on interpunctal spaces; scape, femora and tibiae bluish to violaceous. Sternopleura of mesothorax golden. L.: 2.3 mm. — W. Asia

Fifirtiz vexator (NIKOLSKAYA, 1952) comb. n.

187 (186) Prepectal triangle anteriorly without complete row of large punctures (Fig. 92), but with a crest, which semicircularly curved inward between upper row of punctures and middle of triangle (Fig. 96). Interpunctal spaces of mesoscutum and scutellum different, but not as above. Other characters variable.

188 (189) Interpunctal spaces on mesoscutum (especially on posterior half), and on disc of scutellum rather wide, from one third to one half or more as the diameter of a puncture; very brillant, mostly polished. Thoracic dorsum gold-green, including inner half of scapulae. Facial aspect of head dark bluish. Abdomen with dark green lustre dorsally (Fig. 92). L.: 2.3—2.6 mm. — C. and W. Asia

Fifirtiz kim (NIKOLSKAYA, 1952) comb. n.

189 (188) Interpunctal spaces of mesoscutum and disc of scutellum everywhere narrow, sharply acute and uneven. Thoracic dorsum (Fig. 114) purple bronzy-green, inner half of scapulae black with purpureous frame outwardly. Facial aspect of head and abdomen entirely brillant deep black (Figs 96, 127). L.: 1.5—2.8 mm. — Asia and N. Africa

Fifirtiz noemi (NIKOLSKAYA, 1952) comb. n.

190 (101) Prepectus fused to, and not well delimited against the lateral pronotal panel; the row of punctures of lateral pronotal panel, adjacent to prepectus, always incomplete opposite to lower corner of prepectal triangle, and there are a common, punctureless belt, traversing from lateral pronotal lobe to the centre of prepectal triangle (Fig. 111); the belt very often polished and shining, but may be delicately alutaceous as well, or rarely microscamose, especially in the American species (Fig. 72), anterior margin of prepectal triangle never margined by a sharp crest or complete row of large punctures; near always there are some large punctures situated halfway between lateral pronotal panel and prepectal triangle, i.e. disposed exactly on the former suture separating pronotum and prepectus, now vanished partially or entirely. Body sometimes entirely metallic, but most frequently small and black species. Malar sulcus as long as front margin of malar cavity, or twice as long in one species.

191 (214) Vertex beyond median ocellus entire, smooth, polished and shining, or frequently transversally costulate as occipital declivity beyond it, but never with a narrow median longitudinal furrow, as wide as or less than median ocellus, and touching it posterad (Fig. 156).

192 (203) Posterior margin of mesoscutum and anterior margin of scutellum, in lateral view of thorax, situate high, at the same level (Fig. 135), with no broad transverse concavity between them, except scuto-scutellar groove, which is rather deep, sharp margined and unusually narrow (Fig. 156), not wider than diameter of a puncture at base of scutellum; therefore disc of scutellum very broadly in contact with mesoscutum, sessile. Mesosternum anterad of mid coxae with distinct horizontal pad, about as wide as front tibia, closed both anteriorly and posteriorly by transverse keels. Ventral aspect of scutellum with strong, acute triangular, longitudinal carina in middle.

193 (194) Head with residual scrobal carina primitively retained, sharply developed on the vertex and entirely evanescent on the upper front (Fig. 156). Occiput beyond median ocellus wholly and roughly cross-carinulate. Lower front with rather shallow but conspicuous longitudinal striolations. Inner half of face obliquelly wrinkled. Adorbital sulcus of outer orbit provided with a tiny crest. Lateral pronotal panel adjacent to prepectus rather wide, with about six regular rows of large punctures anterad of prepectal triangle (Fig. 72); and the panel separated from pronotal declivity by a

prominent, lamelliform crest (genus: *Ecalibur* gen. n.). Sensorial area of ♂ 0.4× scape length. Hind coxa rather short and stout, not longer than wide. Propodeum rugose even in the interior of lateral discal area. Entirely black; interpunctal spaces of thoracic dorsum deep brassy; femora and tibiae with violaceous lustre. Sides of second tergite with not very dense patch of pale pubescence. L.: 3.3 mm. — N. America **Ecalibur robertsoni** (CRAWFORD, 1914) comb. n.

194 (193) Head without scrobal carina except an indication of blunt ridge between ocelli, which ridge strongly diverging and fitting adorbital ridge of inner eye orbit just at level of upper third of eye. Ocellar triangle, vertex, front and face without any distinct tegumental sculpture, save the usual, minute and scattered piliferous punctures. Adorbital sulcus of outer eye orbit without thiny crest, smooth and edgeless. Lateral pronotal panel adjacent to prepectus narrow, usually with only two rows of large punctures, occasionally with three, anterad of prepectal triangle; its anterior margin entirely and sharply margined by a blade-like crest, so that there are neither row of large punctures on the edge, nor anterad on the pronotal declivity. Disc of second tergite, on each side, with moderately dense patch of erect, pale pubescence (genus: *Naspoyar* gen. n.). Sensorial area of ♂ 0.3—0.4× scape length. Hind coxa narrow, 1.5—2.0× as long as wide, a little less in *similis*. Propodeum perfectly polished in interior of lateral discal area.

195 (196) Prepectal triangle, at level of horizontal row of punctures, distinctly narrower (0.8× in ♀, 0.6× in ♂) than lateral pronotal panel adjacent to it, which has three rows of large punctures, quite regularly disposed.[18] Vertex with no trace of blunt scrobal ridge between ocelli. Interpunctal spaces of mesoscutum and scutellum strongly flattened, most of them cross-sulcate and many of them polished; and of different width, from 0.3 to 0.8× as wide as punctures themselves. Lateral ocelli small and circular in shape. (species-group: *similis*). Entirely black; with thoracic dorsum bronzy (♀) or brassy (♂). Sensorial area of ♂ 0.4× scape length. L.: 1.75—2.25 mm. — N. America **Naspoyar similis** (CRAWFORD, 1914) comb. n.

196 (195) Prepectal triangle, at level of horizontal row of punctures, distinctly wider (about 1.2× in both sexes) than lateral pronotal panel adjacent to it, which have only two, irregular rows of punctures. Vertex with blunt scrobal ridge sharply developed and angularly produced between median and lateral ocellus. Interpunctal spaces of mesoscutum and scutellum sharp, acute or nearly so; uniformly cross-sulcate, dull; from one quarter to one third as wide as the punctures themselves. Lateral ocelli enlarged and ovoidal in shape (species-group: *fulvicornis*).

197 (200) Interpunctal spaces on median line of mesoscutum and scutellum identical with those on sides; everywhere high, acute and dull; about one quarter as wide as the punctures themselves. Antero-lateral pronotal margin opposite to spiracle with sharp, triangular lobe. All segments 1—7 of funicle in ♀ quadrate or subquadrate, at most apical two may be a little transverse. First segment of funicle in ♂ distinctly shorter than second; sensorial area 0.4× scape length. Eye, at its maximum, in lateral view of head, relatively long and narrow, 1.4× (in ♂) to 1.5× (in ♀) as long as wide.

198 (199) Vertex, in facial view of head, strongly bulging, with ocellar triangle situated well above of inner orbit of eye. Hairs on head and thoracic dorsum 1.5× as long as major diameter of lateral ocellus. Body entirely black (Fig. 81). L.: 1.6—2.3 mm. — S. America **Naspoyar minutus** (GIRAULT, 1912) comb. n.

199 (198) Vertex, in facial view of head, very low, so that median ocellus situated between inner orbit of eye. Hairs on head and thoracic dorsum at most as long or shorter than major diameter of lateral ocellus. Body entirely black (Fig. 135). L.: 2.3 mm. — N. America **Naspoyar fulvicornis** (ASHMEAD, 1886) comb. n.

200 (197) Interpunctal spaces on median line of mesoscutum and scutellum conspicuously more settling that those on sides; less dull, polished here and there; about one third as wide as the punctures themselves. Antero-lateral pronotal margin opposite to spiracle straight, with no lobe. In ♀ all segments 2—7 of funicle transverse, gradually more and more expressively In ♂ first segment of funicle distincly longer than second; sensorial area 0.3× scape length. Eye in lateral view, relatively short and broad, only 1.1× as long as wide, in both sexes.

[18] This species is misleadingly close habitually to *Dekterek granulosus* (CRAWFORD), *D. kaszabi* (BOUČEK), and to *Lufarfar rostratus* (KERRICH). *Similis* differs from *granulosus* only in its generic features. In addition, they are very reminescent to *Ihrambek chrysonotus* (FÖRSTER) and *I. nigellus* (NIKOLSKAYA). Their affinites seems to be more than accidental and were insufficiently studied.

201 (202) Forewing, from base to apex, clothed with uniformly dark pubescence. Apex of scutellum ventrally with two closely allied but distinct carinules, of an inverted V-shaped together; being broadly separated at base and joined only before the outer row of foveae. All tibiae uniformly yellowish. L.: 1.9 mm. — N. America
Naspoyar muesebecki (SMULYAN, 1936) comb. n.

202 (201) Forewing membrane, on its basal half and in costal cell, clothed with inconspicuously short and pale pubescence; on apical half with short and scattered dark setulae. Apex of scutellum ventrally, with only one carina medially, which weakly, triangularly dilated at the base. Front and mid tibia entirely dark brown, hind tibia with a dark stripe on outer aspect. L.: 2.0 mm. — S. America
Naspoyar philembia (BURKS, 1969) comb. n.

203 (192) Both mesoscutum and scutellum individually arcuate and descend to scuto-scutellar groove, forming a conspicuous, transverse depression over the thoracic dorsum (Fig. 136); scuto-scutellar groove not sharp and scutellum very narrowly in contact with mesoscutum. Mesosternum anterad of mid coxae with or without horizontal pad. Ventral aspect of scutellum with no distinct longitudinal carina in the middle.

204 (211) Posterior margin of prepectus settled in a smooth articulating groove of mesepimeron, in actually contact with anterior border of tibial groove. Head with scrobal groove deeply impressed, distinctly stronger than width of scape, which is not visible from the side in rest. Mesosternum anterad of mid coxae with a distinct horizontal pad, although narrow, carinulately margined both anteriorly and posteriorly. Scuto-scutellar groove transverse, rather long, about twice as long as a puncture at base of scutellum; longitudinally foveolate and strongly septate. Propodeal callus without any large punctures between articulating groove of hind wing and supracoxal flange of propodeum, except for fovea margining outwardly propodeal spiracle. (genus: *Bukbakas* gen. n.). Sensorial area of ♂ 0.4× scape length. Mostly black to dark steel-bluish species.

205 (206) Apical margin of clypeal disc produced in a tirangularly acute, sharp median tooth, masked by dense pubescence of the disc. (Fig. 91)). Lateral ocellus situated twice as far from eye as from median ocellus. Scutellar disc loosely descend posteriorly and terminating smoothly at level of marginal rim. Antennae, including scape, entirely pale yellow, only clava weakly infuscated ventrally. Body entirely black (Fig. 136). L.: 2.2 mm. — Africa **Bukbakas casevitzi** sp. n.

206 (205) Apical margin of clypeal disc weakly convex, neither produced, nor densely pubescent. Lateral ocellus situated equidistant between eye and median ocellus. Scutellar disc either abruptly descend posteriorly, with a vertical sector anterad of marginal rim; or else, produced in an acute tubercle which overhang the marginal rim posterad. Scape always black, with dark metallic lustre; funicle and clava dark ferruginous.

207 (208) Posterior border of pronotal disc blade-like throughout. Apex of scutellum ventrally with two rows of foveae, the inner one produced medially in a V-shaped projection toward the outer row; the stripe between them polished and shining. Forewing membrane in basal half with pale setulae, in apical half with dark hairs. Mid femur extremely narrow, hardly wider than mid tibia. Body entirely black; bottom of umbilicated punctures of mesoscutum with dark grayish metallic lustre; hind femur and tibia with bluish-violaceous shine. L.: 2.0 mm. — E. and SE. Asia
Bukbakas microgastris (FERRÈERE, 1930) comb. n.

208 (207) Posterior border of pronotal disc sulcate and bicarinulate from one spiracle to other (as in the genus *Taltonos*, see Figs 14, 15). Apex of scutellum ventrally with two entirely separated rows of foveolae, the stripe between them pustulate. Forewing membrane everywhere with dark setulae. Mid femur distinctly much wider than mid tibia.

209 (210) Scutellar disc gibbously produced apically over the marginal rim, and in lateral view of thorax exceeding the rim posterad as a blunt tubercle (Fig. 112). Head, in facial view, transversally ovoidal in shape, 1.3× as wide as high. Body entirely black; head with weak bluish, thoracic dorsum with weak brassy-gray lustre; all legs with coxa, femur and tibia wholly and uniformly dark bluish-violaceous, except inner aspect of front tibia yellowish. L.: 2.7 mm. — Europe and Middle East
Bukbakas aquilius (NIKOLSKAYA, 1952) comb. n.

210 (209) Scutellar disc vertically descend before apical rim, and in lateral view of thorax not overhanging it. Head in facial view more circular in shape, practically as wide as high. Body entirely black; all legs with coxa, femur and tibia uniformly dark brown, with only weak greenish stripe on dorsal edge of femora and hind tibia. (Fig. 82). L.: 1.5 mm. — Europe and Asia **Bukbakas pupulus** (NIKOLSKAYA, 1952) comb. n.

211 (204) Posterior margin of prepectus well separated from anterior border of tibial groove by a transversally septate, pearl-necklace-like sulcus (Fig. 69). Head practically with no scrobal cavity, at most weakly impressed, distinctly less than width of scape, which is well visible from the side in rest. Mesosternum anterad of mid coxae without horizontal pad, rather sharp, blade-like, reduced to a narrow transverse crest. Scuto-scutellar groove short and narrow, less than diameter of a puncture at base of scutellum. Propodeal callus practically entirely rugoso-punctate between articulating groove of hind wing and supracoxal flange of propodeum (genus: *Dekterek* gen. n.). Sensorial area of ♂ 0.6× scape length. Mostly bronzy or brassy species.

212 (213) Head, in dorsal view, somewhat narrower and longer, and thus ocellar triangle not extremely flat; posterior margin of median ocellus situated a little anterad than anterior margin of lateral ocelli; lateral ocellus situated equidistant between eye and median ocellus; distance between lateral ocelli 2.4× as long as ocello-ocular line. Head and inner half of scapulae with bluish-gray metallic lustre; mesoscutum and scutellum bronzy- to bluish-green. Prepectus rather narrow, only half as wide as the adjacent pronotal panel (Fig. 69). Abdomen short, more globular. L.: 1.75 mm. — N. America **Dekterek granulosus** (CRAWFORD, 1914) comb. n.

213 (212) Head, in dorsal view, somewhat wider and shorter, and thus ocellar triangle extremely flat; posterior margin of median ocellus situated on the same line with anterior margin of lateral ocelli; lateral ocellus situated 1.6× as far from eye as from median ocellus; distance between lateral ocelli 1.5× as long as ocello-ocular line. Head and inner half of scapulae with oily-gray metallic lustre; mesoscutum and scutellum brassy- to gold-green. Prepectus as wide as the adjacent pronotal panel. Abdomen long, more fusiform. L.: 1.6—2.5 mm. — C. Asia **Dekterek kaszabi** (BOUČEK, 1983) comb. n.

214 (191) Vertex beyond median ocellus with a deep longitudinal furrow, actually touching the ocellus posterad (Figs 119, 150); bottom of the furrow either narrow, acute, then polished and shining; or else, widened and then transversally septate by short carinules; the furrow short or elongated, then contiguous on the occipital declivity up to the foramen magnum.

215 (232) Plical carina of propodeum well developed sharp (cf. Fig. 80), and complete, at least on its interior border vertical, excavated, on its outer border sometimes bordered by large punctures or rugosities. Callus propodealis dull, i.e. posterior declivity of propodeum separated from lateral propodeum by a rugoso-punctate stripe, reaching from propodeal spiracle to supracoxal flange, rarely smooth. Clypeal disc hardly 1.3× as wide as long. Postmarginal vein of forewing longer to much longer, usually twice as long as the radial vein (genus: *Pondoros* gen. n.). Sensorial area of ♂ 0.3—0.5× scape length.

216 (223) Transverse costulae of occipital declivity far removed from ocellar triangle; vertex flat, polished and shining (save the longitudinal sulcus reaching median ocellus), on a distance as great, or greater than, major diameter of median ocellus. Forewing clothed with extremely short and exclusively snow-white pubescence (species-group: *tristis*). Sensorial area of ♂ 0.5× scape length. First funicular segment of ♀ thick, quadrate.

217 (220) Head, in dorsal view, have the front plane, situated on same level with inner margin of eyes or nearly so. Adorbital sulcus at lower half of outer eye orbit uniformly wide and perfectly parallel to the eye margin, temples not inflated. Veins of forewing pale yellow. Apical margin of clypeus semicircularly protruding, convex, almost acute. Vertex between lateral ocelli strongly bulging, acute, nowhere flat transversally (but flat longitudinally); its median longitudinal furrow wide and deep, transversally cross-septate.

218 (219) Forewing with well developed, strong and complete marginal fringe. Scape long; apex of scape in rest actually touching the tiny crest on lower border of median ocellus. Head, in dorsal view, 2.5× as wide as long, because the front rather flat. Interpunctal spaces of mesoscutum and scutellum everywhere covered with individually convex, hemispheric papillae, of bluish-green metallic lustre. Sides of scutellum strongly diverging posterad, where 1.3× wider than at base. Plical carina of propodeum framed outwardly by a complete row of large punctures. Forewing marginalis, postmarginalis and stigmalis in a ratio as 2.4 : 1.6 : 1.0. Black; thoracic dorsum and femora with metallic lustre; scape black, with bluish shine. L.: 2.0 mm. — E. Africa **Pondoros kittenbergeri** sp. n.

219 (218) Forewing (damaged in type) without marginal fringe. Scape rather short; apex of scape in rest separated from median ocellus by more than its own major diameter.

Head, in dorsal view, only 2.2× as wide as long, because the front is not so flat. Interpunctal spaces of mesoscutum and scutellum smooth, shining and brillant deep-black. Sides of scutellum practically parallel. Plical carina of propodeum without any trace of punctures outwardly (or inwardly). Forewing marginalis, postmarginalis and stigmalis in a ratio as 2.0 : 1.0 : 1.0. Black to brownish, without metallic lustre; scape testaceous and concolorous to funicle. L.: 1.7 mm. — E. Africa

Pondoros laticeps (MASI, 1940) comb. n.

220 (217) Head, in dorsal view, with a strongly bulging ridge along middle of front, situated much before than inner margin of eyes, and nowhere plane (Fig. 150). Adorbital sulcus at lower half of outer eye orbit arcuately diverge from the eye margin as temples inflated (Fig. 147). Veins of forewing brown to dark brown. Apical margin of clypeus perfectly straight. Vertex between lateral ocelli flat and horizontally plane; its median longitudinal furrow relatively narrow and shallow. Forewing without marginal fringe, scape in rest not quite reaching median ocellus.

221 (222) Mid femur inflated and sharply club-shaped, at apical one third about as wide as front and hind femur; conspicuously thicker than mid tibia. Body entirely black; thoracic dorsum with interpunctal spaces dark brassy to bronzy, bottom of punctures bluish in fresh specimens, and became concolorous with interpunctal spaces in old material. Femora and tibiae with oily-gray shine.[19] L.: 3.25 mm. — C. Asia

Pondoros orcula (NIKOLSKAYA, 1952) comb. n.

222 (221) Mid femur almost parallel sided, ribbon-like, everywhere distinctly narrower than front and hind femur; practically only as wide as mid tibia. Body entirely black; with indefinite, mostly gray metallic tinge on interpunctal spaces of thoracic dorsum and lose brassy lustre on bottom of punctures (Figs 111, 147). L.: 2.2 –2.4 mm. — C. and S. Europe **Pondoros tristis** (MAYR, 1905) comb. n.

223 (216) Transverse costulae of occipital declivity closely approximating, or even penetrating into the ocellar triangle; so that the distance between foremost crest and median ocellus always less than its own diameter. Wigs clothed with long and exclusively dark brown pubescence; marginal fringe of forewing always complete. Sensorial area of ♂ at most 0.4× scape length. First funicular segment of ♀ conical, narrow, at least a little, often much, longer than thick.

224 (227) Vertex without distinct ridge between ocelli, a little flat, polished and shining; foremost costulae of occipital declivity separated from median ocellus by about four-fifth of its major diameter, which fall distinctly beyond the line connecting posterior margin of lateral ocelli. Maximum width of prepectal triangle about twice as lateral pronotal panel. Mesosternum with horizontal pad as wide as fore tibia; carinulately margined both anteriorly and posteriorly. Ocelli almost in a line. Antero-lateral pronotal margin with sharp and acute spine. Thoracic dorsum and occipital declivity clothed with blackish-brown pubescence. (species-group: *politifrons*).[20]

225 (226) Hind tibia uniformly diverging from base to apex, only a little wider at apex that at the middle. Sensorial area of ♂ 0.3× scape length. Body entirely black, with some diffuse steel-bluish tint on thoracic dorsum. L.: 2.5 mm. — W. Indies

Pondoros politifrons (HOWARD, 1894) comb. n.

226 (225) Basal half of hind tibia parallel-sided, narrow, cylindrical, apical half dilated; width at apex about twice as width of the middle. Sensorial area of ♂ 0.4× scape length. Body black; interpunctal spaces of mesoscutum and scutellum deep gray to bronzy, bottom of punctures very brillant brassy. L.: 1.75 mm. — N. America

Pondoros capitatus (SMULYAN, 1936) comb. n.

227 (224) Vertex with sharp ridge between ocelli, almost enclosed behind save the longitudinal furrow, V-shaped and actually touching transverse costulae of occipital declivity;

[19] The paired falciform depressions above the clypeus, in middle of lower front, were given by NIKOLSKAYA (1952: 196) as characteristic features for this species, identically occurring in almost all representatives of this genus, except that in *orcula*, owing to its greater body size, they are stronger and deeper.

[20] These two species, *politifrons* and *capitatus*, are often regarded as indistinguishable or synonymous with *tristis*, respectively. But this is not the case. In view of that earlier consideration and to avoid forthcoming complicate synonymies, they are more explicitly separated here from the Old World species-groups, as otherwise needed. The only question remained whether my material of *capitatus* is actually conspecific with the type of SMULYAN (1936), because, I am convinced, his paratypes (which I could not examined) were a mixture of different species.

foremost costulae penetrates between lateral ocelli. Maximum width of prepectal triangle distinctly less than lateral pronotal panel. Mesosternum entirely declivous; without horizontal pad in front of mid coxae, only a narrow, transverse crest, divided mesad in two roughly semicircular lobes. Ocelli in a flat triangle, posterior margin of median ocellus situated on same level with anterior margin of lateral ocelli. Antero-lateral pronotal margin, opposite to spiracle, without distinct spine, or at most a blunt and minute one. Sensorial area of ♂ 0.4× scape length. Thoracic dorsum and occipital declivity clothed with pale pubescence (species-group: *batavus*).

228 (229) Ocello-ocular line equal to major diameter of median ocellus (Fig. 150). Ridge between ocelli low, the foremost costulae of occipital declivity situated a bit before line connecting posterior margin of lateral ocelli. Inner eye orbit evenly arcuate from eye margin toward middle of front, without ridge. Entirely black; scape brassy; thoracic dorsum with both interpunctal spaces and bottom of punctures deep gray-brassy; femora and tibiae with weak bluish lustre. Funicle and clava yellow (Fig. 148). L.: 2.2 mm. — S. Asia **Pondoros moczari** sp. n.

229 (228) Ocello-ocular line 1.3—1.6× greater than major diameter of lateral ocellus. Ridge between ocelli sharp, crest-like; the foremost costulae of occipital declivity situated well before line connecting posterior margin of lateral ocelli. Inner eye orbit sharp, ridge-like and perpendicular to the plane of front. Scape always with bluish lustre.

230 (231) Lateral discal area of propodeum nearly smooth, more shining. Interpunctal spaces of mesoscutum and scutellum with green-brassy or green-bluish lustre. L.: 2.2—2.5 mm. — Europe **Pondoros intermedius** (BOUČEK, 1956) comb. n.

231 (230) Lateral discal area of propodeum conspicuously aciculate, less shining. Interpunctal spaces of mesoscutum and scutellum with grayish-brassy, or greenish-brassy lustre; bottom of punctures brassy. L.: 2.7 mm. — Europe **Pondoros batavus** (SMITS VAN BURGST, 1918) comb. n.

232 (215) Propodeum without plical carina between spiracle and supracoxal flange (Fig. 77); the callus propodealis only delimited vertically by a shallow impression, visible solely in oblique light; with no any punctures, foveae or rugosities between ventral-inner border of spiracle and the supracoxal flange. Clypeal disc 1.6× as wide as long. Postmarginal vein of forewing a little shorter than the radial vein (Fig. 78), the marginal twice as long as the postmarginal (genus: *Lufarfar* gen. n.). ♂ not known. Malar space without longitudinal sulcus, but with a longitudinal semicarina at the same place where furrow usually occurs, formed by a suture whose sides situated on different levels: side on face lower and on the genae higher; and, this suture of malar space not situated precisely between lower corner of eye, and angle of malar cavity, but a little behind it. Neck of pronotum and the prosternum are of rather reduced size, low. Labium and maxilla unusually elongate and narrow.[21] Antennae with normal seven funicular segments, and three of clava, but appear to have two anelli. Mesosternal declivity rather abrupt, subvertical, with no horizontal pad in front of mid coxae. Forewing without marginal fringe, membrane entirely clothed with short and snow-white pubescence, inconspicuous.

233 (234) Longitudinal suture of malar space as long as front margin of malar cavity. Thorax, in lateral view, relatively slim, 1.2× as long between anterior pronotal margin and rim of the scutellum, as it is high between mesosternum and highest point of mesoscutum. First segment of funicle longer than thick. Lateral pronotal panel adjacent to prepectus as wide as width of prepectal triangle. Sides of scutellum strongly diverging posterad (Fig. 119). Entirely black, mesoscutum and scutellum with golden-cupreous lustre; basal half of scape and femora bluish-green, tibiae bluish-violaceous; apical third of scape, funicle and clava yellow (Figs 76—78). L.: 3.0 mm. — N. Africa **Lufarfar rainerius** sp. n.

234 (233) Longitudinal suture of malar space twice as long as front margin of malar cavity. Thorax, in lateral view, relatively stout, as long as high. First segment of funicle as long as thick. Lateral pronotal panel adjacent to prepectus twice as wide as prepectal triangle. Sides of scutellum practically parallel. Entirely black; mesoscutum and scutellum with oily-gray lustre; base of scape and hind femur with bluish-green shine; tibiae violaceous. Apical quarter of scape, funicle and clava yellow. L.: 2.0 mm. — E. Africa **Lufarfar nimrodus** sp. n.

[21] See Fig. 3 in KERRICH (1956: 121).

DESCRIPTION OF THE NEW TAXA

For sake of brevity, characters given in the key usually are not repeated. Diagnoses of new genera are given with regard to the genus *Perilampus* LATREILLE; viz. those features diagnostic on generic level that are not mentioned, are considered identical with state occurring at representatives of that genus; therefore the reader understands for each genus the addition of the proposition: "otherwise as in *Perilampus*". For new species, the same addition occurs, i.e. "otherwise identical with type-species of the respective genus".

Taxa being ordered, as resulting from the key, which is neither natural nor of filiation sequence, but solely mnemotechnical.

Genus **Kekender** gen. n.

Type-species: *Kekender bouceki* sp. n.

Male (female unknown) medium sized to large. — H e a d relatively flat; viewed from side, front and face plane (Fig. 4), not bulging; occiput abruptly but arcuately declivous. Viewed dorsally, temples strongly converging. Scrobal cavity well impressed but not shaprly margined. Entire surface of head covered with tiny costulae (Fig. 5), including scrobal cavity; but without individualised strong carina separating it from the front. Malar space twice as long as front margin of malar cavity; without malar sulcus, surface longitudinally costulate above, shagreened below. Costulae of temples not quite reaching to transverse carina of malar cavity. Costulae of front converging toward base of clypeus. Inner eye orbit with adorbital sulcus on lower third, outer orbit with thiny crest. — Posterior p r o n o t a l m a r g i n blade-like. Disc of pronotum convex, arcuately declivous anteriorly, not flat, nowhere margined by crest, not sinuate on antero-lateral margin, without transverse crest between rows of punctures. Prepectal tringle rather large, its anterior margin not bordered. Axillula triangular in shape. Middle of mesoscutum humped, scutellum bituberculate mesad. Marginal rim of scutellum subacute, not excavated. Lateral discal area of propodeum with well developed plical carina above, along the spiracle, but not developed laterally and ventrally, between spiracle and nucha. Mesosternum without horizontal pad in front of mid coxae, because produced in two tringular, blunt precoxal tubercles. Tibial spur formula 1—1—2, but the outer spur of hind tibia very short, scarcely longer than the neighbouring setulae. — A b d o m i n a l p e t i o l e transverse, abdomen triangular; only 3 tergites visible, and 7 sternites, exclusive of subgenital plate.

Kekender bouceki sp. n.
(Figs 4—5, 22)

♂. Length 4.1 mm. Head and thorax uniformly golden to deep-brassy, including occiput and hypostomal area, bottom of punctures and inner half of scapulae, sides of thorax and the coxae. Apical half of pedicellus, funicle, clava, trochanters, femora, tibiae and tarsi uniformly honey-yellow to testaceous. Mandibles ferruginous, darkened at apex, but with no basal dark or metallic spot. Tegulae castaneous, venation of forewing brownish. Abdomen uniformly black, without metallic lustre. — Body and appendages everywhere clothed with white hairs, usually shorter than diameter of an ocellus; except forewing membrane with darkish pubescence. — H e a d twice as wide as long, a little wider than high. Eye situated above line of base of clypeus. Ocellar triangle flat; ocelli round, large, lateral ocellus situated three times as far from eye as from median ocellus. Head with delicate, slightly undulated, relatively sharp costulae almost everywhere, save clypeal disc punctate and transversally alutaceous; and face between eye margin and clypeus subrugose and punctate, with interpunctal spaces microstriolate and scamose. Clypeal disc as long as wide, 1.25× longer than supraclypeal area; its apical margin straight. Scape cylindrical, a little widened in apical half but not conspicuously flattened, deformed or expanded; sensorial area sparsely micropunctate on 0.4× scape length. First segment of funicle twice as long as thick, about as long as following two segments together: second segment a little longer thank thick, segments 3—7 gradually becoming shorter, the last one quadrate, none of them transverse; pubescence of funicle short; clava three-segmented,

sutures straight. — P r o n o t a l d i s c roundedely declivous, nowhere flat except a narrow apical border, ribbon-like; with three transverse, irregular rows of lenticular punctures· interspaces acute, here and there cross-sulcate; anterior pronotal margin without crest or spine; lateral pronotal panel rugose and foveolate, with two rows of large punctures anterad of prepectal triangle; other two rows of large punctures moved to the pronotal declivity, below. Outer half of scapulae large, with seven punctures in a transverse row; inner half entirely dull, alutaceous. Punctures of mesoscutum smallests on top of the hump, and increase in size gradually both anterad and posterad. Scutellum longer than wide, with uniformly sized punctures; a median longitudinal stripe, from base to apex, over the tubercles, alutaceous. Lateral discal areas of propodeum dull, shagreened and cross-carinulate. Propodeal spiracles large, slightly ovoidal, almost circular in shape. Declivity of mesosternum separated from mesepimeron by two rows of spaced, large punctures; tibial groove entirely rugose. — F e m o r a and tibiae subcylindrical, not flattened or strongly widened; each tibia as long as the corresponding femur; fore tarsi as long as fore tibia, hind tarsi only 0.7× as long as hind tibia; legs with normal pubescence, except inner ridge of apex of hind tibia with spatulate and apically cleft setulae, not canaliculate as in other genera; claws of hind leg bifid, as usual. — W i n g s perfectly hyaline, vitrous; forewing with rather short and sparse darkish pubescence; marginal fringe not developed except shortly on apical hind corner; length of marginalis, postmarginalis, stigmalis as 3.2 : 3.0 : 1.0; radial knob without uncus; hindwing with snow-white pubescence. — A b d o m e n short, triangular; surface polished and shining; second tergite before apex with transverse row of few large, shallow punctures and erect setulae on each side of the disc; more numerous on third tergite, except a triangular area medially glabrous, and hairs on the sides recurved, decumbent. Subgenital plate with apical tooth curved down, surface alutaceous, punctureless; covered with sparse, short pubescence.

♀ and host unknown.

Material examined: 1 ♂ h o l o t y p e, from East Africa, Kenya, labelled "Muto-Berg, Kenia" and "Purchased Q. A. 1971", deposited in coll. ARGAMAN.

Etymology — Species is dedicated in honour of my old friend and colleague, Dr. ZDENEK BOUČEK, from Commonwealth Institute of Entomology, London, United Kingdom, the excellent specialist of Chalcidoidea and who has special adoration for perilampids.

Remark — I know no close relatives of this species within Perilampidae. However, some males of *Orasema* CAMERON (Eucharitidae) are reminescent in many respects, and I regard this genus as the most transient perilampid toward that family.

Genus **Taltonos** gen. n.

Type-species: *Perilampus hyalinus* SAY, 1828.

Both sexes medium to large sized. — H e a d bulky, scrobal cavity deep; separated from fronto-vertex by a sharp carina, of the position fronto-orbital type, strongly diverging ventrad and approximates inner eye orbit to a distance comparable or less than width of scape (Figs 9—10). Outer eye orbit with thiny crest. Malar space as long as front margin of malar cavity, entirely covered with oblique carinules, with no malar sulcus or suture (Fig. 16). — P r e p e c t a l t r i a n g l e large, not bordered anteriorly by row of punctures (Fig. 20). Posterior margin of pronotal disc sulcate and bicarinulate from one spiracle to other (Figs 14—15). Axillula finger-like (Fig. 19), its upper carina transect axilla entirely. Mesosternum with horizontal pad in front of mid coxae. Propodeum with plical carina complete, reaching from the spiracle up to the nucha. — A b d o m i n a l p e t i o l e transverse, third tergite polished, without microsculpture. Subgenital plate of ♂ punctate and alutaceous. Colouration entirely metallic.

Taltonos tutubas sp. n.
(Fig. 44)

♀. Length 5.5 mm. Head light blue, save occiput black; clypeus, supraclypeal area, scape, ocello-ocular line, sides of thorax, a median stripe of scutellar disc, apex and sides of abdomen, all femora and tibiae gold-green; pronotal disc blue, its sides gold-green; mesoscutum, inner half of scapulae and scutellar disc except median stripe, dark blue to violaceous. Funicle and clava deep black. Apical half of mandibles piceous. Tarsi yellow. Venation of forewing yellowish-brown. Wings hyaline, pubescence dark. — Body with pale pubescence, except

occiput and thoracic dorsum clothed with dark hairs. Ocelli in a flat triangle, median ocellus staying distinctly before than lateral ones; lateral ocelli separated by 1.7× ocello-ocular line; vertex rather long, distance between scrobal carina and foremost costula of occipital declivity 1.5× as long as major diameter of median ocellus. Upper front and vertex flat, covered with oparse, dimpled but shallow punctures; without distinct wrinkles around and beyond of lateral ocelli, or inside of ocellar triangle (cf. Fig. 7). Face with about seven complete, oblique carinules. Clypeal disc remotely punctate, interspaces as wide as punctures themselves. Lower end of scrobal carina run as far from eye as width of scape, its apical tiny crest reaching only base of clypeus. Lower half of outer eye orbit with edgeless adorbital sulcus, strongly diverging dorsad (cf. Fig. 64). — Middle of p r o n o t a l d i s c with two rows of large, quadrate punctures; antero-lateral margin with sharp triangular lobe, a little greater than right angle; from this spine up to fore coxa with a strong crest, the panel with only one row of large punctures. Inner half of scapulae polished, with trace of shallow punctures in its anterior corner, but without such longitudinal row separating the two sectors. Mesoscutum and scutellum with shallow, polygonal and lenticular punctures; interspaces one-sixth to one-fifth as wide as the punctures. Disc of scutellum sharply bicolorous, its punctures decrease in size from mesal line toward the sides. Punctures of upper disc of axilla contiguous with those from side area of scutellum, without oblique row of large foveolae, separating axilla behind. Posterior upper edge of hind tibia with metallic stripe from base to apex. Forewing membrane with rather long and dense hairs.[22]

♂ and biology unknown.

Material examined: 1 ♀ h o l o t y p e, labelled "Rép. Argentine, Mendoza, A. C. Jensen Haarup, 1907" and "26. I. 07", deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. No. 6940.

Remark — Although unique, it is easy to recognize according to shape of vertex, of adorbital sulcus and to the joined axilla to lateral scutellum.

Taltonos azureus sp. n.
(Figs. 56, 59)

♀. Length 3.5 mm. — H e a d with temples and genae, side of thorax, abdomen, femora and tibiae light (azureous) blue; sides of second tergite and hind tibia with violaceous shine; upper front, vertex, pronotal disc, posterior half of mesoscutum, and a longitudinal stripe of scutellum gold-green; inner half of scapulae black. Scape bluish-green, funicle and clava dark ferruginous ventrally, blackish dorsally. Scutellum unicolorous, but median stripe golden and sides with no lustre. Anterior half of mesoscutum dark, blue or black, with indefinite green or violaceous shine. Tarsi yellow, venation of forewing brownish. — O c e l l i situated in a line, anterior margin of median ocellus not situated before than those of lateral ones; the latter are separated by a distance 2.0× as long as ocello-ocular line. Vertex short, distance between scrobal carina and foremost crest of the ocipital declivity about 0.9× as long as major diameter of median ocellus. Lower arm of scrobal carina approximating inner orbit of eye to a distance equal to width of scape. Lower half of outer eye orbit with deep, sharply edged adorbital sulcus; entirely parallel or even slightly converging dorsad to margin of eye. (cf. Fig. 63). Wrinkles of upper front sharp and acute, terminating at a small distance before of lateral ocellus (cf. Fig. 8). Thiny crest of scrobal carina terminating at level of base of clypeus. Face with about 20 complete, oblique carinules. Disc of clypeus shining, punctures sparse and inconspicuous. Inner half of scapulae polished and shining. — In dorsal view of t h o r a x, apical half of scutellum, beyond its lateral carina, with weakly concave sides; punctures of scutellum of uniform size throughout; disc of scutellum with concave, shallow, moderately wide longitudinal impression mesad (Fig. 59). — Hind t i b i a on its posterior-upper edge entirely metallic. Vertex and thoracic dorsum clothed with dark pubescence, body and appendages otherwise pale pubescent. Forewing membrane with moderately long, not dense, dark pubescence.

♂ and biology unknown.

Material examined: 1 ♀ h o l o t y p e, from northern Argentina, labelled "Argentina, Vezényi" and "Tucuman, XI. 1905", deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. No. 6941.

[22] Pubescence of wing membrane here and below being called long (or short) when individual hairs are larger (or smaller) than distance between two successive dark points of setal articulation.

Remark — This species has few outstanding characters: the multicarinulate face, acute lobe of antero-lateral pronotal margin (Fig. 56), concave marginal rim of lateral scutellum, and longitudinally impressed scutellar disc. These features distinguish it from *T. xirgus*, described below, as well.

Taltonos xirgus sp. n.
(Figs 48, 60)

♂. Length 3.8 mm. Entirely gold-green; vertex and a longitudinal stripe on scapulae golden-purple; anterior half of mesoscutum tinged with violaceous, inner half of scapulae black; scape, anterior margin of pronotum, base of axillae, dorsellum, outer half of tegulae and apex of abdomen bluish; apical half of mandibles piceous; ventral aspect of funicle and clava ferruginous; tarsi, a broad ring of apex of hind tibia and venation of forewing yellowish-brown. Entire body and appendages pale pubescent, except forewing membrane clothed with long and dense, darkish hairs. — Ocelli situated in a line; lateral ocelli separated by a distance 1.5× ocello-ocular line; vertex very short, distance between scrobal carina and foremost crest of the occipital declivity 0.8× the major diameter of median ocellus. Lower arm of scrobal carina approximating inner orbit to a distance a little less than width of scape; its tiny crest traceable almost to middle of clypeus. Vertex with sharp wrinkles, almost or actually touching lateral ocellus. Face with about 9 complete, oblique carinules Clypeus rather densely punctate, with interpunctal spaces less than diameter of punctures. Face and clypeus with many strong, appressed setulae. Lower third of outer eye orbit with extremely sharp crest, parallel with eye, but no trace of adorbital sulcus; from lower third up above of middle of eye, outer orbit paralleled by another crest, more distant from eye margin, and also without adorbital sulcus. — Middle of pronotal disc with two transverse rows of regular, subquadrate punctures. Antero-lateral pronotal margin with sharp, triangular spine, about of right-angle in facial view. Lateral pronotal panel with only one sole puncture opposite to prepectal triangle, and a foveolate groove below it. Punctures of mesoscutum shallowly lenticular; interspaces mere septa, one-sixth or less as wide as punctures. Scutellar disc convex, long pilose, not conspicuously bicolorous, its median golden stripe not strongly discernible; punctures of the disc very much increase in size posterad and sideward, becoming twice as, or more, than they are at base; in dorsal view of thorax, the marginal rim of scutellum distinctly concave on sides, but apically not excavated (Fig. 60). Hairs on third tergite of abdomen neither very long, nor dense.

♀ and biology unknown.

Material examined: 1 ♂ holotype, labelled "Brazil, Estado do Pará" and "Faro, 19. I. 1910, DUCKE", deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. No. 6942.

Remark — Species distinctive by densely punctate and pilose clypeal disc, shape of scutellum and of the punctation of scutellar disc.

Taltonos dumcas sp. n.
(Fig. 8)

♀. Length 3.5 mm. Head, pronotum, posterior half of mesoscutum, a longitudinal stripe of scutellum and sides of thorax gold-green; lateral areas of scutellum green, not bicolorous; inner half of scapulae black; scape, genae and temples light blue; anterior half of mesoscutum, apical half and sides of abdomen, femora and tibiae bluish-violaceous; posterior upper edge of hind tibia metallic from base to apex. Apical half of mandibles piceous. Ventral aspect of funicle and clave narrowly ferruginous. Tarsi yellow. Venation of forewing yellowish-brown. — Pubescence of body and appendages white; except occiput and thoracic dorsum clothed with pitchy-brown hairs, and forewing membrane with rather small and scattered brownish hairs. — Ocelli situated in a line; lateral ocelli separated by a distance 2.0× as long as ocello-ocular line. Vertex rather short, the distance between scrobal carina and foremost crest of occipital declivity 0.8× as long as major diameter of median ocellus. Lower arm of scrobal carina approximates inner orbit of eye to a distance distinctly less than width of scape; its thiny crest traceable up to basal quarter of clypeus. Vertex with numerous sharp wrinkles, but none of them touching lateral ocellus (Fig. 8). Face with about 9 complete, oblique carinules. Clypeal

disc broadly impunctate medially, on sides punctures separated by their own diameters. Adorbital sulcus of outer orbit with a sharp crest on lower third of eye, above of this without crest, but only a sharp edge, practically parallel to eye margin. — Middle of pronotal disc with two transverse rows of regular punctures; antero-lateral margin with acute triangular lobe; lateral pronotal panel with one row of large punctures. Inner half of scapulae polished and shining, sharply separated from outer half. Punctures of mesoscutum moderately increase in size posterad; anteriorly the interspaces about one third as wide as punctures, posteriorly one-fifth or less. In dorsal view of thorax, sides of scutellum perfectly straight, marginal rim shallowly emarginating apically; the disc with longitudinal flat to concave impression mesad; punctures of the dorsal impression, from base to apex, are rather large, well twice as wide as those on the sides; they are rather shallow, flat-bottomed, with interspaces narrow, about one-sixth or less the diameter of punctures, polished and shining. Punctures on lateral, declivous area of scutellar disc are small, deep, lenticular; with interspaces less shining, mostly cross-sulcate. Third tergite of abdomen with transverse stripe in midle, of recurced and moderately long hairs.

♂ and biology unknown.

Material examined: 1 ♀ holotype, labelled "Argentina, VEZÉNYI" and "Tucuman, I. 1906", deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. No. 6943.

Remark — Species without outstanding features; the sculpture of scutellum resembles to that of *T. birous*, described below. These two species are very distinct through sculpture of vertex, but this character can be suitable whereby direct comparison of the species faisible. While *dumcas* appears to be a small and narrow species, *birous* is a large, stout one. Clypeal disc of *dumcas* impunctate, that of *birous* very densely. However, the separation of these two species is not easy, and I expect that better distinctness should be detected on the hitherto unknown, respective males.

Taltonos birous sp. n.
(Fig. 7)

♀. Length 3.5—4.5 mm. Entirely gold-green, except apical half of abdomen bluish-green. Head without blue; upper front, vertex, genae and temples brassy. Anterior half of mesoscutum and inner half of scapulae black. Scutellum entirely gold-green, not bicolorous. Ventral aspect of clava ferruginous; apical half of mandibles piceous; tarsi yellow; venation of forewing yellowish-brown. — Pubescence of body everywhere pale (? time-faded); except forewing membrane clothed with rather long and dense dark pubescence. — Ocelli situated in a line; lateral ocelli separated by a distance 2.0× as long as ocello-ocular line; distance separating scrobal carina from foremost crest of occipital declivity 0.8× as long as major diameter of median ocellus. Vertex without sharp wrinkles, and the feebly developed ones far removed from lateral ocellus (Fig. 7). Lower arm of scrobal carina approximating inner eye orbit to a distance a little less than width of scape; and terminating at level of base of clypeus, without being contiguous in a tiny crest. Face with about 7 complete, oblique carinules. Clypeal disc uniformly punctate throughout, but they are more impressed above than below. Outer eye orbit with distinct adorbital sulcus and with sharp edge contiguous from malar space up to mid-height of eye, and parallel. Middle of pronotal disc with two transverse rows of large punctures; antero-lateral emargination deep, the triangular lobe acute; lateral pronotal panel with two rows of large punctures opposite to prepectal triangle. Inner half of scapulae polished and shining, pubescent, sharply separated from outer half, which is deeply punctate and interspaces cross-sulcate. Punctures of mesoscutum roughly of the same size throughout; but those on anterior half are relatively deep and lenticular, while those on posterior half rather shallow and flat-bottomed. Punctures of median stripe of scutellum increase in size posterad, and are shallow, flat-bottomed; those of lateral areas of scutellar disc are uniformly sized throughout, deep and lenticular, the interspaces dull, cross-sulcate. Sides of scutellum straight, marginal rim at apex at most indistinctly emarginate; dorsum of the disc inconspicuously flattened mesad. Third tergite of abdomen almost entirely covered with long, suberect pubescence. Posterior upper edge of hind tibia entirely metallic, from base to apex.

♂ and biology unknown.

Material examined: 1 ♀ holotype and 2 ♀♀ paratypes, labelled "S. Cruz, Brasil, coll. SPEYER", all are deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. No. 6944 (holotype), 6945—46 (paratypes).

Etymology — The new species is dedicated to the late LAJOS BIRÓ, explorer and excellent collector of microhymenoptera, who gathered together so many interesting specimens of perilampids.

Remark — *T. birous* is closely related to *T. dumcas*, and see remarks under that species. It is also reminescent of *T. tutubas*, by the absence of sharp wrinkles on upper front and vertex. However, *tutubas* is a bluish species, with ocelli in a flat triangle, and vertex one and half times longer than median ocellus; while in *birous* body gold-green, ocelli situated in a line, and vertex shorter than median ocellus. *T. birous* is related also to *T. jolaus*, described below, but in *jolaus* antero-lateral pronotal margin not excavated deeply, and adorbital sulcus distinctly diverge dorsad from eye margin. By no means, these two are difficult to distinguish, owing to the poorly expressed characters of females against the males, not yet discovered.

Taltonos jolaus sp. n.
(Figs 57—58)

♀. Length 5.0 mm. Body entirely blue-green, except upper front, sides of second tergite and all femora and tibiae on outer aspect gold-green. Inner half of scapulae black. Anterior half of mesoscutum dark blue-violaceous, almost black. Apical half of mandibles piceuous; tarsi yellow; venation of forewing yellowish-brown; inner aspect of femora and tibiae casteneous. — Pubescence of body pale, except thoracic dorsum brownish-yellow. Forewing membrane covered with rather long and dense, blackish pubescence. Ventral aspect of apical third of funicle and clava ferruginous. Scutellum not bicolorous, its median stripe brillant, but not golden. — Ocelli situated in a line; lateral ocelli separated by 2.0× ocello-ocular line; vertex short, distance between scrobal carina and foremost crest of occipital declivity 0.8× as long as major diameter of median ocellus. Upper front and vertex with small number of moderately sharp wrinkles around lateral ocellus; those of vertex far removed, those of front near touching it. Lower arm of scrobal carina approximating inner orbit to a distance a little less than width of scape; ventrally contiguous in a tiny crest and traceable up to level of basal third of clypeal disc. Face between inner orbit and clypeus with 7 complete, oblique carinules. Surface of clypeal disc uniformly punctate throughout, punctures separated by their own diameters. Lower half of outer eye orbit with adorbital sulcus moderately deep and with sharp edge. Apical one-third of scape, on ventral aspect, with dense patch of minute punctures, separated by their own diameter (Fig. 58). — Middle of pronotal disc with two irregular, transverse rows of large punctures; antero-lateral pronotal margin shallowly emarginate; lateral pronotal panel adjacent to prepectus with two rows of large punctures opposite to triangle. Inner half of scapulae polished and shining, smoothly separated from outer half through a row of 6 shallow punctures. Mesoscutum with roughly uniform sized punctures, near flat-bottomed throughout, shallow. Disc of scutellum with punctures of same size everywhere; its median stripe with interspaces polished, that of lateral areas dull, cross-sulcate. The marginal rim apically only shallowly emarginate. — Third and fourth tergites of abdomen with dense, long, semierect pale pubescence. Posterior dorsal aspect of hind tibia entirely metallic, from base to apex.

♂ and biology unknown.

Material examined: 1 ♀ holotype, labelled "Sao Paolo, 1928, BURY J. GYÖRGY", deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. No. 6947.

Remark — The micropunctate ventral aspect of female scape is not known to occur in any other species of the genus *Taltonos*; and, actually only here is observed for the first time in the entire subfamily Perilampinae; it is

a secondary sexual character of males and in that sex it identically occurs in all genera and species. Otherwise *T. jolaus* has no outstanding features; it is recognized by the combination of the following features: mid-line of scapulae with a row of transitory shallow punctures, between inner polished and outer deeply sculptured areas; antero-lateral pronotal margin shallowly bisinuate opposite to spiracle; scrobal carina loosely becoming thinner and vanished ventrally; thoracic dorsum dark pubescent; scutellar disc without gold-green stripe mesad; and, body predominantly bluish. Superficially it resembles to *T. albitarsis* CAMERON, in which, however, antero-lateral pronotal margin sharply bisinuate, mid-line of scapulae without shallow punctures, and scape of female simple.

Genus **Durgadas** gen. n.

Type-species: *Durtadas pappi* sp. n.

Both sexes medium sized to large. — H e a d bulky, hemispheric in dorsal view; with sharply, subacutely projecting scrobal carina in lateral view. Scrobal cavity deep, sharply margined by a strong carina; of position fronto-scrobal, running subparallel with median line of face, without diverging and closely approximating inner orbit of eyes; its ventral arm definitively contiguous in a tiny crest, which is traceable up to mid level of clypeal disc (♀) or even up to apex of clypeus (♂). Occiput sharply bordered by an individual carina, which is much stronger than coarse costulae of occipital declivity. Front margin of malar cavity distinctly longer (1.3× in ♀, 1.4× ♂) than malar space; malar sulcus developed (♀) or traceable (♂). Scape of ♂ weakly flattened and widened apically. Clava of ♀ with perfectly straight sutures. — Anterior p r o n o t a l m a r g i n sharply margined by a crest, and situated in the same plane throughout, without any indication of sinuate emargination opposite to spiracle. Middle of pronotal disc perfectly plane and rather wide, with at least three transverse, irregular rows of polygonal punctures; lateral pronotal panel adjacent to prepectus with two regular rows of large punctures opposite to triangle. Posterior pronotal margin sulcate and bicarinulate from one spiracle to other. Prepectal triangle free, moderately large, wider than pronotal panel, bordered dorsally and behind by a row of large punctures, unbordered anteriorly. Mesosternum with a horizontal pad in front of mid coxae, about as wide as front tibia, carinulately margined both anteriorly and posteriorly. Scapulae with sharp longitudinal keel separating inner polished area from outer deeply punctate one; the outer one subvertical and about twice as wide as the inner area. Mesoscutum transversally crested except on the sides indefinitely punctate. Disc of scutellum evenly arcuate and provided by a low, zigzag-lined median crest, contiguous from the base almost to the apex. Propodeum rather short and wide. Axillula fingerlike. Marginal vein of forewing longer than postmarginal; radial knob without uncus. Legs short. — A b d o m i n a l p e t i o l e transverse; third tergite with no special microsculpture but with rather long pubescence; sixth tergite of ♂ with prominent, transverse, blunt tubercle; male hypopygium normal. Colouration predominantly melanistic, at most with inconspicuous metallic lustre here and there in female, a little more extended in male.

Durgadas pappi sp. n.
(Figs 26—28)

♀. Length 4.2—4.3 mm. Entirely deep black; front with (sub-brassy)-oily-lustre and hind femur with (sub-olivaceous)-oily-lustre. Outer aspect of hind tibia tinged with an indefinite bluish shine. Anellus red, ventral aspect of apical half of funicle and clava narrowly ferruginous. Apical half of mandibles piceous. Tarsi yellow; inner half of femora and tibiae castaneous. Forewing with yellowish-brown veins and with dark setulae, which are short and scattered; otherwise the body and appendages clothed with white pubescence. Posterior-dorsal aspect of hind tibia metallic (or black with oily-gray lustre) on its basal three-fourths only, its apical quarter yellow. — O c e l l i subcircular in shape, situated in a flat triangle; lateral ocelli separated by a distance 2.0× as long as ocello-ocular line; vertex relatively long, the distance

between scrobal carina and occipital crest 1.3× as long as diameter of median ocellus. Upper front and vertex without distinct wrinkles, or at most with extremely delicate ones, punctures minute and shallow. Surface of front covered with small, individually convex papillae; inner eye orbit not sulcate. Lower arm of scrobal carina separated from inner orbit by a distance much greater than width of scape. Scrobal cavity and supraclypeal area entirely polished and shining, without any sculpture or defineable piliferous punctures. Face between eye and clypeus with about 5 complete, oblique carinules. Disc of clypeus flat, hexagonal, surface polished and rather sparsely punctate on sides, with very shallow punctures; apical clypeal margin distinctly emarginate, concave. Malar space with longitudinal sulcus. Posterior three-fourths of genae obliquely striolate, the striolations reaching transverse carina of malar cavity. Outer eye orbit with adorbital sulcus unusually narrow and with extremely sharp edge, very close to eye margin, and detectable from malar space up near to the vertex. Scape short, not reaching the level of median ocellus; funicle and clava also short, first segment of funicle longer than thick (1.1×), second quadrate, 3—7 gradually more transverse; sutures of clava straight. — Middle of p r o n o t a l d i s c densely punctate, interpunctal spaces narrow, mere septa, but increasing in size laterad, and opposite to spiracle becoming half as wide as punctures themselves. Mesoscutum with about 13 transverse carinules, reaching from side to side, separated by interspaces greater than width of a crest. In lateral view of thorax, mesoscutum and scutellum situated at same level, without transverse depression between them. Scuto-scutellar groove narrow, as wide as a puncture at base of scutellum, straight and deep, not foveolate; scutellum broadly sessile. Surface of axilla smooth, without distinct engraved sculpture. Punctures of scutellar disc shallowly lenticular throughout; they decrease in size from middle toward the sides, and along the marginal rim they are half as wide as dorsally, but interspaces uniformly acute everywhere; marginal rim at apex shallowly emarginate. Hairs on third tergite recurved, about as long as width of hind tibia. Anterior declivity of mesosternum separated to mesepimeron by one complete row of large punctures.

♂. Length 3.7 mm. Entirely black; front and vertex, temples and face, sides of clypeal disc, entire thoracic dorsum, including inner half of scapulae, sides of thorax mostly, and the disc of third abdominal tergite near entirely covered with very deep golden-brassy lustre. Scape, hind femur and tibia with (sub-olivaceous)-oily-gray lustre. Ventral aspect of funicle and clava narrowly ferruginous. Apical half of mandibles piceous. Tarsi yellow; inner aspect of femora and tibiae casteneous, except that of hind tibia with long stripe and a broad apical ring yellow. Venation of forewing brownish. Identical to ♀ except: apical third of scape micropunctate, punctures separated by more than their own diameter. Lateral ocelli separated by 1.7× ocello-ocular line; vertex between scrobal carina and occipital crest 1.2× as long as diameter of median ocellus. Malar space without longitudinal sulcus, but with two longitudinal costulae at same place; genae beyond these obliquely costulate, face before them irregularly rugose. First segment of funicle longer than thick, segments 2—6 quadrate, seventh segment transverse. Third tergite of abdomen with rather long and dense hairs on middle of disc, appear to be woolly.

Biology unknown.

Material examined: 1 ♀ h o l o t y p e from Brazil, labelled "Para, Rio Acara, E. HORVÁTH, 1930" and "VII. 25" on the verso; 1 ♀ p a r a t y p e from Brazil, labelled "Para, Belem E. HORVÁTH, 1930" and "VIII. 15" on the verso; both deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. No. 6948 (holotype) and No. 6949 (paratype). 1 ♂ paratype, labelled "Caviana, Brasilien, Ilha-de-Marajo" and "KARWINSKY von KARWIN" collector, deposited in Coll. ARGAMAN.

Etymology — I have the pleasure to dedicate this species to DR. JENŐ PAPP, Zoological Department of Hungarian Natural History Museum, Budapest; outstanding specialist of Braconidae, a noble friend and colleague.

Remark — The association of sexes purely conjectural, and it may eventually happen that I mixed two distinct species, but I think that I did not. While the female mostly melanistic, with at most indistinct metallic shine on the upper front, and with well impressed malar space, the male mostly dark golden, without trace of malar sulcus; they are similar in shape of mesoscutum and I am convinced that they belong to the same species. I possess this unusual species, in male sex, as long as from 1971, but I mistakenly considered that it is *Perilampus brasiliensis* ASHMEAD, 1904, the

description of which fits it very well. Recently DARLING (1983) restudied the lectotype and transferred *brasiliensis* into the genus *Euperilampus* WALKER, 1871. The resemblance between *Euperilampus brasiliensis* and *Durgadas pappi* thus purely superficial. However, tha latter has all main properties and general habitus of an *Euperilampus*, except axillula finger-like, prepectal triangle broader than lateral pronotal panel, and marginalis longer than postmarginalis. Hence in *Euperilampus* the axillula triangular in shape, prepectal triangle much narrower than the adjacent pronotal panel, and marginalis shorter than postmarginalis, I regard *Durgadas pappi* as a protean representative of both euperilampoid and taltonoid line of development. In the cladistic scheme of DARLING (l. c.), the genus *Krombeinius* BOUČEK, 1978 figured as having character-states in combination transitory from the *hyalinus*-group (here in the genus *Taltonos*) and species-groups of *Euperilampus*. Inasmuch *Krombeinius* having the axillula triangular in shape; prepectal triangle less than half as wide as the adjacent pronotal panel, and marginalis longer than postmarginalis, it is a distinctive genus both from *Durgadas* and *Taltonos*, as well as from *Euperilampus*. Until the shape of posterior pronotal margin of *Krombeinius* unknown (character not stated in the original description, as it was discovered only during the present study), and which is sulcate and bicarinulate in *Durgadas*, the latter genus seems to have no close relatives in the family Perilampidae. For more distinctive features of *Durgadas* see also Table I.

Genus **Balintos** gen. n.

Type-species: *Perilampus parvus* HOWARD, 1896.

Female (male unknown) size small. — H e a d thickset, transverse, scrobal cavity shallow (Fig. 36). Entire surface of head, as in the genus *Kekender*, covered with thiny costulae, including the declivity of scrobal cavity, except clypeus, supraclypeal area and bottom of scorbal cavity polished and shining. The scrobal carina sharply differentiated; of fronto-orbital position, diverging ventrad and joining adorbital sulcus of the inner orbit, reaching up to lower corner of eye. Vertex evenly arcuate and smoothly descending into the occipital declivity, without any sharp separation between vertex and occiput as a bordering transverse crest or costulae. Malar space without longitudinal sulcus. Outer eye orbit without definite adorbital sulcus. Antennae short, clava with extremely oblique sutures and a rather deep sensorial groove ventrally, almost as long as the whole clava. — Antero-lateral p r o n o t a l b o r d e r emarginate and bisinuate opposite to spiracle; lateral pronotal panel with only one row of (rather) large punctures, opposite to prepectal triangle; the second row moved anteriorly and situated on the pronotal declivity; between these two rows a complete, sharp, lamelliform crest, contiguous dorsally from one fore coxa to other. Posterior margin of pronotal disc thick, almost entirely sulcate and bicarinulate, although in middle shagreened and this sculpture obscure the sulcus, but the margin definitely not blade-like medially as in other genera. Scuto-scutellar groove deep and narrow, not foveolate, scutellum broadly sessile. Prepectal triangle large, broader than lateral pronotal panel; free, dorsally and behind bordered by large punctures, anteriorly unbordered. Axillula finger-like, as narrow as lower third of axilla; it is carinulate ly margined dorsally, but this carina not transect axilla as in other genera; on the contrary, t he axilla and axillula entirely separated by a vertical row of foveolate punctures (i.e. transversally lengthened ones). Mesosternum with horizontal pad in front of mid coxae. — A b d o m i n a l p e t i o l e transverse. Coloration melanistic, without metallic lustre.

Genus **Goyurfis** gen. n.

Type-species: *Perilampus platigaster* SAY, 1836.

Both sexes size small, occasionally intermediate. — H e a d bulky, mostly hemispheric, often thickset and transverse, with scrobal cavity deep; carinulately margined; of fronto-orbital position, strongly diverging ventrad and approximating inner orbit of eye, without joining the adorbital sulcus. Sculpture of head delicate throughout, occipital margin unbordered. Adorbital sulcus of inner orbit not developed, of outer orbit unusually narrow and adhered to eye margin. Malar space with a shallow sulcus, suture or only indication through two different kinds of sculptures: obliquely striolate genae and papillate to subrugose face. Clava of female with oblique sutures. — Antero-lateral p r o n o t a l m a r g i n perfectly plane or a little narrowing at the panel opposite to prepectus, but not emarginate and bisinuate. Lateral pronotal panel with 1—2 rows of large punctures opposite to prepectal triangle. Posterior pronotal margin sulcate and bicarinulate on each lateral third, narrow and blade-like in the median third. Prepectal triangle large, broader than the lateral panel; free, unbordered anteriorly. Scuto-scutellar groove rather deep and narrow, not foveolate, scutellum broadly sessile. Axillula finger-like and its dorsal carina entirely transect lower third of axilla. Mesosternum with horizontal pad in front of mid coxae. — A b d o m i n a l p e t i o l e transverse. Sixth tergite of male with a prominent, transverse, blunt tubercle. Coloration melanistic, very rarely weakly metallic, dark blue.

Genus **Nilgator** gen. n.

Type-species: *Perilampus mirabeaui* GIRAULT, 1930.

Both sexes medium sized to large, females often very large. — H e a d bulky, thickset and transverse, front rather narrow, scrobal cavity deep. Vertex practically inexistent, the transverse costulae of occiput actually touching scrobal carina. Ocelli in a flat triangle. Scrobal carina strongly developed; of fronto-orbital position, strongly diverging ventrad and joining, or nearly so, the adorbital sulcus of inner eye orbit. Upper front and vertex sharply wrinkled. Adorbital sulcus of outer eye orbit deep, narrow sharply margined with a tiny crest contiguous from malar space dorsally up to the lateral ocellus. Malar space with longitudinal sulcus, about as long as front margin of malar cavity. Apical half of scape of ♂ slightly dilated and flattened. Sutures of clava of ♀ straight. — P r o n o t a l d i s c plane, relatively long; antero-lateral pronotal margin straight, not emarginate and bisinuate. Lateral pronotal panel adjacent to prepectus with three rows of large punctures opposite to triangle. Posterior margin of pronotal disc blade-like. Prepectal triangle large, a little narrower than lateral pronotal panel; unbordered anteriorly. Inner half of scapulae rugose to rugoso-punctate, not conspicuously differentiated from outer half. Scuto-scutellar groove narrow, scutellum broadly sessile. Disc of scutellum with sharp median tubercle (Fig. 35). Axillula triangular in shape. Mesosternum with a horizontal pad in front of mid coxae. — A b d o m i n a l p e t i o l e transverse; third tergite of abdomen dull, with microsculpture. Coloration entirely metallic.

Genus **Yertatop** gen. n.

Type-species: *Perilampus emersoni* GIRAULT, 1930.

Female's (male not seen) size small. — H e a d bulky, hemispheric, with moderately deep scrobal cavity (Fig. 67). Entire head-surface wrinkled, macropunctate and rugose, dull; except clypeal disc with only piliferous punctures, and supraclypeal area and scrobal cavity polished and shining. Front with numerous irregular, vertical costulae, with no sharp scrobal carina individualized among other ones; the innermost costula separating the mirror-like scrobal cavity from roughly sculptate fronto-vertex, run from anterad of median ocellus, moderately diverging ventrad, of position fronto-scrobal, not nearly approximates inner orbit ov eye. No delimitation between vertex and ociput, the uppermost costulae of occipital declivity touching ocellar triangle. Adorbital sulci of inner and outer orbits not developed, their contours lose. Malar sulcus not defined, the malar space obscured by strong sculpture of face and genase. Sutures of clava straight. — P r o n o t a l d i s c flat, its posterior margin blade-like; antero-lateral margin emarginate and bisinuate, with sharp triangular lobe. Prepectal triangle small (Fig. 68), less wide than adjacent pronotal panel; its anterior margin unbordered by row of large punctures. Lateral pronotal panel with some rows of large punctures, which gradually moves to the anterior pronotal declivity. Inner sector of scapulae alutaceous, well differentiated from deeply punctate, subvertical outer sector, although there are some shallow punctures

situated on the line of separation. Scuto-scutellar groove deep, narrow, not foveolate, scutellum broadly sessile. Axillula triangular in shape. Mesosternum with horizontal pad in front of mid coxae. — Abdominal petiole transverse, third tergite with microsculpture (Fig. 101). Coloration entirely metallic.

Genus **Tondolos** gen. n.

Type-species: *Perilampus tasmanicus* CAMERON, 1911.

Both sexes size small to moderate. — Head thickset, with moderately deep scrobal cavity. Entire surface of head sculptate (Fig. 70), including clypeus and scrobal cavity, but not the supraclypeal area; front with numerous vertical, parallel costulae, reaching from vertex to clypeal disc. The innermost one, separating scrobal cavity from the front, so strong or stronger than other costulae; reaching median ocellus at its anterior third, and running down close to middle of front, of position fronto-scrobal, not nearly approximating inner orbit of eye. No separation between vertex and occiput, the uppermost costulae of occipital declivity closely approximating ocellar triangle. Inner and outer orbit of eye either with ill-defined adorbital sulcus (*cairnsensis*), or the outer one deep and sharp edged (*tasmanicus*). Maler sulcus distinct, deep, about as long as front margin of malar cavity. Clava of ♀ with straight sutures. Scape of ♂ slightly modified. — Pronotal disc short, plane, its posterior margin blade-like; antero-lateral margin emarginate and bisinuate, with distinct triangular lobe. Lateral pronotal panel with two rows of large punctures opposite to prepectal tringle. Inner area of scapulae dull, not sharply separated from outer area, between them with intermediate rows of large punctures, and even with unusual row of large punctures along the notaulices. Prepectal triangle large, occupying most of the distance between tegula and front coxa, distinctly broader than the adjacent pronotal panel; bordered on all three sides by rows of large punctures. Scuto-scutellar groove wide, not deep, with smooth contours and longitudinally foveolate; base of scutellum narrow to moderate. Axillula triangular in shape. Mesosternum with horizontal pad in front of mid coxae. — Abdominal petiole transverse; third tergite with microsculpture (Figs 73—74). Coloration entirely metallic.

Genus **Tiboras** gen. n.

Type-species: *Perilampus maurus* WALKER, 1852.

Female (male not seen) size large. Head thickset, with moderately deep scrobal cavity. The facial aspect of head with no any strong sculpture, except for some extremely shallow and delicate piliferous punctures. Scrobal carina well defined dorsally, encircles from behind the median ocellus; then divering and of fronto-orbital type, but vanished a little above the level of antennal toruli; from this point being contiguous as blunt ridge, which approximates inner eye orbit and actually joins the adorbital sulcus; vertex flat, not sharply separated from transversally striolated occipital declivity. Outer eye orbit with deep and large adorbital sulcus, but edgeless. Malar sulcus developed, as long as front margin of malar cavity. Clava with oblique sutures, and with a deep, ovoidal sensorial pit. — Pronotal disc plane, relatively wide; its posterior margin sulcate and bicarinulate from one spiracle to other; antero-lateral margin at most shallowly emarginate. Lateral pronotal panel with two rows of moderately large punctures opposite to prepectal triangle, and a row of very large ones below it (Fig. 106). Prepectal triangle elongated, occupying most of the distance between tegula and front coxa; but it is narrow, a little less than the adjacent pronotal panel; its anterior margin not bordered by a row of punctures (Fig. 106). Inner sector of scapulae polished and shining, well separated from outer half. Scuto-scutellar groove deep, narrow, not foveolate scutellum broadly sessile. Axillula triangular in shape. Mesosternum with horizontal pad in front of mid coxae. — Abdominal petiole transverse, third tergite with microsculpture (Fig. 107). Coloration entirely melanistic.

Genus **Fulaytar** gen. n.

Type-species: *Perilampus singaporensis* ROHWER, 1923.

Female's (male not seen) size moderate. — Head thickset, in facial aspect with shallow, inconspicuous sculpture; scrobal cavity also shallow; margined by a ridge dorsally, which encircles the median ocellus behind; however, along the inner orbit of eyes the ridge distinctly excavated outwardly and being actually carina-like; it is of position fronto-orbital, closely approximating the eyes and join adorbital sulcus at level of antennal toruli. Vertex flat, large,

sharply separated from transversally costulate occipital declivity, Inner and outer eye orbit with adorbital sulcus developed, the outer one narrow abut rather sharp edged, contiguous from malar space up to the vertex. Malar sulcus deep, about as long as front margin of malar cavity. Sutures of clava almost straight, sensorial groove shallow. — P r o n o t a l d i s c short, plane, its posterior margin blade-like; antero-lateral margin not emarginate. Lateral pronotal panel with two rows of moderately large punctures opposite to prepectal triangle, and one row of rather large ones below it. Prepectal triangle long, as broad as adjacent pronotal panel; its anterior margin not bordered by row of punctures. Inner half of scapulae polished and shining, well separated from outer half. Scuto-scutellar groove deep, narrow, not foveolate, scutellum broadly sessile. Axillula triangular in shape. Mesosternum with horizontal pad in front of mid coxae. — A b d o m i n a l p e t i o l e transverse; third tergite with microsculpture (Fig. 100). Coloration in part metalic, in part melanistic.

Genus **Afroperilampus** Risbec, 1956

Type-species: *Afroperilampus meloui* Risbec, 1956, by original designation.

Both sexes with moderate to large size. — H e a d bulky to thickset, with weak sculpture and deep scrobal cavity. Scrobal carina sharp, encircles median ocellus behind, its lower arms diverging, of position fronto-orbital, joining or not adorbital sulcus of inner eye orbit (Fig. 125). Vertex short to very short, transverse costulae of occipital declivity closely approximating to touching median ocellus. Inner and outer eye orbit with ill-defined adorbital sulcus, usually edgeless. Malar sulcus deep, as long as front margin of malar cavity. Clava of ♀ with almost straight sutures and shallow sensorial groove. Scape of ♂ in apical half strongly flattened and widened, but not expanded. — P r o n o t a l d i s c short, convex; its posterior margin blade-like; antero-lateral margin emarginate and bisinuate. Lateral pronotal panel adjacent to prepectus with two rows of moderately large punctures, or only one row and a foveolate groove. Prepectal triangle long, as broad as pronotal panel, its anterior margin not bordered by a row of punctures. Inner half of scapulae either polished and shining, or else alutaceous, shagreened, striolate or wrinkled, and very often with a row of small (not wide and shallow!) and deep punctures between inner and outer sectors. Scuto-scutellar groove with sharp contour only anteriorly, enlarged posteriorly, longitudinally foveolate (Fig. 87); scutellum with narrow base. Axillula triangular in shape. Mesosternum with horizontal pad in front of mid coxae. — A b d o m i n a l p e t i o l e transverse, third tergite with or without microsculpture (Figs 84—86). Coloration predominantly melanistic, but with few entirely metallic species also occur (see remarks). Sixth tergite of male usually with transversally inflated ridge, densely punctate and pilose.

Remark — The type-species of this genus, *A. meloui* Risbec, is little known and was not available among the material studied. I have no doubt, however, that three taxa, namely *tassoni* Girault, 1922 from Australia, *meloui* Risbec, 1956 from Ivory Coast, and *birmanus* Mani et Kaul, 1973 from SE. Asia are very slosely allied, if not identical. Overall, the species of this genus are difficult to separate, but when *meloui* being revised, it seems likely that the wholly metallic coloured species, grouped around *eximius* Masi, 1932, need new genus to made the entity convenably homogenous. The species around *tassoni* have the occipital declivity with shallow median impression vanished dorsally, while *eximius* has a strong one, which reaches median ocellus. In the collection of the Hungarian Natural History Museum I fond a rather interesting specis from Ethiopia, labelled "Abyssinia, Marako, 1912" and collected by the late Ödön Kovács, during his tragically-ended expedition, but which is unfortunately headless and cannot be described. It is whortwhile to say that the genus *Fulaytar* very distinct from *Afroperilampus* owing to its conspicuously long, sculptureless vertex.

Afroperilampus hurap sp. n.

♀. Length 3.5—3.8 mm. Entirely brillant deep black; except pronotal disc, outer half of scapulae, mesoscutum and scutellum dark, oily, olivaceous-green. Scape black, funicle dark brown, only clava ferruginous. Apical two-thirds of mandibles piceous. Femora and tibiae black, with indefinite oily-gray to slight bluish shine. Tarsi, venation of forewing, and the short, scattered pubescence of forewing membrane yellowish-brown. Pubescence of body and appendages pale. — H e a d bulky, with deep scrobal cavity; in dorsal view, a little more than twice as wide the head as long. Scrobal carina moderately sharp, entire beyond median ocellus, the ventral arm reaching below to antennal toruli and approximating inner eye margin to a distance a little greater than width of scape. Facial aspect of head, genae and temples polished and shining; upper front, declivity of scrobal cavity, face and disc of clypeus covered with shallow, dimpled and moderately scattered piliferous punctures. Apical margin of clypeus conspicuously emarginate, concave. — O c e l l i arranged in a flat triangle, lateral ocelli separated by 1.6× ocello-ocular line; vertex flat, the median ocellus separated from foremost crest of occipital declivity by its own diameter. Adorbital sulcus of outer eye margin deep, sharp edged, parallel to the margin. Malar sulcus curved, as long as front margin of malar cavity. Funicle clavate; first segment conical, longer than thick, segments 2—4 quadrate, 5—7 transverse; last two segments of clava with oblique sutures, an ovoidal sensorial area on the last segment plane, but not in a groove. — Middle of p r o n o t a l d i s c with 2—3 transverse rows of punctures, irregular ones, and separated by uneven crest. Lateral pronotal panel with two rows of large punctures opposite to prepectal triangle. Outer half of scapulae with 3 rows of deep, lenticular punctures and acutely sharp interspaces; inner half polished and shining, with some irregular rows of micropunctures. Mesoscutum and scutellum covered with rather uniform sized, shallow and flat-bottomed punctures; interspaces low, linear, with smooth contours. Sides of scutellum practically parallel, marginal rim not distinctly emarginate apically. Lateral discal areas of propodeum entirely shagreened, nowhere shining. Declivity of mesosternum separated from mesepimeron by one row of large punctures; tibial groove transversally costulate on its anterior half, smooth on posterior one. Hind tibia almost entirely metallic on its posterior upper edge from base to apex, save a yellow ring at the base. Marginalis, postmarginalis and stigmalis of forewing in a ratio of about as 3.0 : 2.0 : 1.0; radial knob club-shaped, without uncus; forewing without marginal fringe. — A b d o m i n a l p e t i o l e transverse; second and third tergite smooth and shining, with some extremely shallow, dimpled setiferous punctures on the sides.

♂ and biology unknown.

Material examined: 1 ♀ h o l o t y p e and 1 ♀ paratype, labelled "Uganda, Bussu, 1909, Dr. E. BAYON"; holotype deposited in the collection of Museo Civico di Storia Naturale, Genova; the paratype in Coll. ARGAMAN.

Afroperilampus liliae sp. n.
(Fig. 125)

♂. Length 3.2 mm. Entirely black; walls of punctures on pronotal disc and outer half of scapulae golden-bronzy, on a median stripe of mesoscutum steel-bluish; interpunctal spaces and bottom of large punctures everywhere black — thus the metallic lustre evident only in oblique light. Dorsellum golden, scape with oily-shine. Pedicellus, funicle, clava, mandibles, except mirror-likely golden-violaceous base, apex of tibiae narrowly, tarsi, venation of forewing, and its short, sparse pubescence, and hairs of vertex and occipital declivity dark piceous to brownish. — H e a d with scrobal carina sharp, complete behind median ocellus, strongly diverging and joining inner adorbital sulcus at lower half of eye. Facial aspect of head polished and shining, without distinct sculpture except apical half of clypeal disc covered with some scattered piliferous punctures. Ocelli arranged in a line, lateral ocelli separated by 1.5× length of ocello-ocular line; foremost crest of occipital declivity actually touching median ocellus. Occiput behind eye subparallel on a short distance, then strongly converging, distinctly narrower than eye. Temples and genae polished and shining, dispersed with some shallow, inconspicuous punctures. Adorbital sulcus of outer orbit shallow, edgeless. Malar sulcus as long as front margin of malar cavity. Apical one-fifth of scape with sensorial area sparsely punctate. First segment of funicle longer than thick, segmentes 2—3 quadrate, 4—7 transverse; pubescence short, appressed. Apical margin of clypeus perfectly straight. — Middle of p r o n o t a l d i s c with two transverse rows of large punctures, separated by a sharp crest. Inner half of scapulae obliquely striolate. Mesoscutum and scutellum with rather small, uniform-sized, lenticular punctures, separated by narrow interspaces, mere septa. Sides of scutellum parallel. Lateral discal areas of propodeum alutaceous. Declivity of mesosternum separated from me-

sepimeron by one row of large punctures; tibial groove mostly smooth. Marginalis, postmarginalis and stigmalis of forewing in a ratio of about as 4.0 : 2.0 : 1.0; radial knob without uncus; marginal fringe complete. — Abdominal petiole transverse. Second tergite of abdomen weakly alutaceous except its median furrow; third tergite, on sides of anterior half or more, densely pin-punctate; a median stripe and posterior one third to half, polished and shining; sides clothed with few suberect, white setulae, shorter than width of hind tibia. Pubescence of head and thoracic dorsum mostly dark, yellowish-brown to piceous or near black; on propodeum and legs pale. Hypopygium sparsely punctate and pilose; with olivaceous-green shine; apically rounded.

♀ and biology unknown.

Material examined: 1 ♂ holotype, labelled „Algeria, Biskra, 1917, G. Gribodo", deposited in Museo Civico di Storia Naturale, Genova.

Etymology — It is my pleasure to name this new species after S-ra Dr. Lilia Capocaccia, director of the Museo Civico di Storia Naturale 'Giacomo Doria', Genova, Italy, for her kind help in loaning types of Masi, and other unworked material.

Afroperilampus horocos sp. n.
(Figs 49, 85)

♀. Length 4.5 mm. Body entirely black; with some oily-gray lustre on scape, side of thorax, and outer aspect of femora and tibiae. Pedicellus, funicle and clava entirely ferruginous, dorsal a little darker. Mandible entirely piceous, at base with a castaneous spot of metallic shine. Vention of forewing yellowish-brown, tarsi yellow, inner aspect of femora and tibiae castaneous. — Pubescence of body everywhere white, except forewing membrane clothed with rather short dark pubescence. Ocelli situated in a flat triangle, lateral ocelli separated by a distance 1.6× as long as ocello-ocular line; vertex rather short, the (irregular) costulae of occipital declivity practically touching scrobal carina. Vertex between lateral ocellus and eye polished, with some weak, indefinite, shallow punctures. Scrobal carina traceable up to the level of antennal toruli, then evanescent, and contiguous as a ridge to the inner orbit. Upper front, sides of scrobal cavity above, face, clypeal disc and anterior half of genae covered with poliferous punctures, which are rather small alternating with large, dimpled ones. Posterior half of genae longitudinally striolate, the striolations recahing transverse carina of malar cavity. Lower margin of clypeus straight. Adorbital sulci indefinite, edgeless. Funicular segments 1—5 quadrate, 6—7 transverse, sutures of clava straight or nearly so, without distinct sensorial groove. — Middle of pronotal disc with three transverse, irregular rows of punctures; antero-lateral emargination with a small, blunt triangle. Inner half of scapulae polished, with irregular alutaceous sculpture here and there. Punctures of mesoscutum relatively small in the centre, and from there they increase in size in all direction, the largest ones situated along pro-mesonotal articulation; interspaces rather narrow, acute. Punctures and interspaces of scutellar disc similar to that from centre of mesoscutum, they are nevertheless of same size throughout. Lateral discal area of propodeum moderately aciculate. Marginalis, postmarginalis and stigmalis of forewing in a ratio as 3.0 : 2.0 : 1.0; radial knob without uncus. Legs normal, posterior upper edge of hind tibia not metallic. — Abdomen a little narrower than thorax, elongated rhomboidal; disc of second tergite with some shallow punctures on the sides, before the apex; third tergite polished and shining, impunctate and clothed with sparse, suberect, moderately long, pale pubescence; fourth tergite with similar hairs but shorter.

♂. Length 3.5 mm. Entirely black, with weak golden casting on pronotum, mesoscutum and outer half of scapulae; hind femur and tibia with (sub-olivaceous)-oily-gray lustre; pubescence of occiput and of thoracic dorsum dark; pubescence of forewing longer and denser. Punctures and interspaces of mesoscutum and scutellum a bit larger, of uniform size throughout. Funicle darker, first segment quadrate, the following ones transverse. Scape dark, subcylindrical; apical one third flattened and testaceous, densely punctate, interspaces as wide or less, than diameter of punctures. Anterior two-thirds of third tergite with rather fine, microscopically engraved, transverse crisps (Fig. 85). Subgenital plate digitiform, alutaceous and punctate; testaceous on the sides with a golden stripe mesad. Otherwise as the female.

Biology unknown.

Material examined: 1 ♂ holotype, labelled "Arusha, 1905" and "Africa or. (ientale), Katona" (= Kálmán Kittenberger); intact specimen was on micropin, remounted by me to a white card to avoid subsequent corrosion; deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. No. 6950. 1 ♀ paratype, labelled "Eritrea, Cheren. D. F. Derchi, 1894"; intact specimen, but it was badly immersed in gum; deposited in Museo Civico di Storia Naturale, Genova.

Remark — The sexes being associated on presumption and judgement on aspectual similarity, appartenence not proved and one may assume that they belong to two different species, but I do not think so. Punctures of male mesoscutum and scutellum large and dissimilar to that of female, being identical with those of *Afroperilampus laticeps* MASI, 1940, recoded identically from Uganda. However, the lower arm of scrobal carina in *laticeps* terminating as far from inner orbit of eye, as width of scape, while in both sexes of *horocos* it joins the adorbital sulcus of inner orbit. Apical margin of clypeus concave in *laticeps* and straight in both sexes of *horocos*. By no means, these two species have many common features.

Afroperilampus delbotor sp. n.
(Figs 33, 50—51, 86)

♀. Length 3.2 mm. Body entirely green, with squash of bluish-green and olivaceous-green to brassy; interpunctal spaces of mesoscutum and scutellum slightly, hind femur and tibia strongly, violaceous. Mandibles funicle and clava yellowish-testaceous. Tarsi yellow. A broad ring at base and apex of hind tibia orange. Pilosity of forewing membrane dark, moderately long and dense. Head shape unusual: very low and wide, in facial view transversally ovoidal, about 1.4× as wide as high. — O c e l l i situated in a line, lateral ocelli separated by a distance 1.6× as long as ocello-ocular line; vertex rather short, the distance between scrobal carina and foremost costula of occipital declivity 0.4× as long as major diameter of median ocellus. Scrobal carina weak behind the median ocellus, but rather strong ventrally, reaching to the level of base of clypeal disc, then evanescent, not quite joing the adorbital sulcus but separated from eye margin by a distance comparable with width of scape. Upper front, vertex, scrobal cavity above, face, clypeal disc and anterior half of genae sparsely punctate, with shallow, dimpled punctures. Adorbital sulci without sharp contours. First segment of funicle longer than thick, segments 2—5 quadrate, 6—7 transverse; sutures of clava straight (ventral aspect of clava now sinked due to drying and the shape of sensorial groove uncertain). — Middle of p r o n o t a l d i s c narrow, convex with two transverse rows of large punctures separated by a low crest; antero-lateral emargination with an acute, sharply triangular lobe. Inner half of scapulae delicately alutaceous throughout. Mesoscutum and scutellum with large, uniform-sized, shallow and flat-bottomed punctures; interspaces rather narrow, acute. Lateral discal areas of propodeum delicately aciculate, practically smooth and shining. Marginalis, postmarginalis and stigmalis of forewing in a ratio of about 3 0 : 2 0 : 1 0; radial knob without uncus. Legs normal. — Third tergite of a b d o m e n polished and shining, with few shallow, dimpled setiferous punctures on the sides; pubescence sparse, short.

♂. Length 2.5 mm. Identical to female in all main features, except: Scrobal carina ventrally very closely approximating eye, to a distance less than half width of scape; then running parallel to adorbital sulcus but not quite join it. Apical 0.2 of scape flattened, testaceous, micropunctate, with interpunctal spaces greater than width of punctures. Segments 1—2 of funicle quadrate, 3—7 transverse. Third tergite of abdomen with some shallow transverse crisps in the middle (Fig. 86), a little more densely covered with dimpled punctures.

Biology unknown.

Material examined: 1 ♀ h o l o t y p e, labelled "Uganda, KATONA" (= KÁLMÁN KITTENBERGER), and "Mujenje, 1913. VIII"; 1 ♂ p a r a t y p e, labelled "Africa or. (ientale) KATONA" and "Arusha, 1905"; both deposited in the Hungarian Natural History Museum, Budapest, Hym. Typ. No. 6951 (holotype) and No. 6952 (paratype).

Remark — This new species is undoubtedly allied habitually to *A. eximius* (MASI), but can not be confused with it, owing to the unusual sculpture of mesoscutum, as well as the quite purple coloration of *eximius*. Both sexes of *delbotor* are pale bluish-green, and I think that they are correctly associated, although they came from different places and are slightly different in some features.

Genus **Itonayis** gen. n.

Type-species: *Perilampus micans* DALMAN, 1820.

Size small to moderate. Head tickset, scrobal cavity shallow, surface of head mostly with strong sculpture. Upper front wrinkled to costulate, but with no sharp separation between scrobal cavity and front. Ocelli arranged in a flat triangle, lateral ocelli separated by a distance equal to ocello-ocello-ocular line. Vertex short, foremost crest of the occipital declivity touching median ocellus. Inner orbit with no adorbital sulcus, outer orbit with a deep one but edgeless. Malar sulcus deep, as long as front margin of malar cavity. Scape of male little modified, clava of female unmodified. Pronotal disc rather short, convex, its posterior margin blade-like; antero-lateral margin not emarginate; lateral pronotal panel with 3—5 irregular rows of punctures opposite to prepectal triangle. Inner, polished sector of scapulae large, three times as wide as outer, roughly sculptate sector, which covered with only two longitudinal rows of large punctures. Prepectal triangle rather large, bordered on all three sides by rows of large punctures (Fig. 90). Scuto-scutellar groove enlarged behind, longitudinally foveolate, scutellum with narrow base. Axillula triangular in shape. Scutellum with apparent frenal crest. Propodeum convex, obliquely declivous (Fig. 98), long and narrow, entirely rugoso-reticulate. Mesosternum with horizontal pad in front of mid coxae. Third tergite without microsculpture. Coloration entirely metallic.

Genus **Vaktaris** gen. n.

Type-species: *Cynips auratus* PANZER, 1798.

Size small to large. — H e a d bulky, hemispherical, with deep scrobal depression especially in large females, currently thickset and transverse in small ones and in males; with scrobal ridge sharply projecting but with no carina, position of the ridge fronto-orbital, diverging ventrally and reaching inner orbit below half height of eyes. Facial portion of head smooth, with piliferous punctures only, often with subrugosely dense around ocellar triangle. Vertex either shorter than diameter of median ocellus or considerably longer than that. Inner and outer eye orbit with no adorbital sulcus, temples and genae without longitudinal striolations. Malar sulcus deep, as long as, or longer than front margin of malar cavity. Scape of ♂ slightly dilated and flattened in its apical half. Clava of ♀ with straight sutures, without deep sensorial groove, except in *ganuz* and *ilvauber* depressed. — P r o n o t a l d i s c narrow, convex, its posterior margin blade-like; antero-lateral margin entire, straight (Fig. 103), or emarginate and bisinuate opposite to spiracle (Fig. 102). Lateral pronotal panel enclosed or open, i.e. with a smooth band transitory between panel and the prepectal triangle; the latter free, not consolidated to the pronotum, moderately long, as broad or broader than pronotum, its anterior margin unbordered by row of punctures. Inner half of scapulae polished, costulate or often delicately aciculate, but well differentiated from outer half. Middle of mesoscutum with prominent, smooth tubercle (Figs 102, 103). Scuto-scutellar groove enlarged behind, longitudinally foveolate, scutellum with narrow base. Axillula triangular in shape. Mesosternum with horizontal pad in front of mid coxae. Propodeum with plical carina sharply developed. — A b d o m i n a l p e t i o l e transverse. Third tergite of abdomen usually without, occasionally with conspicuous microsculpture (Fig. 108). Coloration entirely metallic, often flagrant.

Remark — From the four species treated in the key, two are new (*ganuz*, *ilvauber*), and two already known (*auratus*, *igniceps*). Meanwhile, only two of these (*auratus*, *ganuz*) are known in both sexes, the other two only in females. Although all species being united together through the presence of tuberculate mesoscutum, paradoxically, this is the most heterogenous genus among others treated herein. The lateral pronotal panel enclosed anterad of prepectal triangle by rows of punctures in *auratus*, i.e. it is of *violaceus*-type; while it has a transitory band over in females of *ganuz*, *igniceps* and *ilvauber*, i.e. it is of *tristis*-type (less evidently in *ganuz* male, which is small and the panel comprimate). Besides, *ganuz* differs from the congeners owing to rather broad lateral pronotal disc, not emarginate on antero-lateral margin, and by sharply microsculptate third abdominal tergite — characters that occur in other

genera but not in other three species of *Vaktaris*. Ever it may be attempted by one to subdivide this taxa in more homogenous units, then two species that probably belong here, *Perilampus brisbanensis* GIRAULT, 1915 (known from Queensland and New South Wales), and *Perilampus dentatinotum* GIRAULT 1928 (from Lord Howe Island), compulsory should be reviewed.

Vaktaris ilvauber sp. n.
(Figs 54, 157)

♀. Length 3.0 mm. Head, thorax and abdomen entirely gold-green, here and there brillant dark-olivaceous; upper front and vertex brassy. A broad transverse stripe on thorax, including prepectus, scapulae entirely, anterior half of mesoscutum on iterpunctal spaces, inclusive the tubercle, golden-purple to violaceous. Hind femur olivaceous-green, other femora and tibiae castaneous with indefinite violaceous lustre. Mandibles pale ferruginous, save basal dark spot. Funicle light orange-yellow, clava infuscated. Tarsi and venation of forewing yellowish-brown. Pubescence of body and appendages everywhere snow-white, except forewing membrane clothed with very long dark pubescence. — H e a d compressed dorso-ventrally, vertex very low, little bulging, almost straight, so that eye unusually stout; at its maximum, in lateral view, only 1.3× as high as wide, a little above the middle almost transversally truncate. — O c e l l i arranged in a flat triangle; distance between lateral ocelli 1.3× as long as ocello-ocular line. Vertex short, distance between median ocellus and foremost crest of occipital declivity about 0.6× the major diameter of median ocellus. Head only with occipital declivity transversally costulate, and with a longitudinal furrow of vertex touching median ocellus, practically without any other sculpture, except for very minute piliferous punctures. Apical margin of clypeus straight. Malar sulcus rather shallow,about as long as front margin of malar cavity. Funicle rather short, with (being crumpled due to dessication, the following ratios are crudely approximative) first segment quadrate, segments 2—7 transverse; clava (entirely collapsed) apparently with a sensorial groove on last two segments. — Middle of p r o n o t u m narrow, with two transverse rows of large punctures; antero-lateral margin emarginate and bisinuate, with triangular lobe acute. Lateral pronotal panel and prepectus as shown in Fig. 54. Inner half of scapulae polished and shining, entirely metallic. Mesoscutum and scutellum with moderately large, flat-bottomed, hexagonal punctures; interspaces rather narrow, acute. Sides of scutellum perfectly parallel, apex broadly round, not emarginate. Lateral discal areas of propodeum polished and shining. Forewing with well developed marginal fringe; ratio of marginalis, postmarginalis and stigmalis as 3.0 : 2.0 : 1.0 Hind tibia with no glabrous stripe, its posterior upper edge metallic from base to apex. Hind femur about twice as wide as mid one. — Second t e r g i t e polished, glabrous; third with a median stripe of sparse, long, recurved hairs, punctures almost indistinct.

♂ and biology unknown.

Material examined: 1 ♀ h o l o t y p e, labelled "Punta-Gorda, Guatemala" in Coll. ARGAMAN.

Remark — Although this species runs together with *igniceps* in the key, it does not nearly resemble it. In fact, I know no any other species in this family with so undersided eye, with the ratio of maximum height: width only 1.3; the ratio is 1.5 in *igniceps* and 1.6 in *auratus* and *ganuz*.

Vaktaris ganuz sp. n.
(Figs 103, 108)

♀. Length 3.7 mm. Head, scapè, pronotum, sides of mesoscutum, prepectus, apex of scutellum, a median line and side areas of abdominal tergites golden-purple. Middle of mesoscutum and scutellum dark violaceous, with bottom of punctures black. Inner half of scapulae gold-green anteriorly, dark blue posteriorly. Mandibles piceous. Funicle testaceous, last segment of clava infuscated. Axillae, propodeum, pleural and sternal region of thorax, coxae, femora and tibiae bluish, with violaceous tint here and there. Tarsi yellowish brown. Abdomen basically gold-green. Pubescence of body white. Forewing hyaline, venation and the rather short pu-

bescence of colour of the amber. — H e a d smooth, with no trace of carina in ocellar triangle. Vertex flat, without median furrow; rather long, the distance between median ocellus and foremost crest of occipital declivity twice as long as major diameter of median ocellus; lateral ocelli separated by a distance 1.6× as long as ocello-ocular line. Surface of head covered with scattered, shallow, dimpled piliferous punctures, which are a little stronger on upper ridge of scrobal cavity. Segments 1—3 of funicle a little longer than wide, 4—7 transverse; clava with deep sensorial groove on last two segments. — Middle of p r o n o t u m wide, with three transverse, irregular rows of large punctures; antero-lateral margin not emarginating. Mesoscutum with extraordinary shallow punctures; on anterior half of the disc the interpunctal spaces about as wide as punctures themselves; on posterior half only one-sixth or less. Punctures of scutellum a little deeper, interspaces one third to one half of their diameter. Inner half of scapulae entirely, obliquely striolate. Lateral discal areas of propodeum polished and shining. Marginalis, postmarginalis and stigmalis of forewing in a ratio of about as 2.5 : 2.5 : 1.0; radial knob without uncus. Posterior upper edge of hind tibia metallic from base to apex. — Second t e r g i t e of abdomen delicately alutaceous, third and fourth tergite densely pin-punctate and short pilose.

♂. Length 3.5 mm. Similar to female in very aspect, except scape gold-green, with sensorial area on upper 0.3, covered with large punctures, which are wider than interspaces. Vertex with no trace of keels or median furrow. Mesoscutum and scutellum with punctures of uniform size throughout. Second tergite entirely alutaceous. Third tergite densely and deply pin-punctate (Fig. 108), definitively coriaceous, or in oblique light appearing to be quite rugose toward the sides, saving a very narrow apical margin polished. Shape of hypopygium unusual for the genus: broader than long, its apical margin emarginate, surface rather flat, densely aciculate.

Host unknown.

Material examined: 1 ♂ h o l o t y p e, labelled "Israel, n.[ear] Dead Sea, 29. VI. 1962, J. KUGLER", deposited in the collection of Department of Zoology, Tel Aviv University, Tel Aviv. 1 ♂ pa r a t y p e, from Israel, Wadi of Qumeran, 9. VI. 1986, G. AIDES; 1 ♀ paratype. from Israel, Dead Sea area, Ein Feschka springs, no date, both paratypes in Coll. ARGAMAN.

Etymology — Name derived from the Hebrew correspondent for Dead Sea Scrolls, which were discovered at the same place as this new species.

Remark — A few years ago I mistakenly considered this species as *eximius* MASI, the latter recorded from South Europe and Central Asia, judging from the statement of STEFFAN (1952: 73) that mesoscutum of *eximius* provided by a residue of tubercle, of *auratus*-type. When I saw the type of *eximius*, and ascertained that it belongs to an entirely different complex of species, I simultaneously realized the consequence of generic division of the collective genus *Perilampus*. So much material latently existent in museums and collections often remain unworked because students are not familiar with the limits and intrinsic structure of the group, and then misleadings like of mine may be unavoidable. The division is may help to place the species within the complexes better, and smaller number of types needed for comparison in case of new discoveries. *Vaktaris ganuz* is an interesting, probably Saharo-Sindian element in Middle East, which, although related to *auratus*, has the closests relatives with microsculptate third tergite spread in Afrotropical area, in Indian subcontinent and in Indo-Austral zoogeographical region.

Genus **Bagdasar** gen. n.

Type-species: *Bagdasar amnonius* sp. n.

Female's (male unknown) size moderate to large. Head transverse, with moderately deep scrobal cavity; scrobe not carinulately margined, no trace of a keel even anterad of lateral ocellus; scrobal ridge distinct, of vertexo-orbital type, strongly diverging just before of lateral ocellus and almost transversally join inner orbit. Vertex concave, longitudinally impressed.

Head sculpture inconspicuous. Eye encircled by adorbital sulcus, which is edgeless. Malar sulcus deep, as long as front margin of malar cavity. Middle of pronotum wide, with three transverse rows of large punctures and a ribbon-like polished band beyond them; the posterior margin blade-like; antero-lateral margin not emarginate; lateral pronotal panel with two rows of large punctures throughout. Prepectal triangle not bordered anteriorly. Inner half of scapulae sharply separated from outer half. Scuto-scutellar groove enlarged behind, longitudinally foveolate, scutellum with narrow base. Disc of scutellum with smooth median tubercle. Axillula triangular in shape. Propodeum with plical carina complete. Mesosternum crest-like, without horizontal pad in front of mid coxae. Abdominal petiole transverse, third tergite without microsculpture.

Bagdasar amnonius sp. n.
(Figs 99, 115)

♀. Length 4.0 mm. Black, with upper front, vertex, temples and thoracic dorsum dark olivaceous-green; inner half of scapulae of deeper colour, near black; scrobal ridge at ocellar triangle golden-purple; mesoscutum and scutellum with weak bluish squash, tubercle violaceous. Scape black and brassy, funicle testaceous, last two segments of clava infuscated (Fig. 115). Mandibles dark piceous. Femora, tibiae and tarsi honey-yellow, except front femur violaceous. Venation of forewing yellowish-brown; membrane clothed with long, moderately dense, brown pubescence; marginal fringe developed. — Pubescence of body and appendages white, short. Face and clypeal disc with few shallow, dimpled punctures. Ocelli arranged in a very flat triangle, lateral ocelli separated by a distance 2.2× as long as ocello-ocular line. Vertex short, median ocellus almost touching foremost crest of occipital declivity. Genae smooth. — Punctures and interspaces of mesoscutum increase in size posterad; on scutellar disc uniform, moderate. Inner half of scapulae polished, mirror-like. Lateral discal area of propodeum aciculate. Marginalis, postmarginalis and stigmalis of forewing in a ratio as 2.5 : 2.0 : 1.0; radial knob with a blunt uncus. Declivity of mesosternum separated from mesepimeron by one row of large punctures; tibial groove smooth. Legs normal. — Abdomen elongated, rhomboidal; polished and clothed with rather short and scattered pubescence.

♂ and host unknown.

Material examined: 1 ♀ holotype, from South Africa, Natal, Pietermaritzburg, Ashburton, 3. X. 1983. A. FREIDBERG, deposited in Coll. ARGAMAN.

Etymology — Species is dedicated to its collector, Dr. AMNON FREIDBERG, Department of Zoology, Tel Aviv University, excellent specialist of Diptera, who kindly donated me this valuable specimen.

Genus **Zuglavas** gen. n.

Type-species: *Perilampus stygicus* PROVANCHER, 1888.

Female's (male not seen) size small. — Head transverse, scrobal cavity moderately deep, not carinulately margined; scrobal ridge of fronto-orbital type, reaching inner orbit below upper third of eye. Ocelli arranged in a flat triangle; vertex plane, short, the foremost crest of occipital declivity touching median ocellus. Head smooth. Eye margin with shallow, edgeless adorbital sulcus. Malar sulcus deep, about as long as front margin of malar cavity. Sutures of clava straight, with no sensorial groove. — Middle of pronotum narrow, with two transverse rows of punctures; posterior margin blade-like; antero-lateral margin delicately emarginate and bisinuate, triangle acute; lateral pronotal panel with one row of large punctures. Prepectal triangle rather large, about twice as wide as the panel, its anterior margin not bordered. Pretegular carina of scapulae evanescent, the lobe deeply emarginate, acute (Fig. 104); the entire border of outer half of scapulae low, comprimated from the sides, so that in dorsal view of thorax, upper margin of prepectal triangle produced a longitudinal furrow anterad of tegula. Inner half of scapulae alutaceous. Scuto-scutellar groove enlarged behind, longitudinally foveolate, scutellum with narrow base. Axillula triangular in shape. Propodeum with plical carina complete. Mesosternum with distinct, but rather narrow horizontal pad in front of mid coxae. — Abdominal petiole subelongate to elongate, second tergite only sparsely pilose, third tergite without microsculpture; abdomen globular, unusually corpulent. Coloration melanistic.

Remark — I have a female specimen, tentatively identified as *Perilampus prothoracicus* (SMULYAN, 1936); if identification is accurate, then this species also belongs to the genus *Zuglavas*.

Genus **Ihrambek** gen. n.

Type-species: *Perilampus chrysonotus* FOERSTER, 1859.

Both sexes size small to moderate. — H e a d transverse, scrobal cavity shallow to rather shallow; no trace of scrobal keel or scrobal ridge; front convex, lenticular, bot in vertical and transverse sections. Ocelli arranged in a triangle; vertex convex, with no median furrow, smootly separated from occipital declivity, whose transverse costulae far removed from median ocellus, by 1.8—2.5× its own diameter. — H e a d sculpture weak (*anomocerus*), to moderate (*chrysonotus*), but often dull, with costulae anterad of ocellar triangle and rugosities on the face, along clypeal disc (*nigellus*). Adorbital sulcus of outer eye orbit deep, rather sharp edged. Malar sulcus rather long, distinctly longer than combined width of antennal toruli, but practically only as long as front margin of malar cavity. Scape of ♂ with moderately flattened and dilated apical half. Clava of ♀ with almost straight sutures and with no sensorial groove. — Middle of p r o n o t u m narrow, with transverse rows of punctures; its posterior margin blade-like; antero-lateral margin not emarginate. Pro-mesonotal spiracle entirely covered, well distinct and exteriorized in all other genera; postero-lateral corner of pronotal disc, opposite to scapulae not emarginate as usual for the placement of spiracle. Similarly, antero-upper corner of prepectal triangle oblong, and not prolonged in an acute lobe toward the spiracle, as in all other genera; prepectal triangle otherwise elongated, and bordered on all three sides by a row of punctures. Lateral pronotal panel with three rows of small, irregularly disposed punctures. Inner half of scapulae smooth. Scuto-scutellar groove enlarged behind, longitudinally foveolate. Axillula triangular in shape. Propodeum with plical carina developed. Mesosternum keel-shaped, with no horizontal pad in front of mid coxae. — A b d o m i n a l p e t i o l e transverse, third tergite without microsculpture. Coloration mostly melanistic, with slight metallic squash.

Genus **Olarlar** gen. n.

Type-species: *Olarlar cocegus* sp. n.

Both sexes size moderate to large. — H e a d strong, transverse, with relatively deep scrobal cavity; with sharp ridge, of position fronto orbital (*cocegus*) or vertexo-orbital (all other species), but scrobal carina traceable at most anterad of ocellar triangle. Vertex usually short and concave, with median impression and costulae of occipital declivity approximating median ocellus; or occasionally (in *cocegus*), vertex plane, with occipital costulae far removed from median ocellus. Both inner and outer orbit (except in *cocegus*) with sharp adorbital sulci, provided or not with sharp edge. Malar sulcus deep, as long as front margin of malar cavity; often shallow and longer (*cocegus*). Scape of ♂ weakly flattened and dilated on apical half. Clava of ♀ with straight sutures, with no sensorial groove. — Middle of p r o n o t a l d i s c narrow, with two transverse rows of large punctures; posterior margin blade-like; antero-lateral margin not, or at most shallowly, inditinctly emarginate. Lateral pronotal panel with two rows of large punctures. Prepectal triangle large, broader than the adjacent panel, bordered on all three sides by row of punctures, although the anterior row usually less regular than the other two. Inner half of scapulae smooth, often sulcate behind, usually with transitory punctures along the outer sector. Mesoscutum with unusually dimpled large and irregular punctures. Scuto-scutellar groove enlarged behind, longitudinally foveolate, scutellum with narrow base. Axillula triangular in shape. Plical carina of propodeum complete. Mesosternum with unusually large horizontal pad in front of mid coxae (Fig. 155). — A b d o m i n a l p e t i o l e transverse, third tergite without microsculpture, or at most a shallow one on limited extent (*cocegus*). Coloration entirely or near entirely metallic.

Olarlar cocegus sp. n.
(Fig. 126)

♀ Length 4.0 mm. Head and scape gold-green with strong purple squash; entire thorax, abdomen, femora and tibiae bluish-violaceous, posterior upper edge of hind tibia entirely metallic from base to apex. Funicle and clava black. Mandibles reddish, with greenish spot at base. Tarsi and venation of forewing reddish-brown. Pubescence of body white, except vertex, occiput, thoracic dorsum and forewing membrane with reddish-brown hairs; those of wing long and dense, marginal fringe complete. Entire facial aspect of head, including vertex, genae and temples, polished and shining, with no noticeable sculpture except some scattered, shallow piliferous punctures. Scrobal ridge blunt everywhere, not keel-shaped at vicinity of median

ocellus; adorbital sulci not developed. — Ocelli arranged in a flat triangle, posterior third of median ocellus situated between lateral ocelli; all are circular in shape; lateral ocelli separated by a distance a little less (0.86×) than ocello-ocular line. Vertex flat and smooth, the distance between median ocellus and foremost crest of occipital declivity a bit greater than diameter of an ocellus. Malar space a little longer than front margin of malar cavity, without impressed malar sulcus, only a weak suture traceable. Apical margin of clypeus straight. Funicle not clavate; first segment a little longer than wide, 2—5 quadrate, 6—7 transverse; sutures of clava straight, with no sensorial groove. — Middle of pronotal disc narrow, with two transverse rows of punctures and two transverse carinules, one of them on the margin, the second between the rows; antero-lateral margin not emarginate. Lateral pronotal panel with 2—3 irregular rows of punctures opposite to prepectal triangle. Posterior one third of pronotal disc with a transverse ribbon-like band polished and shining. Prepectal triangle large, broader than the panel, and bordered on all three sides by row of punctures, the anterior row of smallests punctures incomplete. Outer half of scapulae with rather deep, sharp edged punctures; inner half polished and shining. Mesoscutum covered with transversally ovoidal, deep and sharp edged umbilicate punctures; interpunctal spaces on anterior half as wide as the punctures themselves, on posterior half only one third as wide. Scuto-scutellar groove deep, longitudinally foveolate. Scutellar disc with deep, but dimpled punctures; interspaces as wide mesad as the punctures, decreasing in size laterad, and being acutely keel-shaped along the marginal rim; apex of which triangular, not emarginate. Lateral discal areas of propodeum entirely shagreened, nowhere polished. Declivity of mesoternum separated from mesepimeron by two rows of large punctures; tibial groove transversally aciculate above. Horizontal pad of mesosternum almost as wide as front femur. Legs normal; outer aspect of hind femur with a longitudinal stripe glabrous. Forewing marginalis, postmarginalis and stigmalis in a ratio as 3.5 : 2.0 : 1.0; radial knob with short and blunt uncus. — Abdominal petiole transverse; abdomen polished, except middle of third tergite with minute, trandversally engraved dashes, and sparsely pubescent on the sides.

♂ and biology unknown.

Material examined: 1 ♀ holotype, labelled "Meester-Cornelis, Transvaal", deposited in Coll. ARGAMAN.

Remark — This species is readily differentiated from other congeners through the fronto-orbital type of scrobal ridge, elongated vertex, absence of adorbital and malar sulci, and sparsely punctate anterior half of mesoscutum. It may be eventually showed that belong to a genus of its own, sentence that wait for discovery of hitherto unknown male.

Genus **Perilampus** LATREILLE, 1809

Type-species: *Dipolepis violacea* FABRICIUS, 1804, as designated by LATREILLE, 1810.

Both sexes with moderate to large size. — Head thickset, transverse, scrobal cavity deep, often rather deep, with remains of scrobal carina traceable between median and lateral ocelli. Upper front, vertex and inner corner of face dull, densely covered with moderately large punctures; so that interpunctal spaces compressed, appear to be subrugose; usually stronger in males than in females. Scrobal ridge traceable, often sharp in males but not as a true carina, of position vertexo-orbital, strongly diverging and joining inner eye orbit just before the vertex, and contiguous in a ridge perpendicular to the plane of face. Adorbital sulcus of inner orbit traceable, edgeless; of outer orbit deeper, sometimes very sharp edged. Malar sulcus deep as long as front margin of malar cavity. — Ocelli situated in a line, or in a flat triangle. Clava of ♀ with almost straight sutures and with no deep sensorial groove. Scape of ♂ enlarged and flattened in its apical half, but not expanded. — Middle of pronotal disc short, with 2—3 transverse rows of large punctures; its posterior margin blade-like; antero-lateral margin emarginating, deeply or shallowly bisinuating, lateral pronotal panel with two rows of large punctures opposite to prepectal triangle, below it usually with one row and a foveolate groove. Prepectal triangle large, constantly bordered above and behind, but the bordering of anterior margin are subject to great variation: it may be sharply bordered or entirely unbordered at specimens of the same species, or even on the two sides of the same individual. Inner half of scapulae polished, usually with shallow punctures between the two sectors. Scuto-scutellar groove enlarged behind, longitudinally foveolate, base of scutellum relatively wide, not acute.

Axillula triangular in shape. Mesosternum with horizontal pad in front of mid coxae about as wide as front tibia. — Abdominal petiole transverse, third tergite smooth, without microsculpture. Sixth tergite of male simple. Coloration usually entirely metallic, but very often dark, occasionally partially melanistic with only vertex and thorax dorsally metallic.

Remark — LATREILLE (1809 Gen. Crust. et Insect. 4:30) established the generic group name *Perilampus*, including in it four nominal species, without designation of type. Accordingly (cf. GAHAN & FAGAN 1923:113), the type of the genus was designated later by LATREILLE 1810 (Consid. Gen. p. 436). This statement being generally accepted by early authors. Recently BOUČEK and DARLING (pers. comm.) have been discussed this matter and concluded that the type of *Perilampus* is *Cynips italica* FABRICIUS, 1793; based upon the designation of WESTWOOD (1840 Introd. Modern. Class. Ins., Synops. 2:67). This due the fact that prior designation by LATREILLE, 1810 is unacceptable because two species were mentioned (*violacea* and *ruficornis*), and following Direction 4 of I. C. Z. N., 1954. It was indicated to accept this view and use the name *Perilampus* for *italicus*, Then it is neccessary to *Olarlar* for *cocegus*, to transfer *italicus*-group in *Perilampus* proper, and combine *violaceus*-group in *Cynipsillum* AGASSIZ, 1845. These steps could be effectuated when an application will be made to the International Commission of Zoological Nomenclature to validate *Cynips italica* as type of *Perilampus*. Until that date I mentain *Olarlar* as composite of two different entities, although both of them merits generic separation. LAMARCK (1817: 156) described a new genus, *Cinipsillum*, with six species, of very different sort, without type designation. This name was considered as incorrect and altered by AGASSIZ (1845: 325) in *Cynipsillum*, also without designation of type. In their generic catalogue of Chalcidoidea, GAHAN & FAGAN (1923: 41) intended to sunk the name proposed by LAMARCK, as one not currently used and dubious, and they proceeded to make it "isogenotypic synonymy" (their intention expressed as such, l. c.), with *Perilampus* LATREILLE. But they committed two mistakes: the genus of LAMARCK were *Cynipsillum* (sic !), and the type was *Chalcis violacea* PANZER. Moreover, PECK (1951: 517 and 1963: 514) altered the error, stating that GAHAN & FAGAN actually designated the type of *Cinipsillum* LAMARCK with *violacea* PANZER, affirmation that is not held. PECK (l. c.) also states that *violacea* PANZER is a junior synonym of *ruficornis* FABRICIUS, 1793, but it is clear that PECK was not familiar with any *violacea* of PANZER, because when he (1951: 518) — although mistakenly — recorded *ruficornis* from the Nearctic Region, did not cite the species of PANZER among its junior synonymies. Hence KIEFER (1926: 252—253) transfered *Cinipsillum* LAMARCK into the synonymy of *Teleas* LATREILLE, 1809 (Scelionidae) with only one species, *Cinipsillum clavicorne* LAMARCK, 1817, though as type[23]; as a first

[23] Having page-precedence over the genus *Scelio* LATREILLE, 1805, where KIEFFER (1926: 308, 317) transfer another species of LAMARCK.

reviser of this nomenclatorical confusion, I select *clavicorne* LAMARCK, 1817 as type of *Cinipsillum* LAMARCK, 1817. Similarly, because GAHAN et FAGAN selected *violacea* PANZER, 1804, as type of *Cynipsillum*, as a first reviser, I validate as type of the genus *Cynipsillum* AGASSIZ, 1845. The entire confusion existent up to now causes the unfortunate situation, that the genus earlier proposed by LAMARCK must be rejected because the homonymy with *Teleas clavicorne* LATREILLE, while the nomina nuda or emendation of AGASSIZ, validated through the designation of a type by GAHAN et FAGAN, may be used, for *violaceus* are considered as generically distinct.

Genus **Mivarhis** gen. n.

Type-species: *Perilampus laevifrons* DALMAN, 1822.

Size of both sexes small to moderate. — H e a d transverse, thickset, with scrobal cavity rather deep; scrobal carina sometimes traceable between median and lateral ocelli, but with no ridge on the front. Facial aspect of head, on upper front, vertex and inner corner of face dull, with subrugose to rugose interpunctal spaces, vertical wrinkles or coarse carinules. Inner eye orbit usually with a ridge perpendicular to the plane of front, absent in some species; outer eye orbit with adorbital sulcus often deep and sometimes very sharp edged. Malar space with deep malar sulcus which is only half as long as front margin of malar cavity. — O c e l l i arranged in a very flat triangle or in a line, vertex narrow, the foremost crest of occipital declivity penetrates into the ocellar triangle, and concave, with a longitudinal furrow usually developed beyond median ocellus. Clava of ♀ with straight or slightly oblique sutures; sensorial groove small, usually developed only on last segment of clava. Scape of ♂ flattened and dilated on apical half or more, and very often monstrously expanded, then the lower front deeply impressed also, sideward to supraclypeal area; the expansion of the scape of male were considered as individual variation but the question reclames subsequent studies. — Middle of p r o n o t a l d i s c very short, with two transverse rows of punctures; posterior margin blade-like; antero-laleral margin emarginate and bisinuate, sometimes sharply. Lateral pronotal panel usually with two rows of large punctures opposite to prepectal triangle and below it often with one row and a foveolate groove. Prepectal triangle usually large, broader than the panel; above and behind bordered by a row of punctures, anteriorly unbordered or incompletly so. Inner half of scapulae polished, often with shallow, transitory punctures. Scuto-scutellar groove enlarged behind, longitudinally foveolate, scutellum with narrow base, acute. Axillula triangular in shape. Mesosternum keel-shaped, with no horizontal pad in front of mid coxae. — A b d o m i n a l p e t i o l e transverse, third tergite without microsculpture. Coloration metallic, or mostly metallic.

Genus **Vadramas** gen. n.

Type-species: *Perilampus nigriviridis* GIRAULT, 1912.

Both sexes small, rarely medium sized, exceptionally large (*levifacies*). — H e a d bulky or often transverse and thickset, with deep to rather deep scrobal cavity; the scrobal carina entirely vanished and substituted by a blunt ridge, which either strongly diverging ventrad and joing inner orbit of eye, i.e. of fronto-orbital type, or else, running parallel downward without approximating inner orbit of eye, i.e. of fronto-scrobal type. Facial aspect of head entirely devoid of dull sculpture, especially anterad of lateral ocelli smooth, at most with some small piliferous punctures but never subrugose. Vertex plane, regardless to the fact if it is smooth or transversally costulate, or provided or not by a longitudinal furrow, it is at least as long as diameter of median ocellus. Adorbital sulci shallow; malar sulcus deep, half as long, to fully as long as, the front margin of malar cavity. Clava of ♀ with straight to slightly oblique sutures, sensorial groove not developed or small. Scape of ♂ subcylindrical, or flattened and expanded in its apical half. — Middle of p r o n o t a l d i s c narrow, with two transverse rows of large punctures. Posterior pronotal margin blade-like. Antero-lateral margin not emarginating (in Australian species), shallowly emarginating (in European species), or rather deeply

emarginate, with acute triangular lobe and the entire pronotal disc deformed (in SE Asiatic and American species). Lateral pronotal panel with two regular rows of usually large punctures, rom the spiracle up to the front coxa (in Old World representatives); with only one row of extremely large punctures just opposite to prepectal triangle (in New World representatives); or often with only two or three small, inconspicuous punctures (not rows!) opposite to triangle, and the panel cross-crestate below it (in Australian representatives). Prepectal triangle large, broader than the panel, it is sharply bordered anteriorly (in European forms), or entirely unbordered (all other forms). Inner half of scapulae polished. Scuto-scutellar groove enlarged behind, longitudinally foveolate, base of scutellum wide, not acute. Axillula triangular in shape. Mesosternum with horizontal pad in front of mid coxae, often narrow but distinct; only absent in *tetar*, which have also short malar sulcus. — Abdominal petiole transverse, third tergite without microsculpture. Colouration metallic or melanistic.

Remark — This genus is another heterogenous one, and surely not natural. However, after long hesitation, I decided to keep them together, in only one genus, until more species being discovered, because the different entities have their own instrinsic problems, as follows:

The group *cephalotes*, is very distinct from *nigriviridis* GIRAULT, but composed from species rather closely allied, if not identical. Contrarily to the belief of BOUČEK (1971), I cannot exclude the possibility that his three species, *cephalotes*, *maceki* and *polypori*, represent infraspecific variants of one polymorphic species. On the other hand, there exists an open question, if ultimately *cephalotes*, otherwise a very distinct species in the Palaearctic Region, is not the same as *Perilampus angustus* NEES, 1834, lectotype of which I once examined, but my notes were insufficient to decide upon the identity, and that material is not available for the moment.

The group *saleius* also outstandingly distinct from type of the genus, *nigriviridis*. Unfortunately, the holotype of *Perilampus saleius* WALKER, 1839, from King George Sound, Western Australia, deposited in British Museum (Natural History), now headless. RIEK (1966) observed that *queenslandensis* and *aquilionaris* may be synonymous with it. BOUČEK (1988) thus transferred *Perilampus queenslandensis* GIRAULT, 1913, holotype female from Nelson, North Queensland, in junior synonymy of *saleius*. After my opinion, until neotype for *saleius* is not selected, the identity of a headless specimen with the type of other species are not ascertained, because there may be found more than one species resembling *saleius*, and *queenslandensis* may be one of them, not necessarily the same. Although RIEK (1966) states that the type of *saleius* is a male, BOUČEK (1988) indicates that it is a female, and I am ready to accept BOUČEK's opinion as valid, owing to his prestige, but he similarly indicates (BOUČEK 1956) that *cephalotes* is known only in female holotype, and the male is unknown, while declares (BOUČEK 1971) that the female character of *cephalotes* is unknown. In the collection of the Hungarian Natural History Museum, Budapest, there exists only one female of *saleius*, but I did not select it as neotype, because I am ignorant as to the sex of the lectotype of WALKER, and citations from literature leave me with an unquiet feeling.

The species *tetar*, described below, is another distinct entity, but I am ignorant relative to the female and for the moment I consider it as better placed in *Vadramas* than in a new genus.

Vadramas tetar sp. n.
(Figs 130–131)

♂. Length 2.0 mm. Head black; upper front, vertex, thoracic dorsum and sides dark olivaceous-green; mesoscutum brassy with cupreous squash; abdomen black. Scape and coxae castaneous. Pedicellus, funicle and clava orange-yellow, dark red to blackish dorsally; femora, tibiae and tarsi orange-yellow, with weak violaceous shine on basal half of femora. Mandibles reddish-brown. Venation of forewing of colour of the amber. Pubescence of body and appendages white, of forewing membrane dark, long but not dense. — H e a d transverse, occiput strongly converging just behind the eye. Scrobal carina developed on level of vertex, not reaching the plane of front. Scrobal ridge low. Facial aspect of head with no sculpture other than some piliferous punctures. Eye rather strongly bulging, in lateral view of head projecting distinctly anterad than plane of front and face; eye at its maximum 1.5× as high as wide, its facets distinctly decrease in size dorsad. Inner eye orbit with narrow, quite indistinct adorbital sulcus; outer orbit with deep sulcus but practically edgeless. Malar space with deep malar sulcus which is near half as long as front margin of malar cavity. Disc of clypeus convex, its apical margin also convex, semicircularly protruding, Ocelli arranged in a line, lateral ocelli separated by a distance 1.7× as long as ocello-ocular line; the distance between median ocellus and foremost crest of occipital declivity about equal to diameter of median ocellus; middle of vertex flat, with no longitudinal furrow. Temples and genae smooth and shining. Apical half of scape flattened and dilated, and somewhat expanded and a little curved outwardly; sensorial area 0.6× scape length, punctures dense, interspaces as wide as the punctures. Segments 1—2 of funicle a little longer than thick, 3—7 quadrate, none of them transverse; pubescence short. — Middle of p r o n o t a l d i s c with two transverse rows of punctures and a sharp keel between the rows; beyond the punctures a ribbon-like band polished and shining; antero-lateral emargination rather deep, bisinuate, the triangular lobe acute, a little less than right angle. The entire lateral pronotal panel, from upper corner of prepectal triangle up to the base of fore coxa, with only one row of rather large, longitudinally foveolate punctures. Prepectal triangle only half as long as the distance between tegula and front coxa, its anterior margin not bordered by row of punctures. Outer half of scapulae with three longitudinal rows of punctures with smooth contours, inner half polished and sparsely micropunctate. The humped mesoscutum and scutellum covered with uniformly large umbilicate punctures, with smooth contours; interspaces of mesoscutum about one-quarter, on scutellum about one-half as wide as the punctures. Sides of scutellum, in dorsal view, diverging posterad; disc, in lateral view, evenly arcuate, convex. Lateral discal areas of propodeum polished above and aciculate below. Mesosternal declivity with one row of large punctures, tibial groove shagreened. Legs normal. Marginalis, postmarginalis and stigmalis of forewing in a ratio of about 3.0:3.0:1.0; radial knob with a blunt uncus. Abdomen small, smooth, polished and sparsely punctate. Hypopygium testaceous.

♀ and biology unknown.

Material examined: 1 ♂ h o l o t y p e, from Nicaragua, labelled "Sierra di Managua, [18]98, A. Solari", deposited in the collection of Museo Civico di Storia Naturale, Genova.

Remark — The expanded scape, narrow mesosternum and short malar sulcus places this species into the genus *Mivarhis*; but the smooth upper front, large punctures of lateral pronotal panel and sculptureless genae into the genus *Vadramas*. Until the discovery of female, the placement of this species should be considered as tentative.

Genus **Sicatang** gen. n.

Type-species: *Sicatang catilus* sp. n.

Size small, here belong the smallests perilampine known. — H e a d hemispherical to subglobular, scrobal cavity relatively shallow for the thickness of head; vertex large, ocellar

triangle not flattened. Head with no trace of scrobal carina, blunt scrobal ridge traceable, of fronto-scrobal type, running parallel ventrad, without approximating inner orbit of eye. Adorbital sulci weak; malar sulcus deep, half as long as front margin of malar cavity. Scape of ♂ subcylindrical, very slightly modified. Clava of ♀ with straight sutures and with no sensorial groove. — Middle of pronotal disc narrow, with two transverse rows of punctures; its posterior margin blade-like; antero-lateral margin emarginate and bisinuate (in *picpus*); or entire, blunt, with a row of large punctures on the edge (in *catilus*). Lateral pronotal panel margined anteriorly by a vertical crest, with only one row of large punctures beyond the crest. Prepectal triangle large, well twice as broad as the panel, anterior margin not bordered. Inner half of scapulae polished. Scuto-scutellar groove enlarged behind, longitudinally foveolate, base of scutellum wide. Axillula triangular in shape. Apex of scutellum shortened, so that the carina below marginal rim being visible dorsally; in lateral view of thorax situated on same plane with apex of scutellum (Fig. 94). Mesosternum with a horizontal pad in front of mid coxae. Propodeum with plical carina complete. — Abdominal petiole transverse, third tergite without microsculpture. Coloration mostly melanistic, with metallic colours of reduced extent.

Sicatang picpus sp. n.
(Figs 128, 162—163)

♀. Length 1.5 mm. Entirely black; pronotal disc, mesoscutum and scutellum with indefinite green to bluish squash on interpunctal spaces, bottom of punctures black. Scape and tarsi pale yellow; funicle, clava, mandibles entirely and tibiae honey-yellow; dorsal aspect of funicle a little infuscated. Femora and venation of forewing brownish. Pubescence of body white, of forewing membrane dark, long but not dense. — Head except occipital declivity, entirely polished and shining, with no sculpture; and conspicuously pilose, with long setulae on front, and densely on apical third of clypeal disc. Median ocellus situated well anterad of lateral ones, all are circular in outline; lateral ocelli separated by a distance equal to ocello-ocular line. Vertex long, the distance between median ocellus and foremost crest of occipital declivity twice as diameter of an ocellus. Apical margin of clypeus semicircularly protruding, convex. — Antennae short, all funicular segments transverse, about twice as wide as long. Outer half of scapulae with two rows of punctures. — Mesoscutum flat, punctures relatively deep, flat-bottomed, with sharp contours; interspaces narrow, a little less than one-quarter from width of punctures, delicately cross-sulcate; scutellar disc also flat, punctures similar, but interspaces a little wider. Lateral discal areas of propodeum delicately aciculate. Legs normal. Marginalis, postmarginalis and stigmalis of forewing in a ratio as 2.0 : 1.0 : 1.0; radial knob without uncus; marginal fringe complete. Abdomen polished, with few setulae.

♂ and biology unknown.

Material examined: 1 ♀ holotype, labelled "Korea, Prov. Gang-von, district Ondzong, Kum-gang san, along Ok-ru dong, 300—600 m" and "No. 317, 5 August 1975, leg. J. Papp et A. Vojnits; holotype deposited in the Hungarian Natural History Museum, Budapest, Hym. Typ. No. 6953.

Sicatang catilus sp. n.
(Figs 93—95)

♂. Length 2.0 mm. Entirely black; clypeus and supraclypeal area bluish-green. Interspaces of mesoscutum and scutellum bronzy to cupreous. Scape and hind coxa with bluish lustre. Mandibles yellowish-brown, with dark spot at base. Femora and tibiae brown with weak greenish lustre; tarsi yellow. Venation of forewing dark brown, near black. Body clothed with pale pubescence, except vertex, occiput, thoracic dorsum and forewing membrane with dark one; that of wing moderately long but dense. — Head exactly as described for *picpus*, except lateral ocelli separated by a distance 1.4× as long as ocello-ocular line. Sensorial area 0.3× scape length; first segment of funicle longer than thick, second quadrate, 3—7 transverse; pubescence of funicle pale, dense, appressed. — Outer half of scapulae with three rows of punctures, inner half polished. Mesoscutum and scutellum not flat, punctate like in *picpus*, except punctures shallow, on mesoscutum increase in size posterad. Marginalis, postmarginalis and stigmalis of forewing in a ratio of about 2.0 : 2.5 : 1.0; radial knob with an acute uncus; marginal fringe complete. Hind tibia with a broad yellow ring apically. — Basal third of third abdominal tergite with fine transverse crisps on the sides. Hypopygium narrow, punctate and alutaceous, with greenish metallic lustre.

♀ and biology unknown.

Material examined: 1 ♂ holotype, from Turkey, labelled "Tschukur-hissar, Anatol. (ien)", deposited in Coll. ARGAMAN.

Remark — This species closely resembles *Sicatang picpus*, described above, in the main morphological features — hence the generic placement —, but differs in some individual ones, such as colour-pattern, width of ocellar triangle, antero-lateral margin of pronotum, presence of radial uncus of forewing, and especially in postmarginalis, which is longer than marginalis, while in *picpus* only half as long.

Genus **Fifirtiz** gen. n.

Type-species: *Perilampus noemi* NIKOLSKAYA, 1952.

Size of both sexes small, occasionally moderate. — Head rather short, flattened and widened, lenticular; with relatively shallow scrobal cavity; with no scrobal carina, only a ridge which abruptly, almost transversally diverging toward inner eye orbits. Vertex extremely short, keel-shaped, less than half as long as major diameter of an ocellus. Upper front anterad of ocellar triangle with no strong sculpture, only with small, piliferous punctures. Inner orbit of eye with no definite adorbital sulcus, outer orbit with a deep one and sharply margined by an acute edge. Malar sulcus deep, half as long as, to fully as long as, the front margin of malar cavity. Scape of ♂ subcylindrical, little flattened and dilated on apical half. Clava of ♀ with straight sutures, sensorial groove narrow, at most on last claval segment. — Middle of pronotum short, with only two transverse rows of large punctures, its posterior margin blade-like; antero-lateral margin emarginate and bisinuate, with moderately sharp triangular lobe. Lateral pronotal panel with two irregular rows of punctures opposite to prepectal triangle, often below it with one sole row and a foveolate groove. Prepectal triangle small, a little broader than the adjacent panel; sharply bordered on upper and hind margins, sometimes with a crest separating upper row from middle of disc; anterior margin not bordered. Inner half of scapulae smooth. Scuto-scutellar groove enlarged behind, longitudinally foveolate, scutellum with moderately wide base. Axillula triangular in shape. Mesosternum keel-shaped, with no horizontal pad in front of mid coxae. Propodeum with plical carina well developed. — Abdominal petiole transverse, third tergite with no microsculpture. Coloration usually melanistic, with reduced metallic lustre here and there, especially on thoracic dorsum, except in *mavricus* intensively developed.

Fifirtiz turpiculus sp. n.
(Fig. 113)

♂. Length 2.0. mm. Body black; thoracic dorsum black, with only crests of interpunctal spaces dark coppery-red. Pedicellus, funicle, clava, coxae, femora and tibiae uniformly reddish; femora and tibiae with weak violaceous lustre. Tarsi yellowish. Mandibles, including base and apex, and venation of forewing yellowish-light brown. Pubescence of body, inclusive of forewing membrane, short and scattered, snow-white. Head polished, with few piliferous punctures; occipital declivity, temples and genae striolate. Ocelli situated in a line, distance between lateral ocelli 2.5× as long as ocello-ocular line; vertex acute, linear, with no flat surface, foremost crest of occipital declivity actually touching median ocellus. Adorbital sulci deep, that of outer orbit with sharp edge; malar sulcus as long as front margin of malar cavity. Apical margin of clypeus arcuately convex. Scape subcylindrical, its apical third flattened and punctate, the punctures a little greater than interpunctal spaces. First segment of funicle longer than thick, second quadrate, the following ones transverse; pubescence short, subdecumbent. — Pronotal disc with large punctures, with acute interspaces, with no transverse crest between rows. Mesoscutum and scutellum with uniformly large, flat-bottomed punctures; interpunctal spaces rather narrow, acute septa, blade-like even in the corners where three such carinae meet one another. Scutellum pentagonal in dorsal view, its marginal rim strongly upturned at apex and very weakly emarginate. In profile (Fig. 113), scutellum half of its dorsal length produced beyond vertical line of dorsellum-propodeum; its ventral aspect flat, horizontal, without angular declivity. Lateral discal areas of propodeum shining, with some fine ondulations in general

surface. Declivity of mesosternum separated from mesepimeron by one row of large punctures, tibial groove entirely rugose. Legs normal. Marginalis, postmarginalis and stigmalis in a ratio as about 3.0 : 2.0 : 1.0; radial knob with no uncus. — A b d o m e n polished and shining, with fews hort setulae on sides of third tergite. Hypopygium densely micropunctate.

♀ unknown, host not precisely known.

Material examined: 1 ♂ h o l o t y p e from Israel, Upper Galilee, Hula Valley Natural Reserve, 8. VIII. 1969, Z. MENDEL; emerged in laboratory from a log of *Populus euphratica* OLIV. at 26. VIII. 1969, infested with bark beetles (Scolytidae); deposited in Coll. ARGAMAN

Etymology — Name from Latin *turpiculus* — ugly, because of its unconventional habitus (of scutellum) for the genus where it belong and appear to be an intruder of strange features.

Fifirtiz mavricus sp. n.

♀. Length 2.5 mm. Head, thorax (including inner half of scapulae), abdomen, side of thorax, coxae, femora, fore and mid tibia intensively and uniformly fierly golden-purple; the scape, apical third of abdomen, femora and tibiae with supplementary gold-green squash; mesoscutum darkened to violaceous; hind tibia yellowish-brown with bluish-violaceous spot medially. Apical third of scape, pedicellus, funicle and clava uniformly yellowish-testaceous. Mandibles dark brown, with yellowish-red spot in the middle. Tarsi pale yellow. Venation of forewing, and its short, rather scattered pubescence reddish-brown. The pubescence of body everywhere short and snow-white. — H e a d flat, lenticular, with scrobal carina developed between median and lateral ocellus as an acute ridge, almost transversally directed toward inner orbit of eye. Ocelli arranged in a line, distance between lateral ocelli twice the length of ocello-ocular line; vertex acute, its dorsal plane about half diameter of median ocellus; foremost crest of occipital declivity very closely approximating median ocellus, but not quite reaching it. Facial aspect of head polished and shining, with some small, scattered piliferous punctures on upper front and lower corner of face. Temples and genae broadly striolate, the latter with a patch of minute punctures in vicinity of transverse malar carina. Adorbital sulci well impressed, of inner orbit edgeless, of outer orbit sharp edged. Malar sulcus rather deep, as long as front margin of malar cavity. Apical margin of clypeus arcuately convex. Funicle with segments 1—3 a little longer than wide, segments 4—6 quadrate, only seventh segment a little transverse; sutures of clava straight, sensorial groove not conspicuous. — M i d d l e o f p r o n o t u m rather narrow, the two rows of punctures minute and separated by a transverse crest. Mesoscutum covered with relatively small, flat-bottomed polygonal punctures: the great majority of interpunctal spaces randomly incomplete, and remainder ones form winding rugosities. On outer half of scapulae interspaces narrow, regular, cross-sulcate. Disc of scutellum evenly arcuate, convex; punctures small, interpunctal spaces wide, many of them as half diameter of a puncture; the disc with a median stripe impunctate but cross-sulcate, about twice as wide as a puncture. Lateral discal areas of propodeum aciculate. Legs normal. Declivity of mesosternum separated from mesepimeron by one row of large punctures; tibial groove entirely rugose. Marginalis, postmarginalis and stigmalis of forewing in a ratio as 3.0 : 2.0 : 1.0; radial knob very conspicuously enlarged inwardly, but with no uncus outwardly. — A b d o m e n shining, mirror-like; basal half of second tergite with transverse rows of piliferous punctures except in its longitudinal furrow; third tergite with short, sparse pubescence on the sides.

♂ and biology unknown.

Material examined: 1 ♀ h o l o t y p e from Egypt, labelled "H.-I. Sinai, Ofira", a locality situated on Southern corner of Sinai Peninsula, on the Red Sea Coast; in Coll. ARGAMAN.

Etymology — Name derived from the Hebrew word *mavric* — lustrous.

Genus **Ecalibur** gen. n.

Type-species: *Perilampus robertsoni* CRAWFORD, 1914.

Male's (female not seen) size moderate. — H e a d in dorsal view thickset, transverse, in facial view triangular. Scrobal cavity deep, sharply bordered above by a residual scrobal carina; contiguous in a strong ridge, of fronto-orbital type, meeting inner orbit a little above of mid-height of eye. Flat sector of vertex, although cross-crestate, long, well twice as long as major diameter of an ocellus. Adorbital sulci well impressed and sharp-edged, both on inner and outer orbits. Malar sulcus deep, as long as front margin of malar cavity. Scape dilated,

flattened and expanded on apical half. — Middle of p r o n o t a l d i s c deeply emarginate behind, with only two transverse rows of large punctures; while the sides unusually wide, of *Euperilampus*-type, with about six transverse rows of punctures opposite to upper corner of prepectal triangle; posterior margin blade-like; antero-lateral margin not emarginate but provided by a sharp crest. Lateral pronotal panel with a delicately alutaceous, impunctate stripe, contiguous to middle of prepectal triangle; latter large, occupying near entire distance between tegula and front coxa, but narrower than panel; unbordered anteriorly (Fig. 72). Inner half of scapulae polished, sharply separated from outer half. Scuto-scutellar groove narrow, deep, with sharp contours both anteriorly and posteriorly; base of scutellum wide (Fig. 156). Mesoscutum and scutellum almost situated in the same plane, the former a little humped, but without deep transverse impression between them. Axillula triangular in shape. Plical carina of propodeum rather sharply developed, complete. Mesosternum with foveolate horizontal pad in front of mid coxae but which is rather narrow, less wide than fore tibia. — A b d o m i n a l p e t i o l e subelongated, but a little broader than long. Second tergite of abdomen with patch of pale dense pubescence on each side; third tergite without microsculpture. Coloration melanistic.

Genus **Naspoyar** gen. n.

Type-species: *Perilampus fulvicornis* ASHMEAD, 1886.

Both sexes size small. — H e a d thickset, near bulky, transverse. Scrobal cavity deep, occasionally shallow (*similis*); without scrobal carina, with scrobal ridge of position vertexo-orbital, strongly diverging and reaching almost transversally inner orbit of eye. Vertex plane and smooth on a distance greater than diameter of median ocellus. Adorbital sulci delicately impressed, with no edge. Maler sulcus deep, or shallow (*similis*), as long as front margin of malar cavity. Scape of ♂ subcylindrical, little dilated and flattened apically. Clava of ♀ with straight sutures, or oblique (*similis*) ones, with no conspicuous sensorial groove. — P r o n o t a l d i s c narrow, its posterior margin blade-like; antero-lateral margin not emarginate; prepectal triangle joining to lateral pronotal panel, with transitory smooth area between them. Inner half of scapulae shining, sharply separated from outer half. Mesoscutum and scutellum situated on same plane (Fig. 135), with scuto-scutellar groove rather narrow, sharp, deep; scutellum with base wide and straight. Axillula triangular in shape. Propodeum with strong and complete plical carina. Mesosternum with rather narrow but bicarinulate horizontal pad in front of mid coxae, or without pad and then crest-like (*similis*). — A b d o m i n a l p e t i o l e transverse to subquadrate. Second tergite with dense patch of pale pubescence on the sides, third tergite without microsculpture. Coloration melanistic.

Genus **Bukbakas** gen. n.

Type-species: *Perilampus microgastris* FERRIÈRE, 1930.

Both sexes size small to moderate. — H e a d thickset, transverse, with moderately deep scrobal cavity; not carinulately margined, the ridge low, of fronto-orbital type, reaching inner orbit of eye below the mid-height of eye. Vertex flat and smooth on a distance greater than diameter of an ocellus, without median longitudinal furrow. Adorbital sulci usually shallow, edgeless. Malar sulcus impressed and deep, occasionally indistinct (*B. casevitzi*); as long as front margin of malar cavity. Scape of ♂ slightly dilated and flattened apically. Clava of ♀ with straight or weakly oblique sutures; sensorial groove if developed, then at most on last claval segment. — P r o n o t a l d i s c narrow; its posterior margin blade-like, or sulcate and bicarinulate from one spiracle to other. Antero-lateral margin entire, with no trace of emargination, or with a rather sharp triangular lobe (*pupulus*), but the emargination shallow. Lateral pronotal panel joining to prepectal triangle, with a smooth area contiguous to middle of triangle; posterior border of prepectus not separated from mesepimeron by a foveolate groove. Inner half of scapulae polished, sharply separated from outer half. Mesoscutum and scutellum individually convex (Fig 136), a transverse impression in lateral view detectable between them; scuto-scutellar groove shallow, enlarged behind, longitudinally foveolate; base of scutellum narrow. Axillula triangular in shape. Plical carina of propodeum strongly developed, complete. Mesosternum with horizontal pad in front of mid coxae. — A b d o m i n a l p e t i o l e transverse; second tergite glabrous, third tergite without microsculpture. Coloration melanistic.

Bukbakas casevitzi sp. n.
(Figs 91, 136)

♂. Length 2.2 mm. Entirely black; scape, apex of tibiae and tarsi whitish-yellow; funicle testaceous, clava infuscated; mandibles, except dark base, and venation of forewing yellowish-brown. Coxae and femora with oily-gray lustre, middle of hind tibia darkened. Pubescence of body white; forewing membrane clothed with moderately long and moderately dense dark pubescence; marginal fringe complete. — H e a d in dorsal view twice as wide as long. in facial view a bit wider than high. Ocelli large, ocellar triangle not flattened; lateral ocellus situated twice as far from eye as from median ocellus. Foremost crest of occipital declivity situated well beyond of ocellar triangle. Facial aspect of head smooth, rather conspicuously pubescent on front and face, and especially on apical third of clypeal disc dense (Fig. 91). Apical margin of clypeus with a small, acute, median tubercle. Sensorial area 0.4× scape length, minutely punctate; first segment of funicle longer than thick segments 2—3 quadrate, 4—7 transverse; pubescence short. — P r o n o t a l d i s c unusually convex, with three rows of punctures in middle, the foremost one situated on edge of anterior declivity; posterior margin blade-like, antero-lateral margin not emarginate. Lateral pronotal panel narrow than prepectus and consolidated to it. Outer half of scapulae with three transverse rows of punctures, inner half polished and shining. Mesoscutum and scutellum with shallow, lenticular punctures; interspaces about 0.3× as wide as the punctures, those of mesoscutum cross-sulcate, that of scutellum smooth. Lateral discal areas of propodeum delicately shagreened. Declivity of mesosternum separated from mesepimeron by one row of large punctures; tibial groove polished and shining. Marginalis, postmarginalis and stigmalis of forewing in a ratio of about 5.0 : 3.0 : 1.0; radial knob acutely triangular but with no distinct uncus. Lengs normal; ventral third of outer aspect of hind femur with a glabrous stripe from base to apex. — A b d o m e n entirely polished and shining, with few short setulae on third tergite. Hypopygium sparsely punctate.

♀ and biology unknown.

Material examined: 1 ♂ h o l o t y p e, labelled "Pretoria, South Africa", in Coll. ARGAMAN.

Etymology — I dedicate with pleasure this new species to M-me Dr. JANINE CASEVITZ-WEULERSSE, from Séction d'Entomologie, Muséum National d'Histoire Naturelle, Paris, for her kindness and valuable help during this and other studies.

Remark — This new species is readily distinct from all other congeners owing to the yellow scape, absence of malar sulcus, lateral ocelli much closer to median ocellus than to eye, acute apical margin of clypeus, and rather long marginal vein of forewing. Many years ago I tentatively considered it as the hitherto unknown male of *testaceitarsis* CAMERON, but KERRICH (1956) transferred it in synonymy with *maurus* WALKER, although I have some doubt concerning this identity, and see also the opinion of MASI (1940), the size of *casevitzi* and the lacking scrobal carina precludes it from the vicinity of either *maurus* or *testaceitarsis*, if the latter could be considered as valid.

Genus **Dekterek** gen. n.

Type-species: *Perilampus granulosus* CRAWFORD, 1914.

Both sexes size small. — H e a d bulky, hemispherical to lenticular, with rather shallow scrobal cavity in which the scape does not rest and it is well visible in lateral view of head. With no trace neither of scrobal carina nor of scrobal ridge. Vertex flat and smooth on a distance at least as long as major diameter of median ocellus, foremost costulae of occipital declivity far removed from ocellar triangle. Inner eye orbit without adorbital sulcus, outer orbit with a deep one, usually sharp edged. Malar sulcus deep, as long as or a little longer than, front margin of malar cavity. Scape of ♂ somewhat clavate, with considerably incrassate apical half, not expressively flattened, but sensorial area occupies more than the ventral but also the lateral, and partly the dorsal aspect. Clava of ♀ with straight sutures, without conspicuous sensorial groove. — Middle of p r o n o t u m short, posterior margin blade-like,

antero-lateral margin not emarginate. Lateral pronotal panel consolidated to prepectal triangle, which is broader, or only half as broad as the panel. Posterior margin of prepectus separated from mesepimeron by a foveolate groove (Fig. 69). Inner half of scapulae polished. Both mesoscutum and scutellum individually arcuate, with a transverse depression detectable between them in lateral view. Scuto-scutellar groove relatively shallow to enlarged behind, often longitudinally foveolate, base of scutellum narrow, of only 2—3 puncture wide. Axillula triangular in shape. Plical carina of propodeum well developed, complete. Mesosternum with no horizontal pad in front of mid coxae. — A b d o m i n a l p e t i o l e transverse. Second tergite glabrous, third tergite without microsculpture. Coloration mostly metallic.

(To be continued.)

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NEW ENCHYTRAEID SPECIES FROM SPHAGNUM-BOGS IN HUNGARY (OLIGOCHAETA: ENCHYTRAEIDAE)

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The enchytraeid fauna of five *Sphagnum*-bogs and one floating moor with *Sphagnum*, both community types being peculiar to the vegetation of Hungary, have been surveyed. Out of the nine species found three species (*Mesenchytraeus kuehnelti* Dózsa—Farkas, 1990, *Cernosvitoviella minor* sp. n. and *Cernosvitoviella crassoductus* sp. n.) and one subspecies (*Bryodrilus ehlersi glandulosus* ssp. n.) are new to science. With 14 original figures.

Introduction — *Sphagnum*-bogs are usually formed in atlantic and boreal regions, that have plenty of moisture and relatively low temperature, whereas in the southern areas they occur in the alpine regions. The continental climate and relatively low altitude of Hungary are unfavourable for the formation of such bogs. Therefore these are of topogenic origin and their existence depends on the local microclimate. They are found in areas having 600—800 mm precipitation, although water is provided mostly by the subsoil water. Bogs might have been formed in lake basins without an outflow and having an impermeable clay layer (e.g. Kelemér, Sirok) or on the alluvial deposits of the dead branches of the Tisza river (e.g. Csaroda). Bog formation is possible on acidic rocks, on pebbles, on sand, on sandstone or on rhyolite tuff base stone. Sphagnum also occurs on some of our floating moors, where the water, poor in nutrients and acidified by the peat, enables their survival.

Most of our peat-bogs are of boreal origin, as supported by pollen analysis (Zólyomi 1931, Vozáry 1957). Their special microclimate allows the survival of plant and animal relict species, therefore all of these small bogs are precious, carefully watched protected areas of Hungary. So far only the following animal groups have been studied in these bogs: Protozoa and Rotatoria (Varga 1956, Megyeri 1965), Nematoda (Soós 1938, 1940), Cladocera, Copepoda, Ostracoda (Megyeri 1965), Collembola (Loksa 1980, 1981), aquatic Coleoptera (Pálfi 1958).

My aim was to provide further information to the fauna of these interesting nature conservation areas by exploring their enchytraeid species.

Material and methods — Out of the few *Sphagnum*-bogs of Hungary I chose five for my study. For comparison I also took samples from a floating moor, where *Sphagnum* occurs. Geographical location of the study areas is shown of Fig. 1. Only qualitative sampling was carried out in different microhabitats of the bogs (see below).

DESCRIPTION OF THE BOGS, SITES AND DATES OF SAMPLING (Fig 1)

I. Nagymohos and II. Kismohos. Location: slope of the Piroska Hill, near to Kelemér village in the environs of the Bükk Mountain. The two bogs are very close to each other. The first detailed botanical survey was carried out by Zólyomi (1931). The most important glacial relict plant species are *Eriophorum vaginatum*, *Dryopteris cristata*, *Betula pubescens*, *Carex lasiocarpa*, *Drosera rotundifolia* and *Sphagnum* spp. The following *Sphagnum* species occur here: *S. obtusum*, *S. recurvum*, *S. squarrosum*, *S. teres*, *S. fimbriatum*, *S. nemoreum*, *S. palustre*, *S. magellanicum*. The pH of the water is 6.1—6.6.

I. "Nagymohos" Area: 2 ha. Altitude: 296 m. Sites of sampling: a) *Sphagnum* spp., b) shoot base of Eriophorum sp., c) shoot base of Phragmites vulgaris. Date of sampling: 2. 5. 1988.

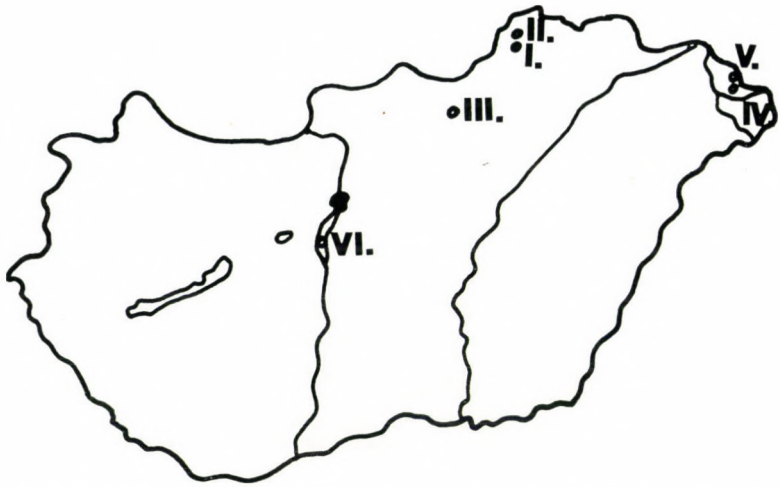


Fig. 1. Location of the study areas: I. Nagymohos and II. Kismohos of Kelemér, III. Nyírjestó of Sirok, IV. Nyírestó and V. Bábtava of Csaroda, VI. Floating moor of Szigetcsép

II. "Kismohos" Area: 1.3 ha. Altitude: 294 m. Sites of sampling: a) *Sphagnum* spp., b) shoot base of *Eriophorum* spp., c) *Betula pubescens* and shoot of *Dryopteris cristata*, d) fragments of decaying *Betula pubescens*, detritus and soil. e) *Polytrichum commune* carpet. Dates of sampling: 2. 10. 1987 and 2. 5. 1988.

III. "Nyírjes-tó" of Sirok. Location: Mátra Mountains, 1 km from Sirok village, on the NE slope of the Darnó Hill. Area: 0.9 ha. Altitude: 250 m. The edge zone of the bog, the swamp (*Scirpeto-Phragmitetum*) has a pH value of 5.5—5.6, whereas the pH of the middle area (*Cariceto lasiocarpae Sphagnetum*) is 3.6—4.0 (MÁTHÉ & KOVÁCS 1958). MÁTHÉ & KOVÁCS (1958) mapped the vegetation of the area, as well. The bog differs from bogs I. and II. On the one hand, here *Carex elata* is very important and *Sphagnum subsecundum*, which is absent in I. and II., occurs here. On the other hand, *Polytrichum commune*, *Salix aurita*, *Dryopteris cristata*, *Drosera rotundifolia* are absent in III. The following *Sphagnum* species occur in this bog: *S. subsecundum*, *S. recurvum*, *S. palustre*, *S. magellanicum*. Sites of sampling: a) *Sphagnum* spp., b) *Sphagnum* on shoot base of *Betula pubescens*, c) *Eriophorum vaginatum*, d) *Carex elata* shoot base with *Sphagnum*, e) edge of bog, *Salicetum-cinereae*, leaf litter with moss. Dates of sampling: 2. 5. 1988 and 16. 5. 1989.

IV. "Nyírestó" and V. "Bábtava" of Csaroda. Location: northern Great Plains, dead branch of the Tisza river, 20 km from Vásárosnamény, near to Csaroda village. These two crescent-shaped bogs are 1300 m apart. Area: 5—6 ha each. VOZÁRY (1957) and SIMON 1960) carried out detailed botanical, pollen analytical and microclimatological studies on this area. The relict species are: *Vaccinium oxicoccus*, *Eriophorum vaginatum*, *Drosera rotundifolia*, *Comarum palustre*, *Salix pentantra*, *S. aurita*, *Polytrichum strictum*. The following *Sphagnum* species occur here: *S. palustre*, *S. recurvum*, *S. magellanicum*. The pH value is 4.4–4.5.

IV. Sites of sampling: a) *Sphagnum* spp., b) shoot base of *Gliceria maxima*. Dates of sampling: 20. 10. 1988 and 8. 6. 1989. In October 1988 sample was taken only from *Sphagnum* a).

V. Sites of sampling: a) *Sphagnum* spp., b) *Thelypteris palustris* shoots, c. *Calamagrosti-Salicetum cinereae* substrate, d. shoot base of *Gliceria maxima*. Dates of sampling: 20. 10. 1988 and 8. 6. 1989.

VI. Floating moor with *Sphagnum*. Location: 40 km from Budapest, on the Csepel Island, near Szigetcsép village, at the first dead branch of the Danube River, at the ferry port. Area: ca 0.5 ha. It is a *Calamagrosti-Salicetum cinereae* association with the following important plan species: *Salix cinerea*, *Frangula alnus*, *Phragmites communis*, *Typha angustifolia* and *T. latifolia*, *Eupatorium cannabinum*. Its *Sphagnum* species are *S. squarrosum*, *S. fimbriatum* *S. recurvum*, *S. girgensohnii*, *S. teres*. The pH value is 7—7.1 (M. BALOGH, pers. comm.)., Mapping of the vegetation is in progress. Sites of sampling: a) *Sphagnum* spp., b) substrate from *Salix cinerea* stem base, c) moss from *Typha angustifolia* shoot base above water, d) *Marschantia polymorpha*, e) *Thelypteris palustris* shoots. Date of sampling: 18. 10. 1988.

In addition to the identification of living worms, some specimens were stained in neutral red, borax carmine and paracarmine. The fixed material was examined in clove oil. Animals were fixed in bouin and stored in 70% ethanol.

Size data given in the description of the new species refer to living material.

RESULTS

The following species were found:

I. "Nagymohos" — *Bryodrilus ehlersi glandulosus* ssp. n., in samples a) and b). No worms were found in sample c).

II. "Kismohos" — *Mesenchytraens kuehnelti* DÓZSA-FARKAS, 1990: a), b) and c), *Cognettia glandulosa* juv. (MICHAELSEN, 1888): b) and e). No worms were found in sample d).

III. "Nyírjes-tó" — *Cognettia sphagnetorum* (VEJDOVSKY, 1877): c) *Cognettia glandulosa* juv. (MICHAELSEN, 1888): a), b) and e). No worms were found in sample d).

IV. "Nyíres-tó" of Csaroda — None of the samples contained enchytraeids.

V. "Bábtava" of Csaroda — *Cognettia sphagnetorum* (VEJDOVSKY, 1877), mature and juv.: in sample a). *Cognettia glandulosa* juv. (MICHAELSEN, 1888): b), c) and d). *Cernosvitoviella minor* sp. n.: d). *Enchytraeus minutus* NIELSEN et CHRISTENSEN, 1961: (in samples c) and d). *Marionina riparia* BRETSCHER, 1899, augm. ČERNOSVITOV, 1928: d) *Marionina argentea* (MICHAELSEN, 1889): d).

VI. Floating moor of Szigetcsép — *Cernosvitoviella minor* sp. n.: b), c) and d). *Enchytraeus minutus* NIELSEN et CHRISTENSEN, 1961: a), b), c) and d). *Henlea ventriculosa* (UDEKEM, 1854): (a), b) and c). *Hemifridericia parva* NIELSEN et CHRISTENSEN, 1959: b) No worms were found in sample e).

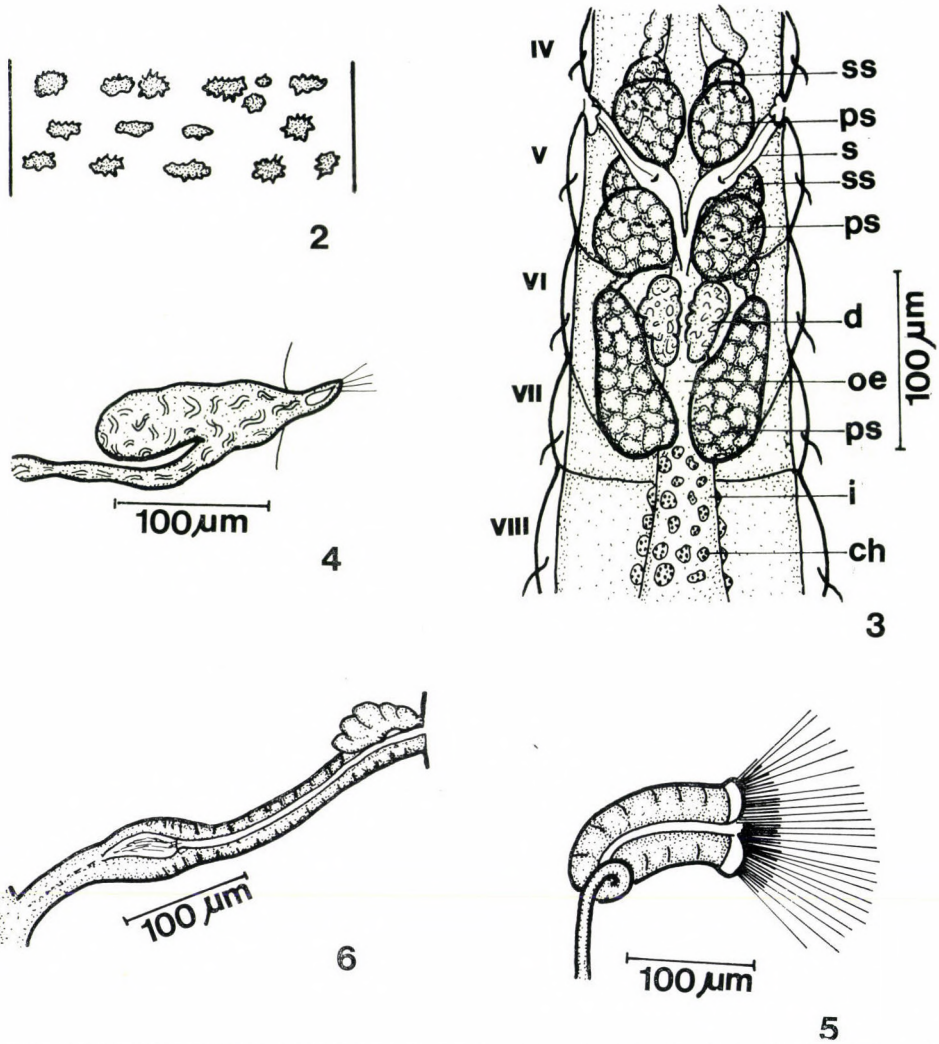
DESCRIPTION OF NEW SPECIES

Bryodrilus ehlersi glandulosus ssp. n.

(Figs 2—6)

Medium sized species. Holotypus: length 14.6 mm, diameter 0.5 mm, segments 49. Paratypes: length 9.5—21 mm, diameter 0.3—0.5 mm, at clitellum 0.4—0.6 mm, segments 42—53. Head pore near the tip of the prostomium. Dorsal pores absent. Colour yellowish white. Setae sigmoid, ventrally becoming shorter in ventero-lateral setal bundles, length of setae in a bundle 32—69 μm. Length of longest setae on proximal and distal ends of body 63—70 μm and 76 μm, respectively. The sequence of setae: 4, 5, (6)—4, 3, (2) : 4, 5, 6, (7, 8)—(7), 6, 5, 4, 3. Number of ventral setae in smaller and larger specimens 5 and 6—8, respectively. Setae in XII. absent. Clitellum extending over XII—1/2 XIII., elevated, the glands are irregularly arranged. Cutaneous gland of irregular shape, larger glands arranged in three transverse rows (Fig. 2).

Brain weakly rounded or truncate posteriorly, 1.5 times as long as wide, 150—200 μm long. The lymphocytes are discoid, 26—38 μm long and 21—28 μm wide, finely granulated, faint brown in transmitted light. Three primary septal glands [IV/V—VI/VII], none of them merging dorsally, the posterior pair elongate, and two secondary septal glands in IV and V (Fig. 3). Four oesophageal gland-like diverticula in VI, of sponge-like structure and no



Figs 2—6. *Bryodrilus ehlersi glandulosa* ssp. n.: 2 = cutaneous glands, 3 = IV—VIII, dorsal view (s = spermatheca, ps = primary septal glands, ss = secondary septal glands, oe = oesophagus, i = intestine, d = oesophageal diverticula, ch = chloragogen cell), 4 = nephridia, 5 = sperm funnel, 6 = spermatheca

pulsating in living specimens. Transition between oesophagus and intestine in VII gradual, origination of midgut still conspicuous due to the chloragogen cells being dark brown in transmitted light. Diameter of chloragogen cells anteclitellar and postclitellar 25—32 μm and 13—17 μm, respectively. Nephridia (Fig. 4). Henlea-type, with separate nephrosoma, some coils of the canal and a postseptale about 3.5 times longer than praeseptale. Efferent duct arising antero-ventrally. Nephridia beginning in IV/V. Dorsal vessel originating in XII. Blood colourless.

Vesicula seminalis present, well developed in XI or XI—XII. The sperm funnel (Fig. 5) small, 2—2.5 times longer than wide, the length of the funnel about one third of the diameter of the worm. The distinct collar as wide as the funnel. End of sperm funnel always curving back; ductus originating here thin (6 μm), long and irregularly coiled in XII. Penial bulb small and compact, 70—86×35—60 μm. Spermatheca (Fig. 6) consisting of a spindle-shaped ampulla (40—57 μm wide and 70 μm long) and an ectal duct (20—32 μm wide, and about 2.5—3 times longer than ampulla), and an ental duct. The two ental ducts unite and communicate with the oesophagus in VI. The ectal duct with one lobe, hyaline gland at the ectal orifice. Usually 1—3 mature eggs present at a time.

Comparison with related species — The new subspecies differs from *B. e. ehlersi* UDE, 1892 in the presence of one larger gland at the opening of the spermatheca (the name of the subspecies refers to this feature), whereas the ductus in *B. e. ehlersi* has no gland. In *B. e. ehlersi* seminal vesicles and secondary septal glands are absent, as well. NURMINEN (1980) finds pulsation of the oesophageal diverticula in VI important. This phenomenon is absent in this subspecies whereas in *B. e. ehlersi* it is very distinct. The new subspecies is relatively close to *B. borealis* CEJKA, 1912, but differs from it in the number and shape of setae, the latter being straight in *B. borealis*. In addition, there are several small glands at the spermathecal duct of *B. borealis*.

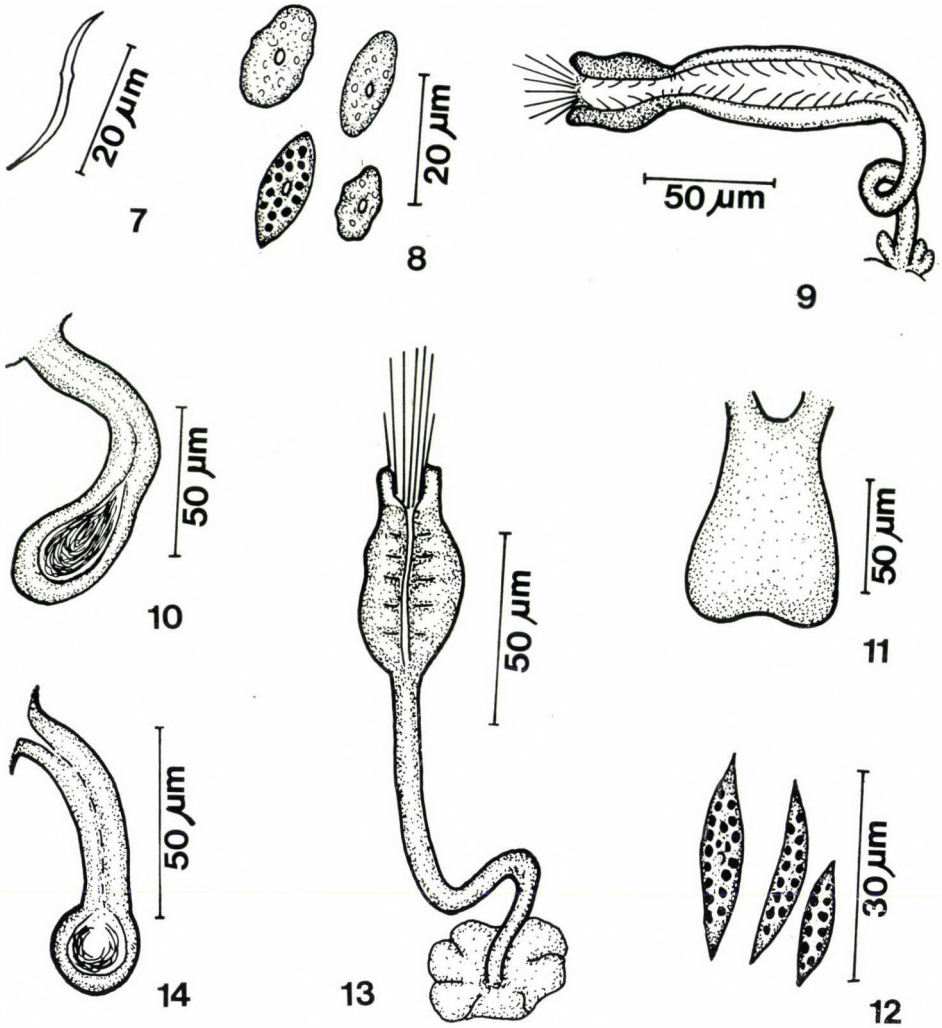
Type-locality: I. *Shagnum*-bog "Nagymohos": a), b) 2. 5. 1988, leg.: K. DÓZSA-FARKAS et J. NAGY. — Fourteen specimens have been examined.

Holotype: B. 1. in 70% ethanol. Paratypes: P. 21. 1. Eleven specimens in 70% ethanol, P. 21. 2. One specimen stained in paracarmine, in Canada balsam, P. 21. 3. One specimen stained in orcein in acetic acid, in Canada balsam. — Type material is deposited at the Department of Systematic Zoology and Ecology, L. Eötvös University.

Cernosvitoviella crassoductus sp. n.
(Figs 7—10)

Very small species. Holotype: length 2.8 mm, diameter 0.16 mm, segments 20. Paratypes: length 2.9—3.7 mm, diameter 0.09—0.14 mm, segments 19—23. Head pore near the tip of the prostomium. Colour whitish. Setae sigmoid, with nodulus (Fig. 7), length of the setae: 17—30 μm; 4,5, 6—5, 6, 4 : 4, 5, 6, 7—5, 6. In XII ventral setae absent, number of dorsal setae 2—3. Clitellum extending over XII—1/2 XIII, slightly developed, clitellar glands indistinct. Cutaneous glands are small and arranged in 5—6 transverse rows.

Brain incised posteriorly. The lymphocytes are broadly spindle shaped (Fig. 8), poorly granulated, transparent, 10—20 μm long, rarely 1—2 dark



Figs 7—10. *Cernosvitoviella crassoductus* sp. n.: 7 = seta, 8 = lymphocytes, 9 = sperm funnel, 10 = spermatheca. — Figs 11—14. *Cernosvitoviella minor* sp. n.: 11 = brain, 12 = lymphocytes, 13 = sperm funnel, 14 = spermatheca

granulated. Two pairs of primary septal glands without dorsal connection, and two pairs of secondary glands. Dorsal vessel originating in XI—XII, blood faintly yellow. Chloragogen cells present from V, granulated, dark in transmitted light.

Vesicula seminalis absent. The sperm funnel (Fig. 9) small, funnel shaped, 1.5—2 times longer than wide, 30—50 μm long. The duct with a dilatation proximally, right after the funnel. Dilatation as wide as, and twice as long as funnel; densely ciliated. Duct continuing in a 6—8 μm wide tube.

Tube somewhat shorter than expanded part. The name of the species refers to this character. The whole sperm duct about 2.5—3.5 times as long as the funnel. Male pore surrounded by a cluster of inseparable glands. Spermathecal duct is 2—2.5 times longer than ampulla; without glands at the ectal orifice (Fig. 10). The ampulla elongate oval with distinct sperm-containing lumen. The spermatheca bent back into V.

Comparison with related species — Out of the so far described 16 *Cernosvitoviella* species only six have a sperm duct with an abrupt dilatation. The wide part in four species (*C. sphaerotheca* HEALY, 1975, *C. goodhui* HEALY, 1975, *C. palustris* HEALY, 1979, *C. parviseta* GADZINSKA, 1974) is located distally, whereas in the other two species (*C. aggtelekiensis* DÓZSA-FARKAS, 1970 and *C. estaragiensis* GIANI, 1979) it is located somewhat further up but still in the distal half of the duct. The main difference between them and *C. crassoductus* sp. n. is that the sperm duct of the latter has the expanded part proximally, right after the funnel.

Type locality: V. "Bábtava" of Csaroda: d). — Theree specimens have been examined. Holotype: C. 2. in ethanol; 20. 10. 1988, leg. I. LOKSA et J. NAGY. Paratypes: P. 23. 1. Two specimens in ethanol; 20. 10. 1988, leg. I. LOKSA et J. NAGY. P. 23. 2. One specimen in ethanol; 8. 6. 1989, leg. K. DÓZSA-FARKAS, I. Loksa et M. POBOZSNY. Type material deposited at the Department of Systematic Zoology and Ecology of the L. Eötvös University, Budapest.

Cernosvitoviella minor sp. n.
(Figs 11—14)

Very small species. Holotype: length 2.5 mm, diameter 0.13 mm, segments 23. Paratypes: length 2—2.8 mm, diameter 0.10—0.16 mm, segments 20—23. Head pore at 0. Colour white due to lymphocytes. Setae sigmoid, with nodulus, 30—35 μm long; (3), 4, 5, 6—3, 4, 5,(6) : (3), 4, 5, 6, 7, 8—4, 5, 6, 7; in XII a ventral setal bundle absent, a dorso-lateral containing two setae each. Clitellum extending over XII or XII—1/2 XIII, clitellar glands rectangular and arranged in transverse rows.

Brain deeply incised posteriorly (Fig. 11), 1.5 times as long as broad. The lymphocytes (Fig. 12) are spindle shaped, 16—29 μm long, with coarse refractile granules (black in transmitted light). Two pairs of primary septal glands with or without a narrow dorsal connection and two pairs of secondary glands. Nephridia tipical of the genus, anteseptale consisting of a funnel only, postseptale elongate, merging into the terminal or subterminal efferent duct. Dorsal vessel originating in XIII; in specimens collected from the floating moor of Szigetcsép in XII or at XII/XIII. Blood colourless (in one specimen light pink). Chloragogen cells present from V, 13—20 μm long, filled with refractile globules.

Vesicula seminalis absent. The sperm funnel (Fig. 13) pear shaped, twice as long as wide, 40—66 μm long, with very high collar. The collar about half of the diameter of the body of the funnel. Sperm duct of the same width throughout its length, about 2.5—3 times as long as the funnel, and about 6 μm wide. Male pore is surrounded by more or less separate, larger glands. Spermatheca in V, spermathecal duct 2.5—3 times longer than diameter of spherical ampulla containing sperms (Fig. 14). The ectal orifice of ectal duct without glands. Usually 1—3 mature eggs present at a time.

Comparison with related species — The new species is most closely related to *C. celere* NURMINEN, 1973, but differs from it in the shape of the spermatheca, in the maximum number of the setae and in the size of the glands around the male pore. The spermatheca of *C. minor* is similar to that of *C. carpathica* NIELSEN et CHRISTENSEN 1959, but the latter is bigger, and it has different lymphocytes and different 3+3 pairs of septal glands.

Type locality: V. "Bábtava" of Csaroda: d) and VI. floating moor of Szigetcsép; b), c) and d). — Eleven specimens have been examined.

Holotype: C. 3. V. "Bábtava", 2. 5. 1988, leg. I. LOKSA et J. NAGY (in ethanol). Paratypes: P. 24.1. Three specimens in ethanol, "Bábtava", 2. 5. 1988, leg. I. LOKSA et J. NAGY. P. 24. 2. Four specimens, floating moor of Szigetcsép, 18. 10. 1988, leg. K. DÓZSA-FARKAS, M. BALOGH et J. NAGY. P. 24. 3. Three specimens, "Bábtava", 8. 6. 1989, leg. K. DÓZSA-FARKAS, I. LOKSA et M. POBOZSNY.

DISCUSSION

Studying nematodes of peat-bogs Soós (1938, 1940) has found, that each of them has a unique fauna. This seems to be the case for enchytraeids, as well. It is especially interesting, that in Kelemér, where the two bogs (I. and II.) are only 200 m apart, the species composition is entirely different. Species distribution is different in the different plant associations and substrates even of the same bog.

"Bábtava" (V.) yielded the highest species number (7). In this bog material collected from the shoot base of *Gliceria maxima* (sample d) provided six species. This microhabitat may be the richest in organic material. At the same time I found only one species, *Cognettia sphagnetorum*, in samples collected from *Sphagnum* (samples a). This species was absent in all the other samples of Bábtava. In Northern Europe *C. sphagnetorum* and *C. glandulosa* were often found together (HEALY 1980, NURMINEN 1967, PEACHEY 1962, SPRINGETT 1970). It was therefore somewhat surprising that in my study these two species occur in separate microhabitats in two bogs. *C. sphagnetorum* was found in the middle region of the bogs: in bog III. it was found in *Sphagnum* collected at the shoot base of *Eriophorum vaginatum* (sample c), whereas in bog V. it was found in *Sphagnum* (sample a). A possible explanation may be the different pH values of these microhabitats. In bog III. the pH of the

edge zone and the middle part were 5.5—5.6 and 3.5—4.0, respectively (MÁTHÉ & KOVÁCS 1958). This explanation is also supported by the results of STANDEN & LATTER (1977), who found the pH optimum for *C. sphagnetorum* to be between 3.6 and 3.8. In a British grassland STANDEN (1982) got negative correlation between pH and population density of this species. According to HEALEY (1980) in a relatively wide moisture range *C. sphagnetorum* is frequent if pH is between 3.0 and 5.5. He also found that this species is widely distributed under pH 5.2, whereas *C. glandulosa* seems to prefer areas with pH above 5.

Bryodrilus ehlersi is widely distributed in the Alps (NURMINEN 1977), in the Tatra Mountains (DUMNICKA 1976), and in Northern Europa up to the Spitzbergen (NIELSEN & CHRISTENSEN 1959, NURMINEN 1965, 1967) in moist habitats. In my opinion *B. ehlersi glandulosus* ssp. n. described here might have evolved from a population surviving as a relict species on this small (2 ha) area.

It is interesting that some samples did not contain enchytraeids at all. The most surprising was sample d) in bog II., that is the decaying *Betula pubescens* pieces and the soil. I expected this site to be favourable for enchytraeids, but I did not find a single worm even after carefully searching a large sample. Out of the two Csaroda bogs none of the "Nyírestó" samples yielded any specimens at all, although sampling was carried out twice in two different associations. Further investigation is needed to explain this phenomenon.

Besides the new species and subspecies the following species proved to be new to the fauna of Hungary: *Enchytraeus minutus*, *Hemifridericia parva* and *Marionina riparia*.

* * *

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TWO NEW TRITON TREMATODE SPECIES FROM VIETNAM*

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Two fluke species *Phyllodistomum pulmonalis* sp. n. and *Mesocoelium tritoni* sp. n. were found in *Paramesotriton deloustali* originating from Vietnam; the description of the two species are given. With 4 original figures.

During the collecting trip of the Hungarian Natural History Museum in Vietnam (MATSKÁSI, OLÁH & TOPÁL 1989) three specimens of the endemic triton species *Paramesotriton deloustali* (BOURRET, 1834) were parasitologically dissected. The present paper submits the description of the founded trematode specimens representing two hitherto unknown species.

Gorgoderidae LOOSS, 1901 — Phyllodistomum BRAUN, 1899

Phyllodistomum pulmonalis sp. n. (Figs 1—2)

Host: *Paramesotriton deloustali* (BOURRET, 1834). — Locality: Tam Dao (Vinh phu province), Vietnam. — Localization: lung. — Intensity: 1—2 specimens. — Date of collecting: 11 May, 1987.

Measurements (in μm): body length: 3600—3902, greatest width: 2370—2401, oral sucker: 458—474 × 489—585, acetabulum: 695—790 × 679—695, ovary: 331—347 × 205—347, testes: 489—553 × 331—410 and 474—663 × 237—284, Vesicula seminalis: 189—237 × 79—110, eggs: 18—25 × 12—18.

Diagnosis: A medium large fluke. Body petaloid, with short forebody distinctly marked of, hindbody with crenulated margin. Tegument squamulose. Oral sucker well developed, terminal. Pharynx absent. Large caeca sinuous, terminating near posterior end of body. Large acetabulum preequatorial. Testes divided into lobes, intercaecal, diagonal. Ovary submedian, pretesticular, lobed. Saccular vesicula seminalis in front of acetabulum, postbifurcal. Genital pore opening behind caecal bifurcation, vitellaria lobed, lying behind acetabulum, intercaecal. Uterus whorls filling postacetabular body cavity, intrude into extracaecal fields, their terminal section meandering on dorsal side of acetabulum to genital pore. Genital pore opening immediately before acetabulum. Eggs numerous, embryonated. Excretory vesicle tubular. Parasitic in lung of endemic triton species Paramesotriton deloustali.

* Hungarian zoological studies in Vietnam, No. 16.

Figs 1—2. *Phyllodistomum pulmonalis* sp. n. Orig. É. Hajdú.

Differential diagnosis: The new species differs from all the congeners by the shape and size of the body as well as the localization and definitive host.

Holotype: the specimen illustrated in Fig. 1, slide V/94 deposited in the Parasitological Collection of the Hungarian Natural History Museum, Budapest. — Paratypes: slides V/95, V/96 deposited as above.

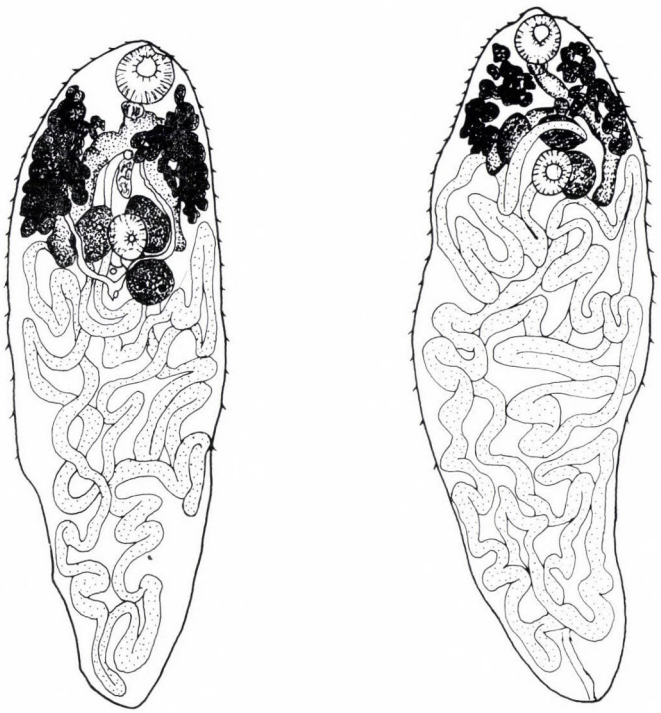
Brachycoeliidae Johnston, 1912 — Mesocoelium Odhner, 1911

Mesocoelium tritoni sp. n. (Figs 3—4)

Host: Paramesotriton deloustali (Bourret, 1834). — Locality: Tam Dao (Vinh phu province, Vietnam). — Localization: intestine. — Intensity: 1—3 specimens. — Date of collecting: 11 May, 1987.

Measurements (in μm): body length: 2835—3024, greatest width: 882—1071, oral sucker: 189—252×195—252, acetabulum: 151—189×151—157, ovary: 189—195×163—189, testes: 126—220×145—163 and 220—226×132—138, cirrus sac: 94—176×56—88, eggs: 31—44×19—25.

Diagnosis: A medium-sized fluke. Body elliptical, tegument spinous. Oral sucker subterminal. Pharynx present. Esophagus variable, caeca short,



Figs 3—4. *Mesocoelium tritoni* sp. n. Orig. É. Hajdú

terminating at the level of acetabulum. Acetabulum smaller than oral sucker in anterior part of body. Ovary rounded, postacetabular, submedian, in right or left side. Genital pore at the bifurcation of caeca. Cirrus sac between caecal bifurcation and acetabulum. Testes simmetrical, situated on each side of acetabulum, at caecal ends. Vitellaria composed of follicles, in two groups in anterior half of body. Uterus occupying most of hindbody, terminal section reaching genital pore dorsal from acetabulum. Excretory vesicle tubular.

Differential diagnosis: The new species differs from all the congeners by the short caeca, the position of vitellaria, and the size of organs (SKRJABIN & MOROSOV 1959). It is the relative of *M. brevicaecum* (OCHI, 1930) and *M. elongatum* GOTO et OZAKI, 1929.

Holotype and paratypes: slide V/97 deposited in the Parasitological Collection of the Hungarian Natural History Museum, Budapest.

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Acta Zoologica Hungarica 36 (3—4), pp. 279—294 (1990)

A REVIEW OF BOTHYNOGRIA BORCHMANN (COLEOPTERA, TENEBRIONIDAE: LAGRIINI)*

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The genus *Bothynogria* BORCHMANN, 1915 with the 6 species included is revised. *Bothynogria bhutanica* sp. n. and *B. meghalayana* sp. n. are described. *Lagria bicolor* KOLLAR et REDTENBACHER, 1848 (whose lectotype is designated) and *Lagria ruficollis* HOPE, 1831 are transferred to *Bothynogria*. With 56 original figures.

The lagriine genus *Bothynogria* was erected by BORCHMANN (1915) to include a single species, *calcarata*, described from "China, Kiautschou". Later he added another species, *himalayana*. There is little else to say about history of the genus. Ever since BORCHMANN's (1936) comprehensive work on World "Lagriidae", only *calcarata* has been mentioned by BORCHMANN (1941) and MASUMOTO (1988).

Recently I have acquired an interest for the lagriine beetles of the Himalaya. Examination of relevant types made it clear that two species originally described in the large collective genus *Lagria* should be assigned to *Bothynogria*. Descriptions by HOPE (1831) as well as by KOLLAR & REDTENBACHER (1848) are very brief as usual in early literature. BORCHMANN's descriptions are more detailed but should be complemented on several points. All of the old species are therefore redescribed in this paper.

This study is based largely on the material deposited in the Naturhistorisches Museum, Basel, Switzerland. Collecting trips organized by this museum to Nepal, Bhutan and the Indian part of Himalaya provided fresh localities for species of *Bothynogria* which were hitherto known merely from types. One new species each from Bhutan and Meghalaya (India) were also found in the material.

Beside the museum in Basel, some other collections have also been taken into account. The following abbreviations are used in this paper to indicate the depository of the specimens investigated. Names of individuals responsible for loan are also added.

BMNH — British Museum (Natural History), London, Great Britain. MR. LESLIE JESSOP.
HFRA — DR. HERBERT FRANZ, Mödling, Austria; private collection.
HNHM — Hungarian Natural History Museum, Budapest, Hungary.
NHMB — Naturhistorisches Museum, Basel, Switzerland. Dr. MICHAEL BRANCUCCI.
NHMW — Naturhistorisches Museum, Wien, Austria. Dr. MANFRED JÄCH.
NMPR — National Museum in Prague, Czechoslovakia. Dr. JOSEF JELINEK.
SMNS — Staatliches Museum für Naturkunde, Stuttgart, German Federal Republic. Dr. WOLFGANG SCHAWALLER.

* 9th contribution to the knowledge of Lagriini.

YKUR — Dr. Yoshihiro Kurosawa, Tokyo, Japan; private collection.
ZMHU — Zoologisches Museum, Humboldt Universität, Berlin, German Democratic Republic. Dr. Fritz Hieke.

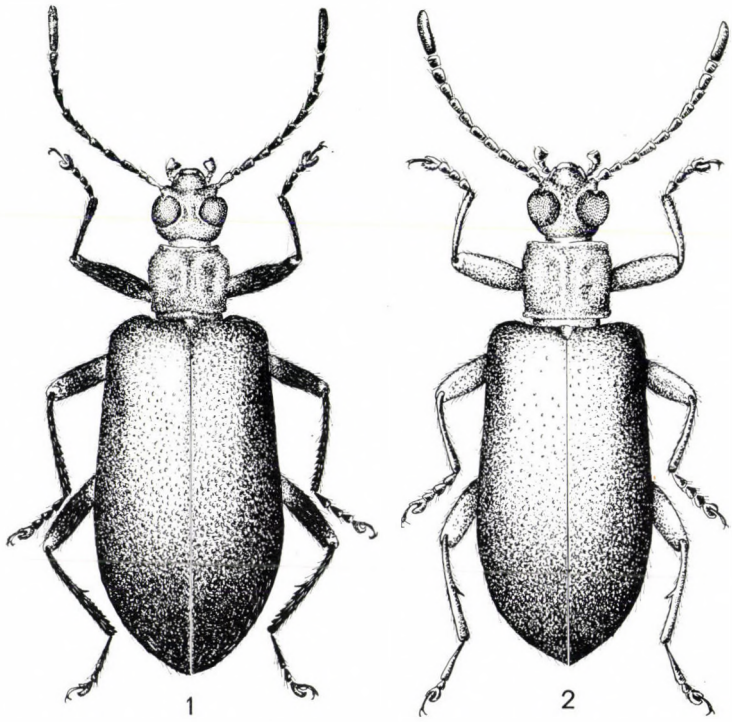
* * *

Acknowledgements — I am indebted very much to all curators and private collectors who have lent me specimens under their care. My sincere thanks are due to Mr. Johann Probst (Wien, Austria) for giving me gift specimens collected by him in Nepal. I am grateful to Miss Ágnes Bartos who prepared the habitus drawings.

Bothynogria Borchmann, 1915

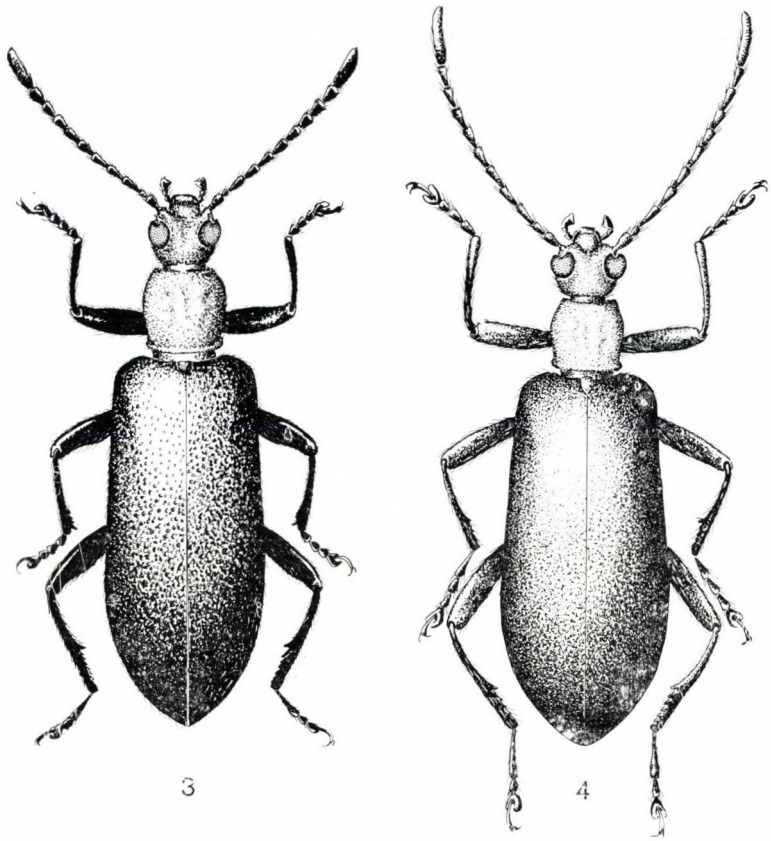
Bothynogria Borchmann, 1915: 128, 1936: 115; Masumoto, 1988: 47. — Type species: *Bothynogria calcarata* Borchmann, 1915, by original monotypy.

♂. Body elongate, rather slender; bicoloured (brownish red and blackish) or rarely unicoloured brownish. Dorsal vestiture usually short, sparse and reclinate, with a few longer and erected hairs on elytral declivity; longer and erect in *himalayana*. Dorsal punctuation coarse and usually dense; interspaces of punctures shiny.



Fgs 1—2. 1 = *Bothynogria calcarata* Borchmann, 1915: male: 2 = *Bothynogria meghalayana* sp. n.: male.

H e a d rounded, with distinct preorbital swelling; clypeus weakly emarginate; labrum deeply notched; eyes relatively large; frons shallowly impressed between eyes; antennae long and narrow; 1st segment shorter than half of distance between antennal sockets; 2nd to 10th segments not modified; 11th segment as long as or slightly shorter than 3 previous segments combined, concave ventrally; inner margin of concavity bordered by a carina. — P r o n o t u m subquadrate to slightly transverse, gently convex; surface with 3 impressions; of variable depth: a median sulcus and 2 lateral kidney-shaped impressions; anterolateral angles slightly projecting; lateral sides with prebasal constriction. — E l y t r a long and subparallel-sided; humeral callosity well developed; punctuation irregular; interspaces forming slight transversal wrinkles. — Thoracal and abdominal s t e r n a without modifications; last abdominal sternite simply rounded at apex. — L e g s relatively long; femora feebly clavate; tibiae nearly straight to slightly curved; distal half to two-third distinctly denticulate-serrate; middle tibiae with a prominent



Figs 3—4. 4 = *Bothynogria ruficollis* (Hope, 1831) male 3 = *Bothynogria bhutanica* sp. n.: male.

tooth of characteristic position or without it; hind tibiae always with a tooth about the middle. — Aedeagus simple, with characteristically shaped paramera.

♀. Body less slender; preorbital swelling less developed; eyes smaller, interocular distance larger; 11th antennal segment not modified; tibiae without denticulation and teeth; ovipositor clearly of lagriine type, without advanced characters (see TSCHINKEL & DOYEN 1980).

Distribution — Five of the 6 known species are restricted to the Himalaya. The sixth is known from south-eastern China and Taiwan.

Remarks — This genus is considered to be closest to *Xenocera* BORCHMANN, 1936 although the latter is apparently not monophyletic. Combination of the most important features distinguishing *Bothynogria* from other lagriine genera is the following:

1. Characteristic impressions of pronotum.
2. Lack of difference between male and female pronotal punctuation. In most genera of subtribe Lagriina females have a depressed median area on the pronotum, sculpture of which is clearly different from that of the rest of pronotum.
3. Shape of last antennal segment of male. The denticulate inner carina of ventral concavity claimed by BORCHMANN as generic feature is merely a species character of *calcarata*.

The main differences of the species belonging here are summarized in Table 1.

KEY TO THE SPECIES OF *BOTHYNOGRIA*

1 (2) Pronotal impressions very deep and distinct; pronotum fairly transverse (width-to-length ratio = 1.42). ♂: Last antennal segment with inner carina of ventral concavity denticulate (Figs 9—10). Taiwan and South-Eastern China
calcarata BORCHMANN, 1915

2 (1) Pronotal impressions less developed; pronotum less transverse (width-to-length ratio $\leq$ 1.20). ♂: Last antennal segment with inner carina of ventral concavity entire. Species from Himalayan countries

3 (4) Elytral punctation fine and sparse, punctures separated by 2 to 5 diameters. Pronotal impressions rather distinct. ♂: Eyes the largest in the genus (Fig. 12), interocular distance less than 0.5 × eye diameter. **meghalayana** sp. n.

4 (3) Elytral punctation coarse and dense, punctures separated by 1—2 diameters. Pronotal impressions much less developed to indistinct. ♂: Eyes smaller.

5 (6) Elytral vestiture long and semierect. ♂: middle tibiae without prominent tooth (Fig. 20) **himalayana** BORCHMANN, 1936

6 (5) Elytral vestiture short and decumbent. ♂: middle tibiae with prominent tooth.

7 (8) ♂: prominent tooth of middle tibiae subapical (Fig. 27). ♀: interocular distance more than 2 × eye diameter (Fig. 26) **ruficollis** HOPE, 1831)

8 (7) ♂: prominent tooth of middle tibiae near to the middle. ♀: interocular distance much less than 2 × eye diameter.

9 (10) ♂: prominent teeth of middle and hind tibiae narrow and acute (Figs 34—35)
bicolor (KOLLAR et REDTENBACHER, (1848))

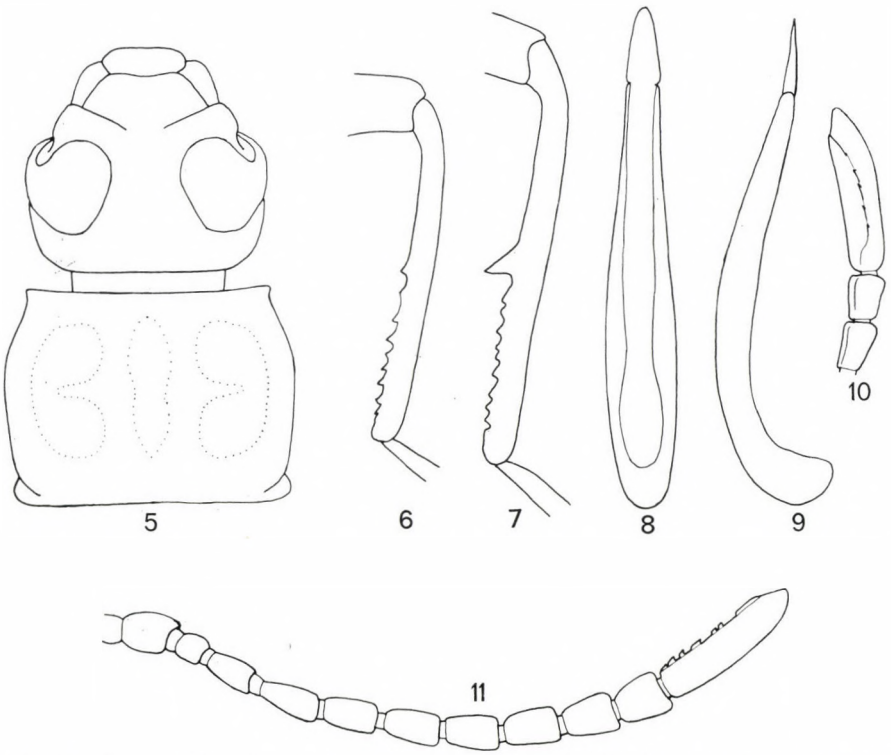
10 (9) ♂: prominent teeth of middle and hind tibiae wide and rather obtuse (Figs 41—42)
bhutanica sp. n.

Bothynogria calcarata Borchmann, 1915
(Figs 1, 5—11, 47, 52)

Bothynogria calcarata Borchmann, 1915: 129, 1936: 116, 1941: 22; Masumoto 1988: 47.

♂. Body elongate, broader than that of congeners; head, pronotum and ventral surface stramineous to brownish red; elytra, antennae and legs darker brown to blackish. Length 8.8—9.5 mm.

H e a d (Fig. 5) with interocular distance about 3/4 of eye diameter (18 : 23); antennae relatively long, (Fig. 11) 8th and 9th segments less than 2× longer than wide at apex, 10th segment subtrapezoidal, slightly longer than wide, 11th segment slightly shorter than 3 preceding combined, subparallel-sided; inner carina of ventral concavity fragmented to irregular denticles (Fig. 10). — P r o n o t u m (Fig. 5) nearly 1.5× wider than long (78 : 55), flattened; maximum width just anterior to middle; impressions distinct, deep; punctures large, irregular in size, separated by 0.3 to 1 diameters on disc, subcontiguous toward margins. — E l y t r a moderately convex, slightly flattened, feebly widening posteriorly; ratio of length to



Figs 5—11. *Bothynogria calcarata* Borchmann, 1915 male: 5 = head and pronotum, 6 = middle tibiae, 7 = hind tibiae, 8 = aedeagus, ventral aspect, 9 = aedeagus, lateral aspect, 10 = last antennal segments, ventrolateral aspect, 11 = antenna.

combined maximum width as 94 : 48; punctures deeply impressed, separated by 1 to 3 diameters; interspaces slightly convex; elytral pubescence short, reclinate. — L e g s rather gracile; middle tibiae (Fig. 6) straight, inner edge serrate, without prominent tooth; hind tibiae straight (Fig. 7), inner edge serrate, prominent tooth is the first in the series of denticles, situated in the middle. — A e d e a g u s with paramera lanceolate, rounded at apex (Fig. 8), nearly straight in profile (Fig. 9). — H a b i t u s: Fig. 1.

♀. Body broader; elytra more widening posteriorly; elytral colour paler; interocular distance about 1.5 × eye diameter; 11th antennal segment shorter than 2 preceding combined. H e a d: Fig. 47. Ovipositor: Fig. 52. Length 9.8 mm.

Types. Not studied. According to GAEDIKE (1986: 345)* one syntype is housed in Eberswalde.

S p e c i m e n s e x a m i n e d. — CHINA, Prov. Yunnan, Gebirge bei Mengtze (2 ♂♂, NMPR). — TAIWAN, Fenchihu, 1400 m, 30. V. 1977, J. et S. KLAPPERICH (2 ♂♂, HNHM); id., 13. VI. 1977, J. et S. KLAPPERICH (1 ♂ 1 ♀, HNHM).

R e m a r k s. — The denticulate inner carina of the 11th antennal segment of the male as well as the distinctly transverse and deeply impressed pronotum clearly distinguishes *calcarata* from its congeners. BORCHMANN (1941) mentioned it from "Kwangtseh-Fukien", China, while MASUMOTO (1988) listed 3 Taiwanese localities (Lalashan, Nanshanchi, Tenghsi).

Bothynogria meghalayana sp. n.
(Figs 2, 12—18, 48, 53)

♂. (holotype). Body elongate, moderately slender, unicoloured stramineous (immature specimen?). Length 9.2 mm.

H e a d (Fig. 12) with interocular distance less than half of eye diameter (12—19); antennae relatively short (Fig. 18), 8th and 9th segments slightly longer than wide, 10th segment subquadrate, 11th segment as long as 3 preceding segments combined, subparallel-sided; inner carina of ventral concavity as in Fig. 17. — P r o n o t u m (Fig. 12) wider than long (76 : 63); maximum width at the middle; impressions distinct and deep, especially median sulcus; punctures large, separated by 1 to 3 diameters, less close on elevated parts around median sulcus, closer to subcontiguous toward margins. — E l y t r a slightly flattened, subparallel-sided; ratio of length to combined maximum width as 88 : 44; punctures fine and shallow, separated by 2 to 5 diameters; interspaces flat, feebly convex toward lateral margin; elytral pubescence sparse, short, reclinate. — L e g s strong, middle tibiae (Fig. 13)

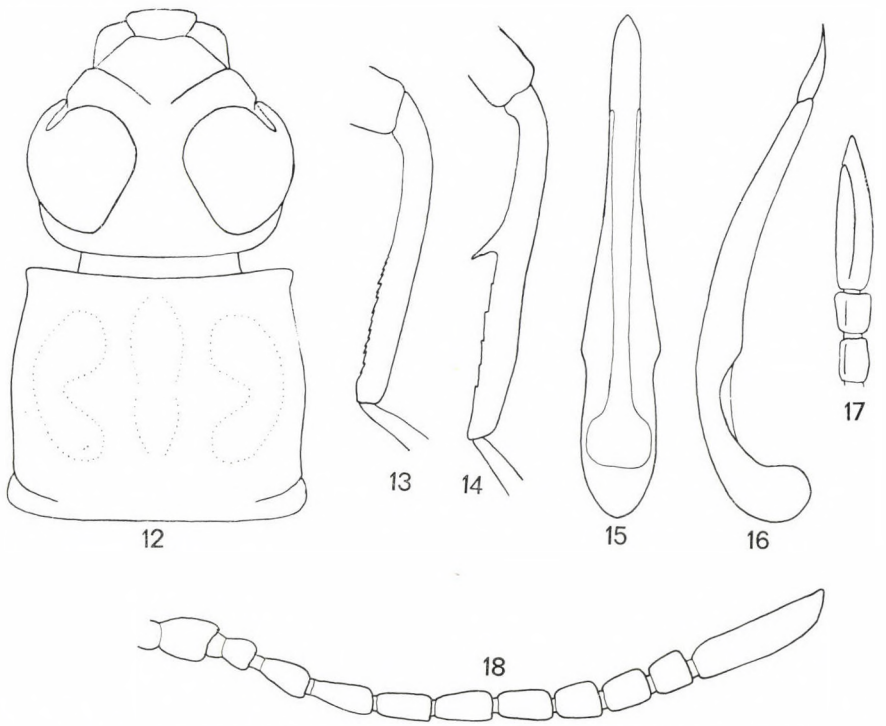
* GAEDIKE, H. (1986): Katalog der in den Sammlungen der Abteilung Taxonomie der Insekten des Institutes für Pflanzenschutzforschung, Bereich Eberswalde (ehemals Deutsches Entomologisches Institut) aufbewahrten Typen — XXIV. — Beitr. Ent. 36: 321-429.

straight, inner edge very finely serrate, without prominent tooth; hind tibiae (Fig. 14) slightly curved outwards; inner edge finely serrate, prominent tooth is the first in the series of denticles, situated just anterior to middle. — A e d e a g u s with a weak lateral projection in posterior half; paramera subparallel-sided, acutely rounded at apex (Fig. 15), slightly curved dorsad in profile (Fig. 16). — H a b i t u s: Fig. 2.

♀. Body broader; colour as in male; interocular distance 1.4× eye diameter (28 : 20); 11th antennal segment as long as two previous segments combined. Head: Fig. 48. Ovipositor: Fig. 53. Length 9.5—10.5 mm.

Type-material — H o l o t y p e, ♂, from Meghalaya, India, is labelled as the following: "Umtyngar Cherrapunjee 16.5.", "Megalaya [sic!] 1976 Wittmer, Baroni U.", "Holotypus ♂ Bothynogria meghalayana Merkl, 1990" [red]. It is deposited in NHMB. — P a r a t y p e s, 4 ♀♀: with two first labels as in holotype, "Paratypus ♀ Bothynogria meghalayana Merkl, 1990" [yellow]. Three paratypes are deposited in NHMB, one in HNHM.

R e m a r k s — On account of deep and distinct pronotal impressions this species is somewhat related to *calcarata*, but the inner carina of the 11th antennal segment of male is not denticulate. The antennae are the shortest, the eyes are the largest and elytral punctation is the sparsest among the species of *Bothynogria*.



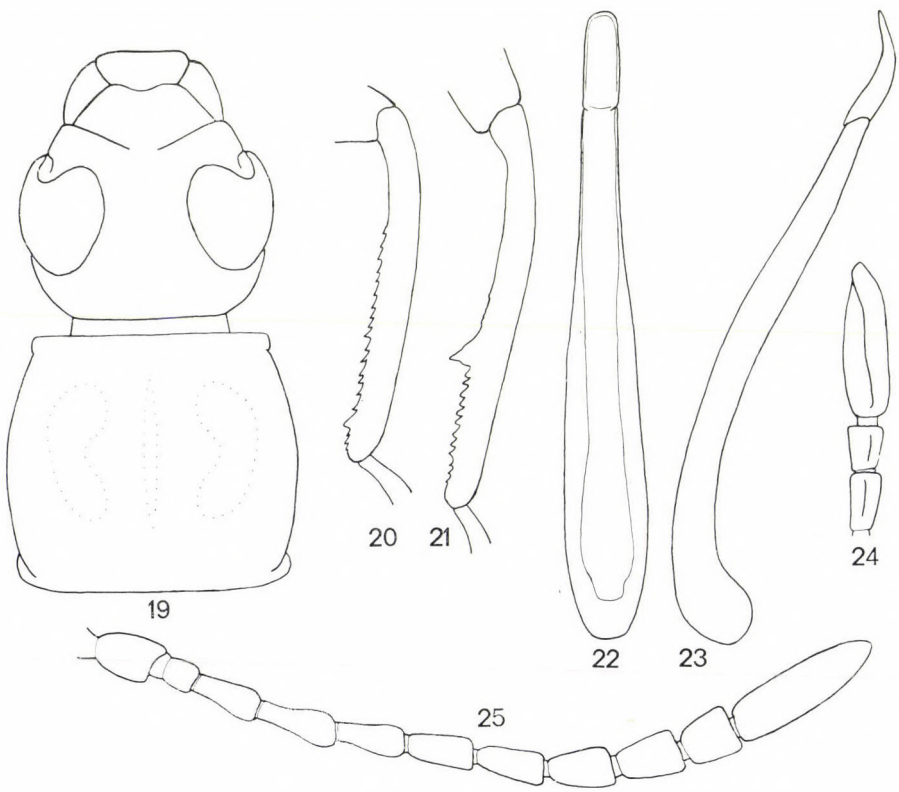
Figs 12—18. *Bothynogria meghalayana* sp. n. male: 12 = head and pronotum, 13 = middle tibiae, 14 = hind tibiae, 15 = aedeagus, ventral aspect, 16 = aedeagus, lateral aspect, 17 = last antennal segments, ventrolateral aspect, 18 = antenna.

Bothynogria himalayana BORCHMANN, 1936
(Figs 19—25, 49, 54)

Bothynogria himalayana BORCHMANN, 1936: 116.

♂. Body elongate, slender; head, pronotum and ventral surface brownish red, elytra, antennae and legs darker brown to black; sometimes whole body unicolorous brownish red to stramineous. Length 7.7—9.8 mm.

H e a d (Fig. 19) with interocular distance as wide as eye diameter (22 : 22); antennae (Fig. 25) relatively long, 8th and 9th segments less than 2× longer than wide at apex, 10th segment subquadrate, 11th segment shorter than 3 preceding combined, subparallel-sided; inner carina of ventral concavity as in Fig. 24. — P r o n o t u m (Fig. 19) slightly wider than long (74 : 67); maximum width at the middle; impressions shallow; punctures separated by 1.5 to 3 diameters on disc, more closely set toward margins. — E l y t r a slightly flattened, subparallel-sided; ratio of length to combined maximum width as 92 : 45; punctures deeply impressed, separated by 1 to



Figs 19—25. *Bothynogria himalayana* BORCHMANN, 1936 male: 19 = head and pronotum, 20 = middle tibiae, 21 = hind tibiae, 22 = aedeagus, ventral aspect, 23 = aedeagus, lateral aspect, 24 = last antennal segments, ventrolateral aspect, 25 = antenna.

3 diameters; interspaces convex; elytral pubescence relatively long, semierect. — Legs strong; middle tibiae (Fig. 20) straight; inner edge serrate, denticles subequal in size, without prominent tooth (at most one subapical denticle a bit larger); hind tibiae (Fig. 21) straight; inner edge serrate, prominent tooth is the first in the series of denticles, situated just posterior to middle. — Aedeagus with paramera subparallel-sided to slightly converging toward broadly rounded apex (Fig. 22), fairly curved dorsad in profile (Fig. 23).

♀. Body less slender; elytra more widening posteriorly; elytral colour more often paler; interocular distance 1.4× eye diameter (28 : 20); 11th antennal segment about as long as two preceding segments combined. Head: Fig. 49. Ovipositor: Fig. 54. Length 9.8—11.0 mm.

Types. Not traced.

Specimens examined — NEPAL (East): Kakani bei Kathmadu, 26. IX. 1978, H. Franz (1 ♂, HFRA); Sheopuri, N Kathmandu, 1800—2500 m, 27. VI. 1980, W. Wittmer (1 ♂, NHMB); Phulchoki, 1500—1700 m, 23, VI. 1980, W. Wittmer (2 ♂♂, NHMB); id., 1500—1600 m, 25. VI. 1980, W. Wittmer (2 ♂♂, NHMB); Koshi, Waku-Sakranti-Thaklung, 1600—2200—1500 m, 10. VI. 1985, M. Brancucci (1 ♂, NHMB); Arun V., Arun R., Hedangna-Num, 800 m, 16. VI. 1983, M. Brancucci (2 ♂♂, NHMB; 1 ♂, HNHM ex NHMB); Arun V., Num-Hedangna, 1500—800—1100 m, 7. VI. 1983, M. Brancucci (5 ♂♂, 2 ♀♀, NHMB; 1 ♂, 1 ♀, HNHM ex NHMB); Arun V., Arun R.-Num, 800—1500 m, 17. VI. 1983, M. Brancucci (1 ♀, NHMB); Arun V., Lamobagar Gola, 1400 m, 8—14. VI. 1983, M. Brancucci (7 ♂♂, 3 ♀♀, NHMB; 3 ♂♂, 1 ♀, HNHM ex NHMB); Sankhua Sabha Distr., below Karmarang to Hedangna, tree-rich cultural land, 950—1350 m, 5. VI. 1988, (No. 407), J. Martens et W. Schawaller (1 ♂, SMNS); Sankhua Sabha Distr., Arun Valley bottom between Hedangna and Num, subtropical forest, 950—1000 m, 6—8. VI. 1988 (No. 408), J. Martens et W. Schawaller (1 ♂, SMNS); Sankhua Sabha Distr., Arun Valley bottom, ascent to Num, broad-leaved forest, 1100—1450 m, 8. VI. 1988 (No. 409), J. Martens et W. Schawaller (1 ♀, SMNS). — INDIA: Nilghedi Hills (1 ♂, ZMHU).

Remarks — This species can be easily separated from the congeners by the comparatively long and semierect elytral vestiture.

Bothynogria ruficollis (Hope, 1831), comb. n.
(Figs 3, 26—32, 50, 55)

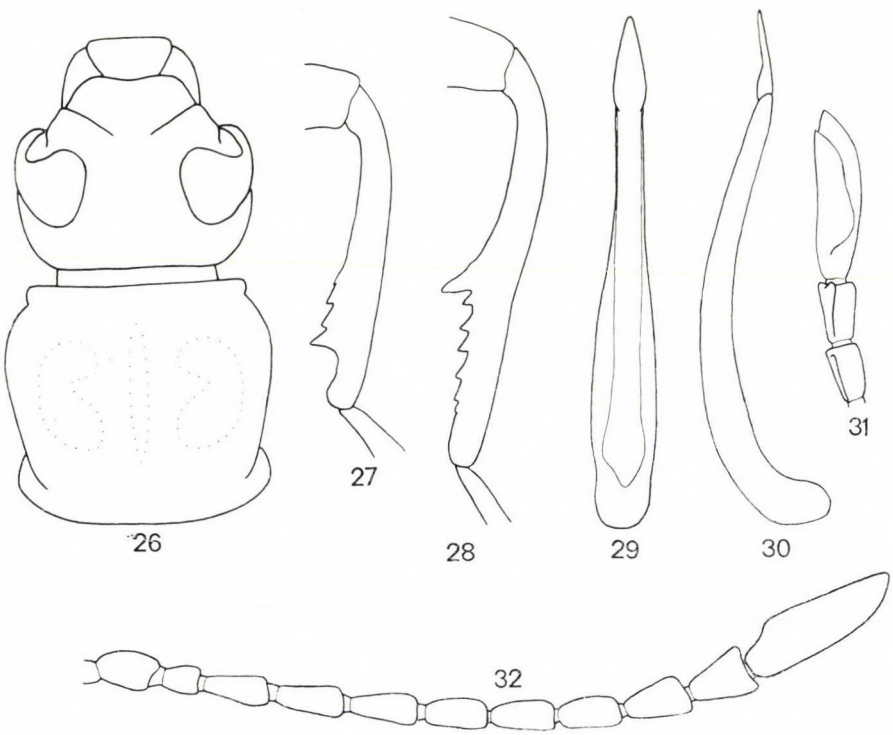
Lagria ruficollis Hope, 1831: 32; Borchmann, 1910: 13; 1915: 86, 87; Chujo, 1966: 549. — *Cerogria ruficollis:* Borchmann, 1936: 137.

♂. Body elongate, slender; in most cases head, pronotum and ventral surface brownish red, elytra, antennae and legs (except femoral base) darker blackish brown to nearly black; elytra may be lighter brownish, with sutural border sometimes infuscate. Length 7.8—10.0 mm.

Head (Fig. 26) with interocular distance 1.26× eye diameter (24 : 19); antennae relatively long (Fig. 32), 8th and 9th segments distinctly elongate, 10th segment subtriangular, 11th segment longer than two but shorter than three previous segments combined, distinctly broadening at inner border;

inner carina of ventral concavity as in Fig. 31. — P r o n o t u m (Fig. 26) slightly wider than long (70 : 62); maximum width anterior to middle; impressions shallow; punctures large, separated by 1 to 2 diameters on disc, more closely set to coalescent toward margins. — E l y t r a distinctly flattened, hardly widening posteriorly; ratio of length to combined maximum width as 95 : 44; punctures deeply impressed, separated by 1 to 2.5 diameters; interspaces convex; elytral pubescence sparse, short, reclinate. — L e g s strong; middle tibiae (Fig. 27) gradually widening toward prominent tooth then abrubtly attenuating; inner edge with denticles, prominent tooth is the last in the series; apical one-third barely curved out; hind tibiae (Fig. 28) slightly curved outwards; inner edge with coarse denticles, prominent tooth situated at the middle of tibial length. — A e d e a g u s with paramera wide, lanceolate, acutely rounded at apex (Fig. 29), nearly straight in profile (Fig. 30). — H a b i t u s: Fig. 3.

♀. Body less slender; colour in most cases more or less unicolorous brownish, with blackish legs; sometimes elytra darker. Interocular distance more than 2× eye diameter (40 : 19); 11th antennal segment shorter than



Figs 26—32. *Bothynogria ruficollis* (HOPE, 1931) male: 26 = head and pronotum, 27 = middle tibiae, 28 = hind tibiae, 29 = aedeagus, ventral aspect, 30 = aedeagus, lateral aspect, 31 = last antennal segments, ventrolateral aspects, 32 = antenna.

two previous segments combined. Head: Fig. 50. Ovipositor: Fig. 55. Length: 8.8—10.5 mm.

Type-material — Holotype, ♂, from Nepal, is labelled as follows: "Type" [circular with red margin], "ruficollis Hope" [handwritten], "ruficollis Hope 4231 [handwritten with ink] bicolor Redt. Hügel Kaschm p. 534 [handwritten with pencil]", "Hardwicke Bequest". It is deposited in BMNH.

Specimens examined — NEPAL (West). Chitre, Ghar Khola, 2400 m, 26—31. V. 1984, C. Holzschuh (1 ♂, 1 ♀, NHMB); Banthanti-Landrung, Modi Khola, 2500—1600 m, 2. VI. 1984, C. J. Rai (1 ♂, NHMB); Pothana, Modi Khola, 1900 m, 5—7. V. 1984, C. J. Rai (2 ♀♀, NHMB); id., 7—9. VI. 1984, B. Bhakta (2 ♀♀, NHMB); Kali-G. Khola, Gasa-Kalopani, Dhawalagiri, 2000—2500 m, 20. VI. 1986, C. Holzschuh (1 ♀, NHMB). — NEPAL (East). Kathmandu, 1—18. VI. 1963, Lep. Soc. Japan Exped. (1 ♂, YKUR); Kathmandu Distr, Sheopuri Mt., degraded forest, bushes, 1700—2100 m, 25. VI. 1988 (No. 305), J. Martens et W. Schawaller (1 ♂, SMNS); Bajra Barai, Kathmandu-V., 28. V. 1976, W. Wittmer et C. Baroni Urbani (1 ♀, NHMB); Godavari, Kathmandu-V., 1500—1700 m, 21—V. 1977, W. Wittmer et M. Brancucci (2 ♂♂, NHMB); id., 1500 m, 17. V. 1983, M. Brancucci (2 ♂♂, 2 ♀♀, NHMB); id., 1500 m, 22—25. VI. 1983, M. Brancucci (3 ♂♂, 1 ♀, NHMB; 1 ♂, HNHM ex NHMB); id., 1500 m, 3. VI. 1985, J. Probst (6 ♂♂, 3 ♀♀, HNHM; 1 ♂, 1 ♀, NHMW ex HNHM); Kathmandu, Gokarnaban, 24. V.— 21. VI. 1976, W. Wittmer et C. Baroni Urbani (1 ♂, 1 ♀, NHMB; 1 ♀, HNHM ex NHMB); Phulchoki, 1500—1600 m, 25. VI. 1980, W. Wittmer (3 ♂♂, NHMB; 1 ♂, HNHM ex NHMB); id., 1500—1700 m, 23. VI. 1980, W. Wittmer (1 ♂, NHMB); id., 2000 m, 7. VI. 1977, W. Wittmer (1 ♂, NHMB); Nagarkot, 1800—2000 m, W. Wittmer (1 ♀, NHMB); Chandan Bari, 3350—4250 m, 22. VI. 1978, B. Bhakta (2 ♀♀, NHMB); Janakpur, Chisopani-Kabre, 2300—1900 m, 14. VI. 1987, Sherpa Pashang (3 ♂♂, 1 ♀, HNHM); Hong Gaon-Hatiya, 2300—1500 m, 1. VI. 1980, W. Wittmer (1 ♂, NHMB); Mure, 6. VI. 1976, W. Wittmer et C. Baroni Urbani (2 ♂♂, NHMB); Chichila-Mure, Arun V., 1950—2000 m, 1. VI. 1983, M. Brancucci (1 ♂, NHMB); Mure-Arunthan, Arun V., 2000—1300 m, M. Brancucci (1 ♂, NHMB); Sankhua Sabha Distr., Arun Valley between Mure and Hurure mixed broad-leaved forest, 2050—2150 m, 9—17. VI. 1988, J. Martens et W. Schawaller (1 ♀, SMNS); Sankhua Sabha Distr., between Pahakhola and Karmarang, open forest bushes, 2300—1800 m, 4. VI. 1988, J. Martens et W. Schawaller (1 ♂, 1 ♀, SMNS) Mt. Everest (1 ♀, HNHM).

Remarks — Males of *ruficollis* can be readily distinguished from those of congeners by the subapical position of the prominent tooth in the middle tibiae. The eyes are the smallest within the genus by which females are easily recognizable, too.

Bothynogria bicolor (Kollar et Redtenbacher, 1848), comb. n. et stat. rev.

(Figs 33—39, 51, 56)

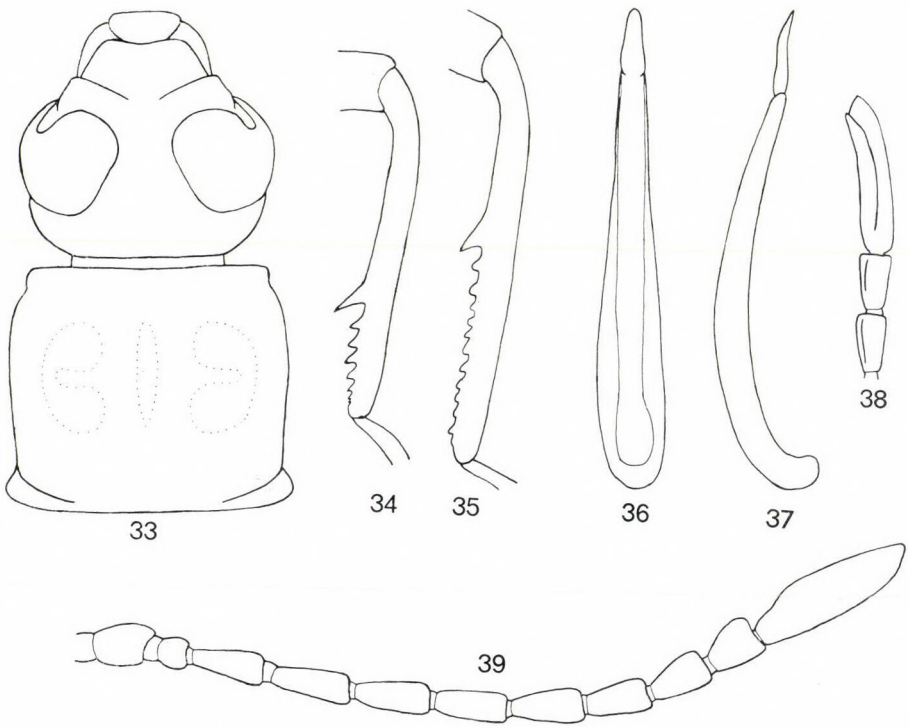
Lagria bicolor Kollar et Redtenbacher, 1848: 534; Borchmann, 1910: 7 1915: 87 (as synonym of *Lagria ruficollis*) 1936: 137 (as synonym of *Cerogria ruficollis*).

♂. Body elongate, slender; head, pronotum and ventral surface brownish red, elytra, antennae and legs darker brown to blackish. Length 8.7—9.5 mm.

Head (Fig. 33) with interocular distance about half of eye diameter (14 : 26); antennae (Fig. 39) relatively long, 8th and 9th segments distinctly elongate, 10th segment about as long as wide at apex, 11th segment slightly shorter than 3 preceding combined, slightly broadening at inner border; inner

carina of ventral concavity as in Fig. 38. — P r o n o t u m (Fig. 33) slightly wider than long (74 : 63); maximum width anterior to middle; impressions of moderate depth; punctures large, separated by 0.5 to 1 diameter on disc, subcontiguous toward margins. — E l y t r a barely flattened, hardly widening posteriorly, ratio of length to combined maximum width as 98 : 46; punctures deeply impressed, separated by 1 to 3 diameters; interspaces convex; elytral pubescence sparse, short, reclinate. — L e g s strong; middle tibiae (Fig. 34) straight; inner edge with a few denticles, prominent tooth is the first in the series, narrow and acute, situated just posterior to middle; hind tibiae (Fig. 35) straight, inner edge serrate, prominent tooth is the first in the series of denticles, situated just anterior to middle. — A e d e a g u s with paramera narrow, lanceolate, rounded at apex (Fig. 36), slightly curved ventrad in profile (Fig. 37).

♀. Body less slender, elytra more widening posteriorly; elytral colour more often paler; interocular distance a little wider than eye diameter (24 : 21); 11th antennal segment about as long as two previous segments combined. Head: Fig. 51. Ovipositor: Fig. 56. Length 9.2—10.6 mm.



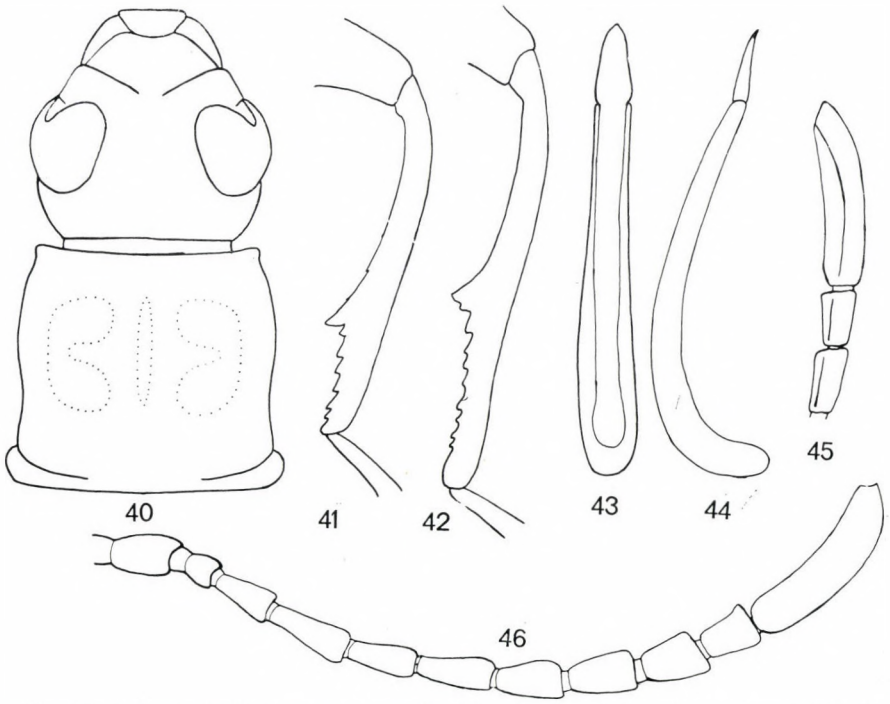
Figs 33—39. *Bothynogria bicolor* (KOLLAR et REDTENBACHER, 1848) male: 33 = head and pronotum, 34 = middle tibiae, 35 = hind tibiae, 36 = aedeagus, ventral aspect, 37 = aedeagus, lateral aspect, 38 = last antennal segments, ventrolateral aspect, 39 = antenna.

Types-material — The type series housed in NHMW consists of two specimens. Both stand under a label reading "Bicolor Redtenb. Kaschmir Typen !". One of them, the less damaged, belongs to *bicolor* indeed and I have choosen it as lectotype. It is labelled as follows: "Hügel 405", "TYPUS" [red], "Ruficollis Rdt Kaschmir" [handwritten], "Lectotypus ♀ Lagria bicolor Kollar et Redtenbacher 1848 des. O. Merkl, 1990" [red], "Bothynogria bicolor (Koll. et Rdt.) det. O. Merkl, 1990".

The second specimen is herewith designated to paralectotype, although it is not conspecific with the lectotype but belongs to *himalayana*. It is labelled as the following: "Hügel 405". "TYPUS" [red], "Paralectotypus ♀ Lagria bicolor Kollar et Redtenbacher 1848 des. O. Merkl, 1990" [red], "Bothynogria himalayana Bm. det. O. Merkl, 1990".

Specimens examined — NEPAL (East): Godavari, Kathmandu-V., 1500 m, 22—25. VI. 1983, M. Brancucci (1 ♀, NHMB) Phulchoki, 1500—1700 m, 23. VI. 1980, W. Wittmer (1 ♂, NHMB) Hong Gaon-Hatiya, 2300—1550 m, 1. VI. 1980, W. Wittmer (1 ♂, NHMB) Arun V., Lamobagar Gola, 1400 m, 8—14. VI. 1983, M. Brancucci (1 ♂, HNHM ex NHMB) Arun V., Num-Hedangna, 1500—800—1100 m, 7. VI. 1983, M. Brancucci (1 ♂, NHMB); Num-Chichila, 1500—1900 m, 17. VI. 1980, W. Wittmer (1 ♀, HNHM ex NHMB); Sankhua Sabha Distr., Arun Valley bottom between Hedangna and Num, subtropical forest, 950—1000 m, 6—8. VI. 1988 (No. 408), J. Martens et W. Schawaller (1 ♂, SMNS); Sankhua Sabha Distr., Arun Valley bottom, ascent to Num, broad-leaved forest, 1100—1450 m, 8. VI. 1988, J. Martens et W. Schawaller (1 ♂, SMNS). — INDIA: Sikkim: no closer locality (1 ♂, ZMHU; 1 ♂, HNHM ex ZMHU). Uttar Pradesh: Mussoorie, 2000 m, VIII. 1988, K. Werner (2 ♂♂, HNHM). West Bengal: Distr. Darjeeling, Lebong, 1600—1800 m, 2. VI. 1975, W. Wittmer (1 ♂, NHMB); Distr. Darjeeling, Lopchu, 1500 m, 31. V. 1975, W. Wittmer (1 ♀, NHMB).

Remarks — Borchmann (1910, 1915, 1936) treated *bicolor* as a synonym of *ruficollis*. However, comparison of males and females of both species showed constant external and genitalic differences.



Figs 40—46. *Bothynogria bhutanica* sp. n. male: 40 = head and pronotum, 41 = middle tibiae, 42 = hind tibiae, 43 = aedeagus, ventral aspect, 44 = aedeagus, lateral aspect, 45 = last antennal segments, ventrolateral aspect, 46 = antenna.

Bothynogria bhutanica sp. n.
(Figs 4, 40—46)

♂. Body elongate, moderately slender; head, pronotum and ventral surface brownish red (head a little darker); antennae and legs brown, femoral base lighter, elytra brownish black. Length 9.1—9.3 mm.

H e a d (Fig. 40) with interocular distance 1.2× eye diameter (24 : 20); antennae relatively long (Fig. 46), 8th to 10th segments longer than wide, 11th segment a little shorter than 3 preceding segments combined, subparallel-sided, inner carina of ventral concavity as in Fig. 4.5) — P r o n o t u m (Fig. 40) wider than long (73 : 62); maximum width at base; impressions shallow; punctures large, separated by 0.5 to 1 diameter on disc, subcontiguous toward margins. — E l y t r a hardly flattened, hardly widening posteriorly; ratio of length to combined width as 91 : 44; punctures deeply impressed, separated by 1 to 3 diameters; interspaces convex; elytral pubescence short, reclinate. — L e g s strong; middle tibiae (Fig. 41) nearly straight, inner edge denticulate, prominent tooth is the first in the series of denticles, broad, situated just posterior to middle; hind tibiae (Fig. 42) barely curved outwards, inner edge serrate, prominent tooth is the first in the series of denticles, broad and less acute, situated in the middle. — A e d e a g u s with paramera broad, lanceolate, acutely rounded at apex (Fig. 43), slightly curved ventrad in profile (Fig. 44). — H a b i t u s: Fig. 4.

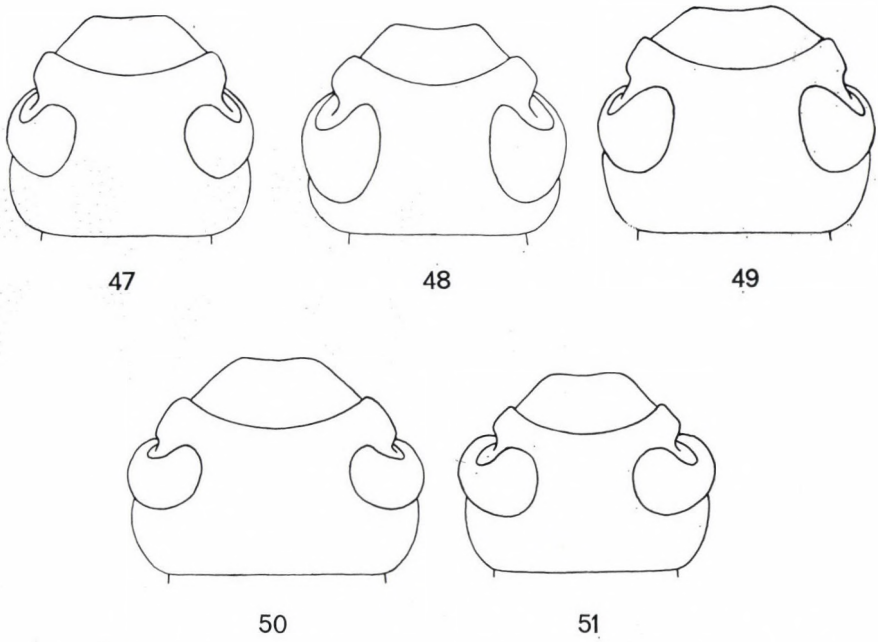
♀. Unknown.

Table 1

Comparison of the species of *Bothynogria*. Relative characters

Character	*calcarata*	*meghalayana*	*himalayana*
Depth and distinctness of pronotal impressions	+++	+++	+
"Flatness" of elytra	+++	+	++
Elytral vestiture	short, reclinate	short, reclinate	long, semierect
Prominent tooth of middle tibiae	—	—	—
Prominent tooth of hind tibiae	at middle	before middle	after middle
Antennal length	++	+	++
ID : ED ratio of ♂	18 : 23 (0.78)	12 : 29 (0.41)	22 : 22 (1.00)
ID : ED ratio of ♀	28 : 18 (1.55)	28 : 20 (1.40)	28 : 20 (1.40)
PW : PL ratio of ♂	78 : 55 (1.42)	76 : 63 (1.20)	74 : 67 (1.10)
EL : EW ratio of ♂	94 : 48 (1.95)	88 : 44 (2.00)	92 : 45 (2.04)

Abbreviations: ID = interocular distance, ED = eye diameter, PW = maximum pronobined maximum elytral width.

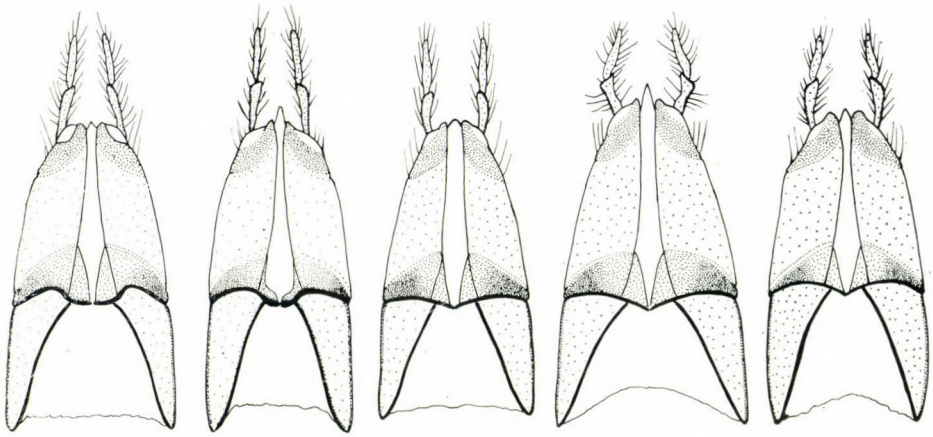


Figs 47—51. Head of females of *Bothynogria:* 47 = *calcarata*, 48 = *meghalayana*, 49 = *himalayana*, 50 = *ruficollis*, 51 = *bicolor*.

are denoted by the number of cross-marks

Character	*Eruficollis*	*Bicolor*	*Bhutanica*
Depth and distinctness of pronotal impressions	+	++	++
"Flatness" of elytra	++++	+	+
Elytral vestiture	short, reclinate	short, reclinate	short, reclinate
Prominent tooth of middle tibiae	subapical	near to middle	near to middle
Prominent tooth of hind tibiae	at middle	at middle	at middle
Antennal length	++	++	++
ID : ED ratio of ♂	24 : 19 (1.26)	14 : 26 (0.54)	24 : 20 (1.20)
ID : ED ratio of ♀	40 : 19 (2.10)	24 : 21 (1.14)	unknown
PW : PL ratio of ♂	70 : 62 (1.13)	74 : 63 (1.17)	73 : 62 (1.18)
EL : EW ratio of ♂	95 : 44 (2.15)	98 : 46 (2.13)	91 : 44 (2.07)

tal width, PL = pronotal length along midline, EL = elytral length along suture, EW = com-



Figs 52—56. Ovipositors of *Bothynogria*: 52 = *calcarata*, 53 = *meghalayana*, 54 = *himalayana*, 55 = *ruficollis*, 56 = *bicolor*.

Type-material — H o l o t y p e, ♂, from Bhutan, is labelled as the following: "Wangdi Phodrang 1700 m 21 km 0", "Nat.-Hist. Museum Basel-Bhutan Expedition 1972", "Holotypus ♂ Bothynogria bhutanica Merkl, 1990" [red]. It is deposited in NHMB. — P a r a t y p e: with two first labels as in holotype, "Paratypus ♂ Bothynogria bhutanica Merkl, 1990" [yellow]. It is deposited in HNHM.

R e m a r k s — This species is extremely similar to *bicolor* but the prominent teeth on the middle and hind tibiae are rather broad and obtuse (narrow and acute in *bicolor*); the last antennal segment is subparallel-sided (slightly widening at inner border in *bicolor*); interocular distance and relative length of last antennal segments are larger than in *bicolor*.

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A REVISION OF THOMSON'S MICROCHELONUS SPECIES (HYMENOPTERA: BRACONIDAE, CHELONINAE)

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The following five *Microchelonus* (originally *Chelonus*) species by C. G. THOMSON are redescribed (their synonymous names are indicated in brackets): *M. atripes* (THOMSON, 1874) (= cunctator PAPP, 1971, syn. n.), *M. depressus* (THOMSON, 1874), *M. pilicornis* (THOMSON, 1874) (= sculptilis TOBIAS, 1986, syn. n.), *M. rimulosus* (THOMSON, 1874) (= rimatus SZÉPLIGETI, 1896) and *M. rugicollis* (THOMSON, 1874) (= temporalis TOBIAS, 1986, syn. n.). Taxonomic remarks on the species registered by THOMSON as M. caudatus (THOMSON, 1874) (= jun. syn. of *M. retusus* [NEES, 1816]), *M. fenestratus* (Nees, 1816) and *M. microphthalmus* (WESMAEL, 1838) are preserved. With 77 original figures.

Introduction — In 1874 and 1891 C. G. THOMSON in his series "Opuscula entomologica" published two monographs in which, besides other genera, within the genus *Chelonus* JURINE he described new species as well as reported known species mainly from Sweden. Since then the species of *Chelonus* with 16 antennal joints (female sex) and carapace with apical foramen (male sex) have been transferred into the genus *Microchelonus* SZÉPLIGETI, 1908. From among the *Chelonus* species reported by THOMSON (l.c.) the following thirteen taxa proved to represent the genus *Microchelonus:*

atripes (THOMSON, 1874)
basalis (CURTIS, 1837)
caudatus (THOMSON, 1874 jun. syn.
= *retusus* (NEES, 1816) sen. syn.
contractus (NEES, 1816)
depressus (THOMSON, 1874)
fenestratus (NEES, 1816)
latrunculus (MARSHALL, 1885)
microphthalmus (WESMAEL, 1838)
parcicornis (HERRICH—SCHÄFFER, 1838)
pedator (DAHLBOM, 1832)
pilicornis (THOMSON, 1874)
rimulosus (THOMSON, 1874)
rugicollis (THOMSON, 1874)

Upon my request and by Dr. R. DANIELSSON's courtesy I received for examination the *Microchelonus* material specified previously from the Thomson's Collection preserved in the Universitetes Zoologisk Institutionen in Lund except the following species: *M. basalis, contractus, latrunculus* and *pedator.*

Subsequently I accomplish my taxonomic and systematic results of studying Thomson's *Microchelonus* material.

Acknowledgement — I am particularly indebted to Dr. ROY DANIELSSON (Lund) who kindly put at my disposal the type material and named specimens of the genus *Chelonus* / *Microchelonus* from Thomson's Collection preserved in the Lund University (Zoological Institute and Museum) for a long-term loan-period. Without his tolerant assistance my present contribution could not have been prepared.

List of the *Microchelonus* SZÉPLIGETI, 1908 species described by C. G. THOMSON (originally in the genus *Chelonus* JURINE, 1801)

Microchelonus atripes (THOMSON, 1874)
= M. cunctator PAPP, 1971 syn. n.
Microchelonus caudatus (THOMSON, 1874) jun. syn.
= *M. retusus* (MEES, 1816) sen. syn.
Microchelonus depressus (THOMSON, 1874)
Microchelonus pilicornis (THOMSON, 1874)
= M. sculptilis TOBIAS, 1986 syn. n.
Microchelonus rimulosus (THOMSON, 1874)
= M. rimatus (SZÉPLIGETI, 1896)
Microchelonus rugicollis (THOMSON, 1874)

Microchelonus atripes (THOMSON) (Figs 1—7)

Chelonus atripes THOMSON, 1874: Opusc. ent. 6: 578. Lectotype ♀ + 1 ♂ paralectotype, type locality: "Småland och pa Öland" (Sweden), in Universitetes Zoologiska Institutionen, Lund.
Microchelonus cunctator PAPP, 1971: Acta Zool. Hung. 17: 78. Holotype ♀, type locality: "Čojbalsan aimak: 80 km NW of Čojbalsan, 700 m" (Mongolia), in the Hungarian Natural History Museum, Budapest; **syn. n.**

Designation of the lectotype ♀: "Ö" (= Öland) — "Sweden Öland" — third and fourth labels are my lectotype designation as well as the actual name of the species given by me.

One ♂ paralectotype: "Sm" (= Småland) — "Bhn" (= ?) — "Sweden Småland" — fourth and fifth labels are my paralectotype designation as well as the actual name of the species given by me.

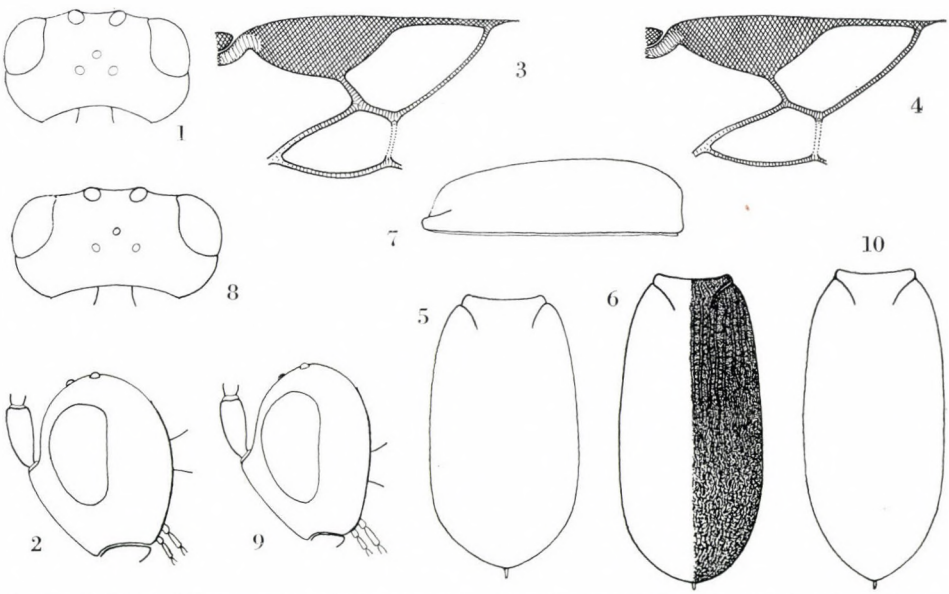
Description of the lectotype ♀ — Body 2.9 mm long. — Head in dorsal view (Fig. 1) transverse, 1.8 times as broad as long, eye slightly though distinctly longer than temple, latter strongly rounded, occiput moderately excavated. Eye in lateral view almost twice as high as wide, temple somewhat wider than width of eye and not narrowing ventrally (Fig. 2). Ocelli small, distance between fore and a hind ocelli twice greater and distance between hind two ocelli three times greater than diameter of an ocellus; POL about one-third shorter than OOL (Fig. 1). Face almost twice as wide as high, inner margin of eyes parallel. Clypeus 1.7 times wider between tentorial pits than high medially, its lower margin convex. Malar space 1.5 times as long as basal width of mandible. Face concentric striate-rugulose, subshiny; clypeus less concentric and finely striate-rugulose, subshiny. Head above rather transversely rugulose. — Antenna somewhat longer than head and mesosoma together. First flagellar joint distinctly three times as long as broad, further joints gradually shortening and attenuating so that penultimate joint twice as long as broad. Left antenna broken, with four joints (scape, pedicel and flagellar joints 1—2).

Mesosoma in lateral view about 1.5 times as long as high. Mesonotum between tegulae somewhat less broad than head. Mesosoma rugose to densely rugose, scutellum rather rugulose. — Hind femur thrice as long as broad, broadest at its middle; hind tibia and tarsus equal in length, basitarsus of hind leg as long as tarsal joints 2—4.

Fore wing nearly as long as body. Pterostigma (Fig. 3) 2.3 times as long as wide and 1.75 times as long as metacarp, issuing radial vein distally from its middle; *r1* and *r2* equal in length, *r3* straight; *cuqu1* distinctly three times as long as *r2*.

Carapace as long as head and mesosoma together, in dorsal view 1.75 times as long as broad, slightly broadening posteriorly (Fig. 5); in lateral view almost evenly high (Fig. 7); apically just incurved ventrally. Basal pair of keels short and converging. Anterior third of carapace striate-rugose, posteriorly longitudinally rugose to rugose, interspaces with transverse rugulosity (cf. Fig. 6). — Ovipositor sheath in lateral view as long as hind tarsal joints 2—3.

Body brownish black, carapace with faint rusty suffusion. Legs blackish brown, tibiae and tarsi brown, spurs pale. Oral organ brown. Wings weakly fumous, pterostigma brown, veins light brown.



Figs 1—7. *Microchelonus atripes* (Thomson): 1 = head in dorsal view, 2 = head in lateral view, 3—4 = distal part of right fore wing: lectotype (3) and ♀♂ (4), 5—6 = carapace in dorsal view: lectotype (5) and ♀♂ (6), 7 = carapace in lateral view. — Figs 8—10. *M. longiventris* (Tobias): 8 = head in dorsal view, 9 = head in lateral view, 10 = carapace in dorsal view.

The single male p a r a l e c t o t y p e is similar to lectotype. Antenna about as long as head, mesosoma and two-thirds of metasoma together, with 19 joints. First flagellar joint three times as long as broad, further joints gradually shortening and attenuating so that penultimate joint 1.75 times as long as broad. Pterostigma issuing radial vein less distally from its middle. Carapace in dorsal view twice as long as broad, its anterior half rugose with more or less striate elements, posteriorly rugose to rugulose. Apical foramen transverse, distinctly three times as wide as high. Colour similar to that of female, fore tibia and tarsus yellowish.

Female and male specimens (without type status) deviating from the syntypes: (1) Pterostigma somewhat longer, 2.5—2.6 times as long as wide, *r1* usually somewhat shorter than *r2*, *cuqu1* distinctly less than three times as long as *r2* (Fig. 4). (2) Carapace in dorsal view (Fig. 6) twice as long as broad.

M. atripes (THOMSON) is closely related to *M. longiventris* (TOBIAS, 1964), the distinction of the two species is very difficult:

M. atripes (THOMSON)	*M. longiventris* (TOBIAS)
1. Head in dorsal view less transverse, 1.8 times as broad as long; temple strongly rounded and slightly shorter than eye (Fig. 1).	1. Head in dorsal view more transverse, twice as broad as long; temple rather constricted and about one-third shorter than eye (Fig. 8).
2. In lateral view eye almost twice as high as wide, and distinctly less wide than temple, latter not narrowing ventrally (Fig. 2).	2. In lateral view eye somewhat more than twice as high as wide, and slightly wider than temple, latter somewhat narrowing ventrally (Fig. 9).
3. Carapace of female 1.75 times as long as broad and slightly broadening posteriorly (Figs 5—6).	3. Carapace of female twice as long as broad and not broadening posteriorly (Fig. 10).

D i s t r i b u t i o n — *M. atripes* (THOMSON) was described from Sweden. Up to now it was reported from Belgium, Finland and Yugoslavia (SHENEFELT 1973). I have specimens (♀♂) from Bulgaria, Germany and Hungary. Supposedly widely distributed in Europe.

H o s t s — 1. *Coleophora glaucicolella* WOOD, new host: 2 ♀ + 5 ♂, bred 5 May 1980, Kiel: Lebrader Moor (FRG), K. H. LAMPE. — 2. *Coleophora glaucicolella* WOOD: 4 ♂, bred August 1980, Niedersachsen: Dümmer See (FRG), K. H. LAMPE. — 3. *Coleophora alticolella* ZELLER, new host: 1 ♀ 1 ♂, bred 2 June 1980, Brohl (FRG).

R e m a r k s — 1. In TOBIAS's key (1986) *M. atripes* is ranged in a couplet with *M. excavatus* (TOBIAS, 1972), both species with cubic head, i.e. in dorsal view temple about twice as long as eye and occiput deeply excavated. This feature does not correspond to that of the lecto- and paralectotype of *M. atripes*, consequently the species is not to be coupled with *M. excavatus*.

2. My name, *M. cunctator* PAPP, 1971 (Mongolia), refers to the same species as *M. atripes* (THOMSON), consequently *M. cunctator* is an evident junior synonym of *M. atripes*. No essential deviation is to be noted between the syntypes of the two taxa.

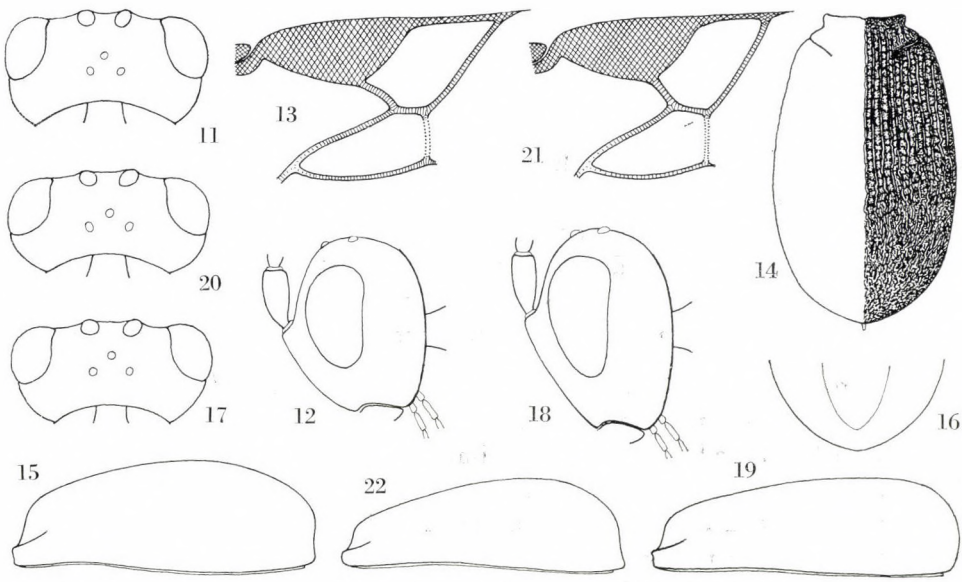
Microchelonus depressus (THOMSON)
(Figs 11—16, 23—24)

Chelonus depressus THOMSON, 1874: Opusc. ent. 6: 576. Lectotype ♀ and four ♀ + one ♂ paralectotypes, type locality: Sweden (not given in the original description), in Universitetes Zoologiska Institutionen, Lund.

Designation of the lectotype ♀: "Scan" (= Scania) — "Sweden Skåne" — third and fourth labels are my lectotype designation as well as the actual name of the species given by me.

Four ♀ and one ♂ paralectotypes from the localities "Öland" (two ♀ + one ♂) and "Skåne" (two ♀) (Sweden) with similar labels to those of the lectotype. — One ♀ + one ♂ paralectotypes as well as one ♂ specimen of the species *Microchelonus* (?)*contractus* (NEES, 1816) are on one needle (from the locality Öland), their name labels, however, are added on a separate needle because the needle with the *Microchelonus* wasps themselves is very short. The question mark (?) before the name *contractus* indicates that the relatively small specimen seems to represent this species in general view, but its long *r1* reminds of *M. depressus*.

Description of the lectotype ♀ — Body 3.3 mm long. — Head in dorsal view (Fig. 11) transverse, twice as broad as long, eye almost one-third longer than temple, latter strongly rounded, occiput excavated. Eye in lateral view 1.75 times as high as wide; temple indistinctly wider than eye, broadest at its lower part (Fig. 12). Ocelli small, distance between fore and a hind ocelli twice, whereas distance between hind two ocelli three times greater than diameter of an ocellus; OOL (nearly) twice as



Figs 11—16. *Microchelonus depressus* (THOMSON): 11 = head in dorsal view, 12 = head in lateral view, 13 = distal part of right fore wing, 14 = carapace in dorsal view, 15 = carapace in lataral view, 16 = posterior end of carapace in ventral view. — Figs 17—19. *M. luzhetzkji* (TOBIAS): 17 = head in dorsal view, 18 = head in lateral view, 19 = carapace in lateral view. — Figs 20—22. *M. subcontractus* (ABDINBEKOVA): 20 = head in dorsal view, 21 = distal part of right fore wing, 22 = carapace in lateral view.

long as POL (Fig. 11). Face more than twice as wide as high, inner margin of eyes parallel. Clypeus 1.35 times as wide below as high, its lower margin convex. Malar space 1.5 times as long as basal width of mandible and half as long as height of eye. Face partly concentric partly rather transverse striate-rugose, subshiny, clypeus finely and dispersely punctate-subpunctate, shiny (Fig. 24). Head above striate-rugose. — Antenna somewhat longer than head and mesosoma together. First flagellar joint 3.1 times as long as broad, further joints gradually shortening and attenuating so that penultimate joint 1.5 times as long as broad.

Mesosoma in lateral view about 1.5 times as long as high. Mesonotum between tegulae about one-fifth less broad than head. Mesosoma roughly rugose to scrobiculate, mesonotum rugose, scutellum rugulose to uneven and shiny. — Hind femur 3.3 times as long as broad, broadest at its middle; hind tibia and tarsus equal in length; basitarsus of hind leg as long as tarsal joints 2—4.

Fore wing shorter than body. Pterostigma (Fig. 13) 2.4 times as long as wide and slightly longer than metacarp, length of radial cell along metacarp nearly half as long as that of pterostigma, latter issuing radial vein somewhat distally from its middle, *r1* twice as long as *r2*, *r3* straight, *cuqu1* almost four times as long as *r2*.

Carapace one-fifth longer than mesosoma but shorter than head and mesosoma together, in dorsal view 1.6 times as long as broad, broadest at its middle (Fig. 14), in lateral view nearly evenly high anteriorly and posteriorly (Fig. 15); apically just incurved ventrally (Fig. 16). Basal pair of keels short and converging. Carapace antero-posteriorly with somewhat weakening strio-rugosity, apically rather densely rugulose (Fig. 14). — Ovipositor sheath in lateral view as long as half of hind basitarsus.

Body black. Antenna blackish with faint rusty suffusion. Mandible and palpi rusty brown. Legs dark brown to brown, tibiae yellow to brownish yellow, hind tibia darkening; tarsi also yellow with brownish tint. Wings subhyaline, pterostigma opaque brownish, veins rather brownish-yellowish.

Three ♀ paralectotypes are quite similar to the lectotype. Yellow pattern of legs of one paratype somewhat more vivid.

One ♂ paralectotype: Similar to lectotype ♀. Carapace in dorsal view 1.7 times as long as broad, broadest at its middle. Antenna damaged, right antenna with 15 whereas left antenna with 13 joints; length: width ratio of flagellar joints slightly smaller than that of female lectotype, first flagellar joint 2.5 times as long as broad.

Microchelonus depressus (Thomson) runs to *M. subcontractus* (Abdinbekova, 1971) (USSR), *M. luzhetzkji* (Tobias, 1966) (USSR) and *M. akmolensis* (Tobias, 1964) (USSR: Kazakhstan) with the help of Tobias's key

(1986) for the *Microchelonus* species of the European part of the USSR. Their specific differences are disclosed as follows:

M. depressus (THOMSON)

1. *r1* twice as long as *r2*; length of *R* along metacarp about half or somewhat more than half as long as pterostigma (Fig. 13).
2. Temple in dorsal view relatively less strongly rounded (Fig. 11).
3. Carapace in lateral view less convex or evenly high anteriorly and posteriorly (Fig. 15).
4. Carapace basally always black.

M. subcontractus (ABDINBEKOVA)

1. *r1* about as long as or somewhat longer than *r2*; length of *R* along metacarp less than half as long as pterostigma (Fig. 21).
2. Temple in dorsal view relatively strongly rounded (Fig. 20).
3. Carapace in lateral view more convex or posteriorly higher than anteriorly (Fig. 22).
4. Carapace basally either fully black or (sometimes) with a pair of lateral yellow spots.

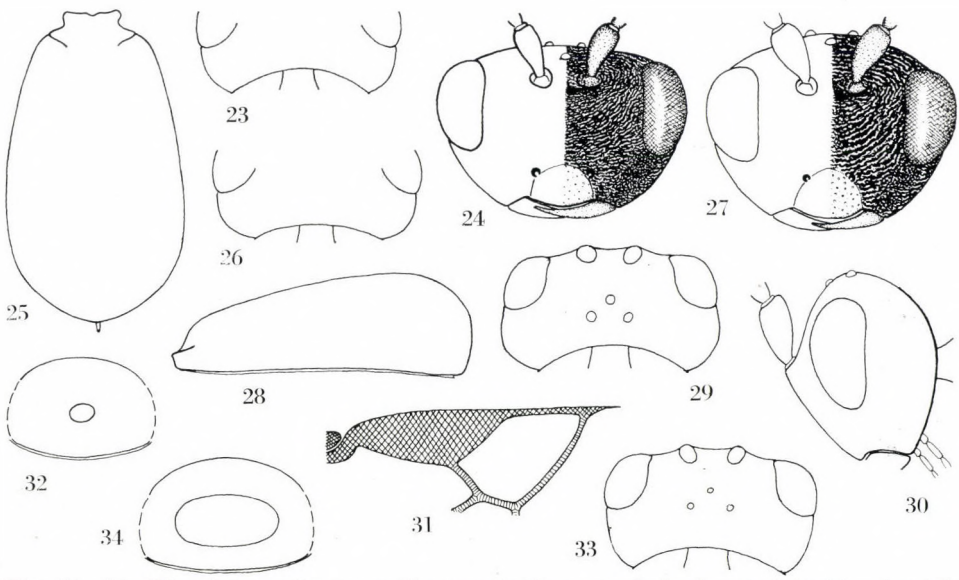
In all other respects the two species are quite similar and they seem to be very closely related to each other.

M. depressus (THOMSON)

1. Temple in dorsal view strongly rounded, compared to *M. luzhetzkji* rather rounded (Fig. 11).
2. Eye in lateral view less high, 1.75 times as high as wide, widest about its middle (Fig. 12).

M. luzhetzkji (TOBIAS)

1. Temple strongly rounded to constricted (Fig. 17).
2. Eye in lateral view high, (about) twice as high as wide, widest at its upper third (Fig. 18).



Figs 23—24. *Microchelonus depressus* (THOMSON): 23 = temple in dorsal view, 24 = head in frontal view. — Fig. 25. *M. luzhetzkji* (TOBIAS): carapace in dorsal view. — Figs 26—28. *M. akmolensis* (TOBIAS): 26 = temple in dorsal view, 27 = head in frontal view, 28 = carapace in lateral view. — Figs 29—32. *M. pilicornis* (THOMSON): 29 = head in dorsal view, 30 = head in lateral view, 31 = distal part of right fore wing, 32 = posterior end of carapace with sexual aperture (♂) in frontal view. — Fig. 33. *M. subarcuatilis* TOBIAS: head in dorsal view. — Fig. 34. *M. arcuatilis* TOBIAS: posterior end of carapace with sexual aperture (♂) in frontal view.

3. *r1* twice as long as *r2* (Fig. 13).
4. Outline of metasoma in dorsal view less rounded behind (Fig. 14); in lateral view metasoma rather equal in height anteriorly and posteriorly (Fig. 15).
5. Metasoma basally without yellow spots, black as elsewhere.
6. Clypeus shiny and almost smooth, i.e. with fine and disperse punctation—subpunctation.

3. *r1* and *r2* about equal in length.
4. Outline of metasoma in dorsal view more rounded behind (Fig. 25); in lateral view metasoma less flattened, posteriorly somewhat higher than anteriorly (Fig. 19).
5. Metasoma basally with a pair of yellow(ish) spots, otherwise black.
6. Clypeus dull and at most subshiny, dorsoventrally rugulose to finely punctate.

M. depressus (THOMSON)

1. Temple in dorsal view rounded, occiput more excavated (Fig. 11).
2. *r1* twice as long as *r2* (Fig. 13).
3. Antenna less long, somewhat longer than head and mesosoma together; penultimate joint of flagellum 1.5 times as long as broad.
4. Head in frontal view more transverse, 1.5—1.6 times as broad as high; striorugosity of face relatively less strong (Fig. 24); head and mesosoma dull to at most subshiny; sculpture of body relatively less strong.
5. Metasoma in lateral view rather equal in height anteriorly and posteriorly (Fig. 15).
6. Tegula black.

M. akmolensis (TOBIAS)

1. Temple in dorsal view more rounded, occiput less excavated (Fig. 26).
2. *r1* and *r2* about equal in length.
3. Antenna long, as long as head, mesosoma and half metasoma; penultimate joint of flagellum 1.8—2 times as long as broad.
4. Head in frontal view less transverse; striorugosity of face relatively strong (Fig. 27); head and mesosoma shiny; sculpture of body relatively stronger.
5. Metasoma in lateral view posteriorly higher than anteriorly (Fig. 28).
6. Tegula yellow.

Distribution — Described from Sweden, reported from Finland (SHENEFELT 1973).

Host unknown.

Microchelonus fenestratus (NEES) sensu THOMSON

Sigalphus fenestratus NEES, 1816: Mag. Ges. naturf. Fr. Berlin 7: 269. Syntypes ♀♂ destroyed, type locality: ?Germany (??Sickershausen).
Chelonus fenestratus (NEES) sensu THOMSON 1874: Opusc. ent. 6: 575 ♀♂.
Chelonella fenestrata (NEES): TELENGA 1941: Faune de l'URSS, Insèctes Hym. 5 (3): 301—302.
Chelonus (*Microchelonus*) *fenestratus* (NEES): HELLÉN 1958: Not. ent. 38: 35.
Microchelonus fenestratus (NEES): PAPP 1971: Acta Zool. Hung. 17: 83.

In Thomson's Collection six specimens of *Chelonus fenestratus* (NEES) are preserved, which had been identified by C. G. THOMSON himself (1874). Examining them a taxonomic rectification was carried out; the six specimens (four ♀ and two ♂) received the following names:

1. *Microchelonus contractus* (NEES, 1816): 2 ♀ + 2 ♂. — 1 ♀ (with 4 labels): "Lhn 26/6" = Lindholmen, Skåne), "♀", "fenestratus N. ", 4th label is with my species-name. — 1 ♀: "V. G. " (= Vestergöthland), 2nd label is with my species-name. — 1 ♂: "L—d" (? = Lund), "♂", 3rd label is with my species-name. — 1 ♂: "♂", „Lund", 3rd label is with my species-name.
2. *Microchelonus vescus* (KOKUJEV, 1899): 1 ♀: "Lpl." (= Lapland), 2nd label is with my species-name.
3. *Microchelonus* sp.?, *ripaeus* TOBIAS, 1986?: 1 ♀: "Lap" (= Lapland), 2nd label is with my species-name.

Microchelonus microphthalmus (WESMAEL)

Chelonus microphtalmus (sic!) WESMAEL, 1838: Nouv. Mém. Acad. Brux. 11: 157. Syntype "♀" = ♂, type locality: "environs de Liége" (Belgium), in the Institut Royal des Sciences Naturelle de Belgique. — Syntype examined.
Chelonella microphthalma (WESMAEL): SZÉPLIGETI 1908: Annls Mus. natn. hung. 6: 405.
Microchelonus microphthalmus (WESMAEL): PAPP 1967: Acta Zool. Hung. 13: 207.

In Thomson's Collection there are two female specimens pinned under the label "microphthalmus". Having examined and comparing them with the syntype ♂ specimen (received for study from Bruxelles) they proved to be conspecific. The two female specimens bear the following labels — One ♀: "O. G." (= Östergothland), "Bhn" (= ?), "microphthalmus". — One ♀: "Col. Ljgh".

At this point I have to remark that the species *Chelonus microphthalmus* WESMAEL (now in the genus *Microchelonus*) was misinterpreted by the subsequent authors. The majority of them applied the name *Chelonella* or *Microchelonus exilis* (MARSHALL, 1885) for this species. The new taxonomic evaluation and interpretation as well as its redescription will be given in another paper.

Microchelonus parcicornis (HERRICH-SCHÄFFER)

Chelonus parcicornis HERRICH-SCHÄFFER, 1838: Faunae Insect. German. p. 154. Syntypes ♀♂ lost (?), type locality: (?) Germany.
Chelonus parcicornis HERRICH-SCHÄFFER: THOMSON 1874: Opusc. ent. 6: 579 ♀♂.
Chelonella parcicornis (HERRICH-SCHÄFFER): SZÉPLIGETI 1908: Annls Mus. natn. hung. 6: 403 (in key) ♀♂.
Microchelonus parcicornis (HERRICH-SCHÄFFER): PAPP 1971: Acta Zool. Hung. 17: 83 ♀.
Microchelonus rectus PAPP, 1971: Acta Zool. Hung. 17: 83—84. Holotype ♀, type locality: "Central aimak: Ulan-Baator, Nucht in Bogdo ul, 1600 m" (Mongolia), in the Hungarian Natural History Museum, Budapest. **Syn. n.**
Chelonus thomsonii DALLA TORRE, 1898: Cat. Hym. 4: 208, erroneous replacement name. **Syn n.**

In Thomson's Collection there are two female specimens with the name *Chelonus parcicornis* (HERRICH-SCHÄFFER) identified by C. G. THOMSON himself. Having examined the two specimens they proved to represent HERRICH SCHÄFFER's species. — My name, *Microchelonus rectus* (see above), is an evident junior synonym of *M. parcicornis*. Inherent my synonymization the species *M. parcicornis* was misinterpreted by me, the female specimen from Mongolia (PAPP 1971: 83) must be rectified as *M. latifunis* TOBIAS, 1986.

Microchelonus pilicornis (THOMSON)
(Figs 29—32, 35—38)

Chelonus pilicornis THOMSON, 1874: Opusc. ent. 6: 580. Lectotype ♀ and 1 ♀ + 2 ♂ paralectotypes, type locality: "Skåne och på Gottland" (Sweden), in the Universitetes Zoologiska Institutionen, Lund.

Microchelonus sculptilis TOBIAS, 1986a: Key for the Insects of the European part of the USSR III/4: 323—324. Holotype ♀ and 1 ♀ paratype, type locality: Tchumay, Moldavia (USSR), in the Zoological Institute, Leningrad. **Syn. n.**

Designation of the lectotype ♀: "Scan" (= Scania) — "Type" — "Sweden Skåne Gottland" — fourth and fifth labels are my lectotype designation as well as the actual name of the species given by me.

One ♀ + two ♂ paralectotypes from the localities "Lund" (one ♀) and "G1." (? = Gottland) as well as "Örtofta" (two ♂) (all from Sweden) completed with similar labels to those of lectotype.

Remark — Having examined the type-series (holotype ♀ and one ♀ paratype) of *M. sculptilis* TOBIAS as well as the type-series of *M. pilicornis* (THOMSON) I could establish unambiguously the synonymy of the two names, i.e. *M. sculptilis* is an evident junior synonym of *M. pilicornis*.

Description of the lectotype ♀ — Body somewhat elongated 4 mm long. — Head in dorsal view (Fig. 29) transverse, 1.9 times as broad as long, eye as long as temple, latter rounded, head between temples minutely broader than between eyes, occiput excavated. Eye in lateral view almost twice as high as wide; temple one-fifth broader than eye and broadest at its middle (Fig. 30). Ocelli small, distance between fore and a hind ocelli 1.5 times, whereas distance between two ocelli 2.5 times as long as diameter of an ocellus; OOL twice as long as POL (Fig. 29). Face about twice as wide as high, inner margin of eyes slightly converging. Clypeus 1.65 times as wide below as high medially, its lower margin convex. Malar space twice as long as basal width of mandible, and half as long as height of eye. Head rugose, face rather transversely rugose, clypeus punctate to finely punctate, shiny. — Antenna thin, about as long as head and mesosoma together. First flagellar joint four times as long as broad, further joints gradually shortening so that penultimate joint distinctly 1.5 times as long as broad.

Mesosoma in lateral view clearly 1.5 times as long as high. Mesonotum between tegulae one-fifth less broad than head. Mesosoma rugose similar to that of head, scutellum somewhat less rugose. Middle femur four times as long as broad, broadest at its middle. — Legs of lectotype heavily damaged, every coxa and middle right trochanter + femur present, other parts of legs absent.

Fore wing shorter than body. Pterostigma (Fig. 31) 2.7—2.8 times as long as wide and distinctly longer than metacarp, length of radial cell along metacarp half as long as that of pterostigma, latter issuing radial vein distally from its middle; *r1* as long as *r2*, *r3* straight and apically somewhat incurved, *cuqu1* clearly three times as long as *r2*.

Carapace one-sixth longer than mesosoma, somewhat shorter than head + mesosoma together, in dorsal view about twice as long as broad, subparallel-sided and broadest about its middle (Fig. 35); in lateral view less high, about three times as long as high, slightly higher posteriorly than anteriorly (Fig. 36); apically just incurved and somewhat excised (Fig. 37), its

ventral cavity nearly as long as carapace itself (cf. Fig. 38). Basal pair of keels short, converging and merging into rugosity. Carapace antero-posteriorly with longitudinal rugosity, apically rather rugose (Fig. 35). — Ovipositor sheath broken (that of female paralectotype about as long as basitarsus of middle leg).

Body black. Flagellum brownish black (discolouration?). Basal half of mandible brown, otherwise yellow. Palpi brown. Coxae black, middle right femur baso-distally black, brownish to yellow. Wings subhyaline, pterostigma and veins opaque brownish.

One ♀ paralectotype quite similar to the lectotype. Left antenna damaged, only with 10 flagellar joints. Hind femur three times as long as broad, broadest at its middle. Hind tibia and tarsus equal in length; hind basitarsus as long as hind tarsal joints 2—4 + half of fifth joint together. Coxae and trochanters black, base of femora blackish, otherwise legs yellow. Fore pair of tarsi as well as middle right tarsus damaged; middle and hind left legs except coxae absent.

Two ♂ paralectotypes similar to female. Hind femur rusty. Apical foramen of carapace nearly round, 1.5 times as wide as high. Carapace somewhat incurved ventrally, i.e. its ventral cavity nearly as long as carapace itself (Fig. 38). Left flagellum of one ♂ paralectotype (from Örtofta) with 9 joints, right flagellum absent. One ♂ paralectotype (from "Gl.") damaged: carapace broken and separately glued, right flagellum with seven and left flagellum with two joints, middle-right and hind pair of legs absent.

Microchelonus pilicornis (THOMSON) seems to be related to *M. arcuatilis* TOBIAS, 1986 (USSR: Moldavia) and to *M. subarcuatilis* TOBIAS, 1986 (USSR: Moldavia) by their strongly sculptured body and relatively thin antenna. The three species are distinguished with the help of the following key:

1 (4) Females.
2 (3) Temple in dorsal view broadening, i.e. head between temples somewhat broader than between eyes (Fig. 29). Length of radial cell along metacarp half as long as pterostigma (Fig. 31). Carapace in dorsal view about twice as long as broad, rather subparallel-sided, striate elements of its sculpture somewhat stronger in comparison to *M. subarcuatilis* (Fig. 35); postero-ventral end of carapace emarginated (Fig. 37). Carapace in lateral view less high, about three times as long as high (Fig. 36). 4 mm. — Sweden, Hungary, USSR: Moldavia. (= *Microchelonus sculptilis* TOBIAS, 1986, known only ♀ sex)
M. pilicornis (THOMSON, 1874)
3 (2) Temple in dorsal view not broadening, i.e. head between temples somewhat less broad than (and at most as broad as) between eyes (Fig. 33). Length of radial cell along metacarp nearly as long as that of pterostigma (Fig. 39). Carapace in dorsal view about 1.5 times as long as broad, distinctly broadening at its middle, striate elements of its sculpture less strong compared to *M. pilicornis* (Fig. 40); postero-ventral end of carapace not emarginated. Carapace in lateral view high, 2—2.4 times as long as high (Fig. 41). 3.5—4 mm. — Hungary, USSR: Moldavia
M. subarcuatilis TOBIAS, 1986
4 (1) Males.
5 (8) Foramen of apical end of carapace small and nearly round, i.e. at most 1.5 times as wide as high (Fig. 32).

6 (7) Temple and head in dorsal view as in female. Carapace also as in female, but not emarginated apically. Carapace somewhat incurved ventrally, i.e. its ventral cavity nearly as long as carapace itself (Fig. 38). Hind femur rusty. 4 mm.

M. pilicornis (THOMSON, 1874)

7 (6) Temple and head in dorsal view as well as carapace similar to those of female. Carapace deeply incurved ventrally, i.e. its ventral cavity one-third shorter than carapace itself (Fig. 42). Hind femur black. 3.5—3.8 mm.

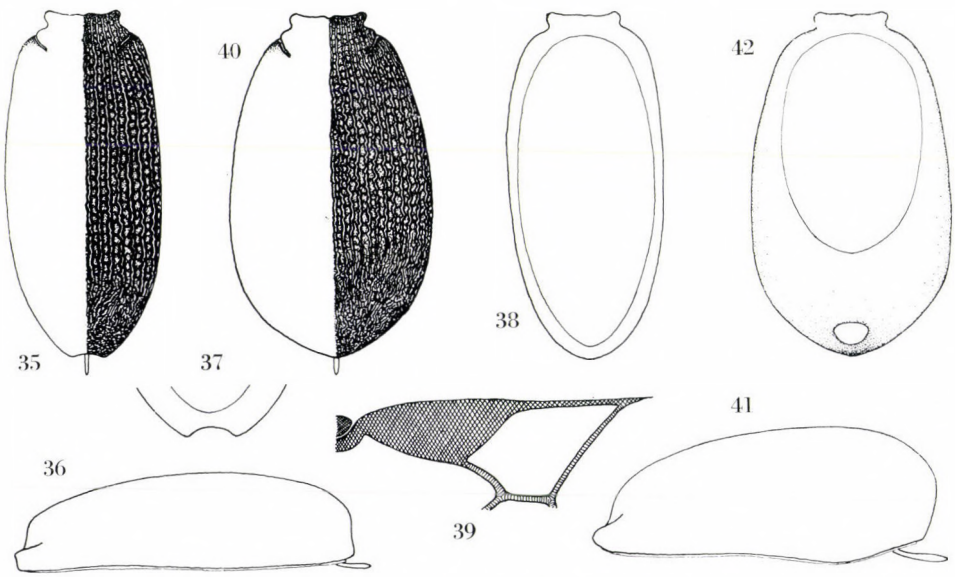
M. subarcuatilis TOBIAS, 1986

8 (5) Foramen of apical end of carapace middle-sized and elliptic, i.e. twice as wide as high (Fig. 34). Temple in dorsal view rounded, i.e. not broadening. Carapace in dorsal view twice as long as broad, subparallel-sided (cf. Fig. 35); deeply incurved ventrally, i.e. its ventral cavity one-third shorter than carapace itself (cf. Fig. 42). 3.6—4 mm. Only male sex known. — Yugoslavia, USSR: Moldavia

M. arcuatilis TOBIAS, 1986

Using TOBIAS's key (1986) *M. pilicornis* runs to *M. semenovi* TOBIAS, 1986 (USSR), the two species are separated by the features tabulated below:

M. pilicornis (THOMSON)	*M. semenovi* TOBIAS
1. Carapace in dorsal view elongate and broadest about its middle, i.e. less broadening posteriorly; basal pair of keels weak and short (Fig. 35).	1. Carapace in dorsal view not elongate and broadest at its hind third, i.e. distinctly broadening posteriorly; basa pair of keels strong and extending to anterior third of carapace.
2. Carapace (of ♀) apically somewhat excised (Fig. 37).	2. Carapace (of ♀) apically not excised.
3. Mesosoma clearly 1.5 times as long as high.	3. Mesosoma 1.3 times as long as high.
4. Face twice as wide as high.	4. Face 1.5 times as wide as high.
5. Hind tibia yellow and without whitish ring basally.	5. Hind tibia dark yellow with a whitish ring basally.



Figs 35—38. *Microchelonus pilicornis* (THOMSON): 35 = carapace (lectotype ♀) in dorsal view, 36 = carapace (♀) in lateral view, 37 = posterior end of female carapace in ventral view 38 = carapace (♂) in ventral view. — Figs 39—42. *M. subarcuatilis* TOBIAS: 39 = distal part of right fore wing, 40 = carapace (♀) in dorsal view, 41 = carapace (♀) in lateral view, 42 = carapace (♂) in ventral view.

Host unknown.

Distribution — Sweden, Finland (SHENEFELT 1973), USSR (Ural Mts) (TOBIAS 1986). I have specimens from Hungary (3 ♀: Hortobágy).

Microchelonus retusus (NEES)
(Figs 43—48, 52)

Sigalphus retusus NEES, 1816: Mag. Ges. nat. Fr. Berl. 7 (1813): 270 "♀" = ♂, type locality: "Berolini" (Germany), syntype(s) destroyed.
Microchelonus retusus (NEES): SHENEFELT 1973: Hym. Cat. (n. ed.) Brac. 6: 898. PAPP 1975: Folia ent. hung. 28 (2): 301.
Chelonus caudatus THOMSON, 1874: Opusc. ent. 6: 577. Lectotype ♀, type locality: "Illstrop i Skåne" (Sweden), in the Universitetes Zoologiska Institutionen, Lund. Synonymized with *M. retusus* by THOMSON 1891: 1714.
?*Chelonus emarginatus* HERRICH-SCHÄFFER, 1838: Faunae Insect. German. p. 154 ♂ ?♀, type locality: (?)Germany, syntype(s) lost?

Designation of the lectotype ♀ of *Chelonus caudatus:* "Ils. 17/8" — "Sweden Skåne Ilstorp 17. VIII." — third and fourth labels are my lectotype designation as well as the actual name of the species given by me.

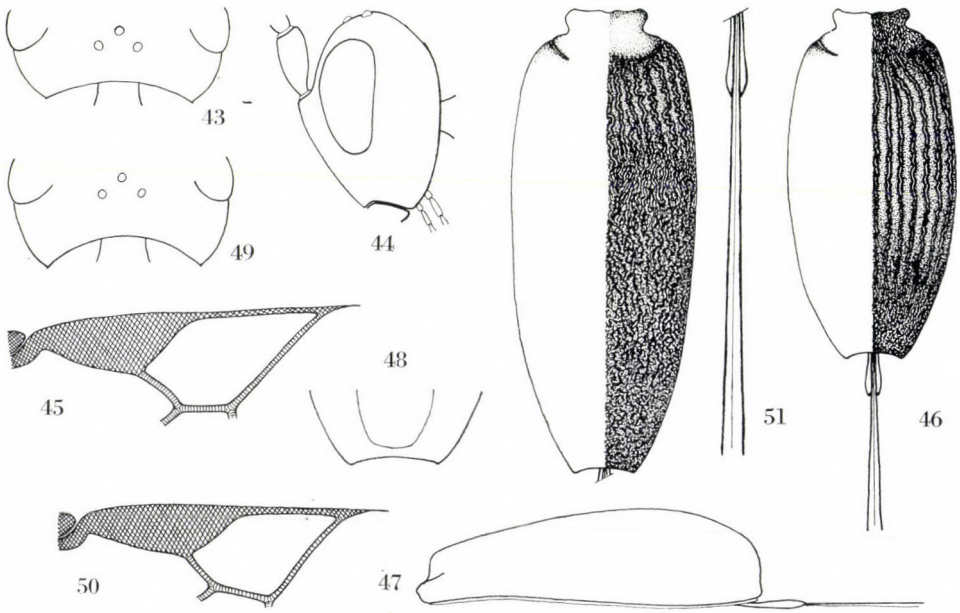
As I have previously indicated the name *Chelonus caudatus* was synonymized by its describer, C. G. THOMSON, with the name *Ch. retusus* (NEES) (THOMSON 1891). The synonymization was accepted by the majority of the authors subsequent to THOMSON, and since SHENEFELT (1973) both names are ranged in the genus *Microchelonus* SZÉPLIGETI. For me the problem of the synonymization lies in the sexual differences of the two forms, the name *M. retusus* was erected on the basis of the male sex and the name of *M. caudatus* was on the female sex; the syntype specimen(s) of *M. retusus* is (are) destroyed thus not to be examined, consequently the synonymization is based merely on the original description by which it is impossible to recognize the female sex of *M. retusus*. In the Zoological Museum of Berlin there are four female specimens under the name *Ch. retusus* with the locality label "Europe", and one of them has an orange label "Type" (designated by ?). The female specimens of *Chelonus→Microchelonus retusus* are conspecific with the female lectotype of *M. caudatus*. Considering this identity as well as the traditional synonymization of the two names I disregard to alter their taxonomic position, though I venture the following remark: If authenticated females of *M. retusus* were discovered in the future and if they were different from *M. caudatus* in specific characters, the synonymization would be resolved and, implicitly, the two names would represent two different species.

Description of the lectotype ♀ of *M. caudatus* (THOMSON), jun. syn. of *M. retusus* (NEES) — Body 3.8 mm long. — Head in dorsal view transverse, twice as broad as long, eye one-third longer than temple, latter (Fig. 43) rather rounded constricted, occiput moderately excavated. Eye in lateral view twice as high as wide, one-fifth wider than temple, latter almost evenly wide, i.e. not narrowing ventrally (Fig. 44). Ocelli small, distance

between fore and a hind ocelli just greater than diameter of an ocellus; OOL nearly twice as long as POL. Face almost twice as wide as high, inner margin of eyes parallel. Clypeus as wide between tentorial pits as high medially, its lower margin convex. Malar space slightly longer than basal width of mandible. Face rather transversely strio-rugose, subshiny; clypeus smooth and shiny, with very disperse subpunctates; head above rather transversely rugose, temple rugo-rugulose. — Antennae incomplete: right antenna with five joints (scape, pedicel and flagellar joints 1—3), left antenna with two joints (scape and pedicel). (Antenna of female "Type" specimen in Berlin: About two-thirds as long as body. First flagellar joint five times as long as broad, further joints gradually shortening so that penultimate joint 1.4 times as long as broad; flagellum not flattening distally.)

Mesosoma in lateral view 1.4 times as long as high. Mesonotum between tegulae distinctly less broad than head. Mesosoma rugose, strongly rugose; scutellum smooth and shiny with very disperse subpunctates. — Hind femur (Fig. 52) 4.5 times as long as broad. Hind tibia slightly shorter than hind tarsus; basitarsus as long as tarsal joints 2—4.

Fore wing about two-thirds as long as body. Pterostigma (Fig. 45) 2.5 times as long as wide and as long as metacarp, issuing radial vein distally



Figs 43—48. *Microchelonus retusus* (Nees): 43 = temple in dorsal view, 44 = head in lateral view, 45 = distal part of right fore wing, 46 = carapace (♀) in dorsal view, 47 = carapace (♀) in lateral view, 48 = posterior end of female carapace in ventral view. — Figs 49—51. *M. mirabilis* (Tobias): 49 = temple in dorsal view, 50 = distal part of right fore wing, 51 = carapace in dorsal view.

from its middle; along metacarp slightly less wide than length of pterostigma; *r1* as long as *r2*, *r3* straight, *cuqu1* somewhat more than twice as long as *r2*.

C a r a p a c e somewhat longer than head and mesosoma together, in dorsal view (Fig. 46) elongate oval and twice as long as broad, broadest at its middle; in lateral view (Fig. 47) distinctly one-third higher posteriorly then anteriorly; apically not incurved and truncate (Fig. 48). Basal pair of keels short and converging. Carapace posteriorly with somewhat weakening rugostriation, its apical third rugose-rugulose, shiny (Fig. 46). — O v i p o s i t o r s h e a t h long, about as long as hind femur or about half as long beyond hypopygium as carapace (Figs 46—47).

Body black. Antenna dark brown. Mandible brown, at middle yellow. Palpi brown. Galea yellow, basally brownish yellow. Tegula dark brown. Legs blackish; femora apically and tibiae 1—2 entirely yellow; hind tibia yellow, its distal third yellow; hind tibia yellow, its distal third blackish; tarsi dark fumous yellowish, hind basitarsus less fumous. Wings subhyaline, pterostigma and veins opaque brownish.

In 1972 V. I. TOBIAS described a species from Mongolia under the name *Microchelonus mirabilis* which seems very closely related to *M. retusus*. I have a little series of this species (5 ♀ + 2 ♂) also from Mongolia, thus I could establish the distinction between the two species:

M. retusus (NEES)	*M. mirabilis* (TOBIAS)
1. Pterostigma about 2.5 times as long as wide, radial cell along metacarpal vein almost as long as pterostigma, *r1* and *r2* about equal in length (Fig. 45).	1. Pterostigma about three times as long as wide, radial cell along metacarpal vein one-third shorter than pterostigma, *r1* shorter than *r2* (Fig. 50).
2. Carapace in dorsal view twice as long as broad; its striate sculpture extending to anterior half of carapace (Fig. 46).	2. Carapace in dorsal view somewhat more than twice as long as broad; its striate sculpture restricting to anterior third of carapace (Fig. 51).
3. Ovipositor sheath about as long as hind tibia (Figs 46—47).	3. Ovipositor sheath twice as long as hind tibia (Fig. 51).
4. Temple in dorsal view relatively more constricted, eye nearly twice as long as temple; occiput less excavated (Fig. 43).	4. Temple in dorsal view relatively less constricted, eye only somewhat longer than temple; occiput more excavated (Fig. 49).
5. Body 3.8 mm long.	5. Body 4—4.5 mm long.

M. retusus (NEES) differs from all but one European *Microchelonus* species by its conspicuously long ovipositor sheath. The only exception is *M. arnoldi* (TOBIAS, 1964) described from Kazakhstan (Tselinograd region) and reported from Saratov (European Russia of the USSR) (TOBIAS 1986a). The two species are distinguished by the following features:

M. retusus (NEES)	*M. arnoldi* (TOBIAS)
1. Carapace in dorsal view not narrowing apically (Fig. 46).	1. Carapace in dorsal view narrowing apically (Fig. 53).

2. Radial cell along metacarp slightly less wide than length of pterostigma (Fig. 45).
3. Hind femur 4.5 times as long as broad (Fig. 52).
4. Ovipositor sheath about half as long as carapace (Fig. 46).
5. Carapace without a pair of basal yellow spots, i.e. carapace fully black.

2. Radial cell along metacarp distinctly shorter than pterostigma (cf. Fig. 50).*
3. Hind femur three times as long as broad (TOBIAS 1986: 318).*
4. Ovipositor sheath about one-third as long as carapace (Fig. 53).
5. Carapace basally with a pair of yellow spots.

Microchelonus analipennis (FAHRINGER, 1934) (Austria) has also a relatively long ovipositor sheath, which is about as long as half of carapace. The species, however, is not closely related to *M. retusus* due to its large corporal size (6—7 mm), rugose scutellum, fore wing with two transverse anal veins, roughly rugose body and head above with transverse rugo-striation. By the way it seems reasonable to remark that since its description *M. analipennis* has not been reported anywhere, and, furthermore, a reexamination of the syntypes is necessary to establish its taxonomic position as well as its place in the modern system of *Microchelonus* species.

With the help of TOBIAS's key (1986a: 318—323, see also Fig. 195/4 p. 329) *M. retusus* (NEES) runs to *M. kopetdagicus* (TOBIAS, 1966) (USSR: Soviet Middle Asia). Both species are characterized by their relatively long, i.e. 4.5—5 times as long as broad, hind femur. In addition to the two distinctive features given by TOBIAS (l. c.) the following three characters separate the two species:

M. retusus (NEES)

1. First flagellar joint five times as long as broad.
2. Radial cell along metacarp almost as wide as length of pterostigma (Fig. 45).
3. Ovipositor sheath long, half as long as carapace (Fig. 46).

M. kopetdagicus (TOBIAS)

1. First flagellar joint four times as long as broad.
2. Radial cell along metacarp distinctly ("1.5 times") less wide than length of pterostigma.
3. Ovipositor sheath very short, hardly projecting beyond carapace.

D i s t r i b u t i o n — Frequent in the Palaearctic Region.

H o s t s — *Alucita hexadactyla* LINNAEUS (Lep., Alucitidae) and "*Pterophorus orneodes*". Both hosts were recorded after DOURS (1874) and RONDANI (1876) by SHENEFELT (1973: 898-899). The combination of the generic and species names "Pterophorus orneodes" is certainly an arbitrary one. There are two families in which similar plume moth (or plume) species are ranged, however, the two families, Pterophoridae and Orneodidae, are systematically rather far from each other. The host identified as "Pterophorus orneodes" was supposedly named by a non-specialist who thought that the host represents either a pterophoride or an orneodide species, and the two family names were "fused" in the above form (the Hungarian lepidopterist, Dr. L. RONKAY's pers. comm.).

* In the original description TOBIAS (1964) gives the following characterization of these two specific features: radial cell along metacarp hardly shorter than pterostigma and hind femur four times as long as broad. There is a contradiction between his original description (l.c.) and the characterization of *M. arnoldi* (TOBIAS) by TOBIAS (1986a) within the key for the *Microchelonus* species of the European part of the USSR, published in his most recent book. I accepted the latter of the two characterizations.

Microchelonus rimulosus (THOMSON)
(Figs 55—60, 63—67)

Chelonus rimulosus THOMSON, 1874: Opusc. ent. 6: 577. Lectotype ♀ and 1 ♂ paralectotype, type locality: "Gottland" (Sweden), in the Universitetes Zoologiska Institutionen, Lund. *Chelonus rimatus* SZÉPLIGETI, 1896: Természetr. Füz. 19: 176 (in Hungarian) and 236 (in German). Holotype ♂, type locality: "Budapest" (Hungary), in the Természettudományi Múzeum, Budapest. Recently synonymized by me (PAPP 1987: 323).

Designation of the lectotype ♀ of *Chelonus rimulosus:* "G1." (? = Gottland) — "Bhn." (= ?) — "rimulosus m." — fourth and fifth labels are my lectotype designation as well as the actual name of the species given by me.

One ♂ paralectotype from the locality "G1." (? = Gottland) "Bhn." (= ?) completed with similar labels to that of lectotype.

Description of the lectotype ♀ — Body 4 mm long. — Head in dorsal view (Fig. 55) transverse, twice as broad as long, head between temples minutely broader than between eyes, eye as long as temple, latter rather deeply rounded, occiput excavated. Eye in lateral view 2.3 times as high as wide, widest at its upper third, temple broadening and one-third broader than eye (Fig. 56). Ocelli small, distance between fore and a hind ocelli 1.4 times greater and distance between hind two ocelli three times greater than diameter of an ocellus; POL somewhat longer than OOL (Fig. 55). Face twice as wide as high, inner margin of eyes just subparallel. Clypeus 1.5 times as wide below as high medially, its lower margin convex. Malar space somewhat longer than basal width of mandible. Face laterally rathre

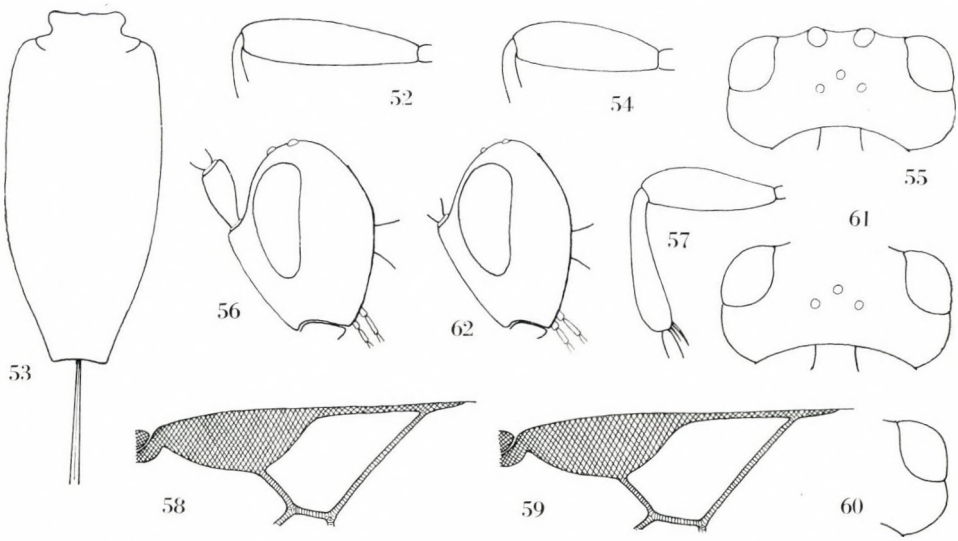


Fig. 52. *Microchelonus retusus* (NEES): hind femur. — Figs 53—54. *M. arnoldi* (TOBIAS): 53 = carapace in dorsal view, 54 = hind femur. — Figs 55—60. *M. rimulosus* (THOMSON): 55 = head in dorsal view, 56 = head in lateral view, 57 = hind femur + tibia, 58—59 = distal part of right fore wing: lectotype ♀ (58) and ♀♂ (59), 60 = right lateral part of head in dorsal view. — Figs 61—62. *M. scabrosus* (SZÉPLIGETI): 61 = head in dorsal view, 62 = head in lateral view.

dorso-ventrally and medially rather concentric striated. Clypeus subpunctate. Head above rather transversely, temple rather dorso-ventrally striated. Entire head shiny. — Antenna damaged. Right antenna with two flagellar joints and left antenna with three flagellar joints. First flagellar joint three timer as long as broad. (Remark: flagellum of the Hungarian specimens slightly attenuated, its penultimate joint cubic to subcubic.)

Mesosoma in lateral view about as long as high. Mesonotum between tegulae somewhat less broad than head. Mesosoma rugose, areolate-rugose, mesonotum-scutellum-metanotum with longitudinal elements, scutellum medially uneven, propodeum with a strong, transverse and somewhat arched keel ending laterally in a tooth-like emergence. — Hind femur (Fig. 57) about three times as long as broad, widest at its middle; hind tibia and tarsus equal in length; hind tibia slightly thicker than usually; hind basitarsus as long as hind tarsal joints 2—4.

Fore wing shorter than body. Pterostigma (Fig. 58) 2.5 times as long as wide and as long as metacarpal vein, length of radial cell along metacarp one-third shorter than that of pterostigma, latter issuing radial vein distally from its middle, *r1* slightly longer than *r2*, *r3* straight, *cuqu1* distinctly twice as long as *r1*.

Carapace as long as head and mesosoma together, in dorsal view twice as long as broad at middle, posteriorly somewhat more narrowing than basally (Fig. 63); in lateral view higher posteriorly than anteriorly or three times as long as high (Fig. 65); apically just incurved ventrally, ventral cavity almost as long as carapace itself (Fig. 66). Basal pair of keels short and converging. Carapace dorsally shiny, strongly rugo-striate, apically rather strio-rugose, interspaces with transverse rugulosity. — Ovipositor sheath very short.

Body black. Mandible and palpi brown. Antenna and tegula brownish black. Legs dark brown, coxae blackish, fore tibia and tarsi yellowish. Wings subhyaline, pterostigma brownish and veins light brownish.

One ♂ paralectotype similar to the lectotype ♀. Antenna also damaged, right flagellum with 9 whereas left flagellum with 14 joints. Carapace in dorsal view broadening so that widest before its hind end; apical aperture of carapace conspicuously wide, five times as wide as high (Fig. 67).

Female (and male) specimens (without type status) deviating from the lectotype: (1) Eye in dorsal view slightly though clearly longer than temple (Fig. 60). (2) *r1* and *r2* equal in length (Fig. 59). (3) Carapace posteriorly less narrowing or rather rounded (Fig. 64).

M. rimulosus (Thomson) is related to *M. scabrosus* (Szépligeti, 1896) (Hungary, Czechoslovakia, USSR), their carapace strongly rugo-striate, mesosoma and head also similarly sculptured. The two species are distinguished by the following features:

M. rimulosus (THOMSON)

1. In dorsal view temple deeply rounded, eye as long as temple, head between temples minutely broader than between eyes (Fig. 55); in lateral view one-third broader than eye (Fig. 56).
2. Penultimate joint of antenna cubic to subcubic.
3. Carapace just incurved ventrally, i.e. ventral cavity almost as long as carapace itself (Fig. 66).
4. In lateral view carapace less high, i.e. three times as long as high (Fig. 65).
5. Scape brownish black.

M. scabrosus (SZÉPLIGETI)

1. In dorsal view temple rounded as usually, eye somewhat longer than temple, head between temples and eyes equally broad (Fig. 61); in lateral view at most slightly broader than eye (Fig. 62).
2. Penultimate joint of antenna 1.6—1.7 times as long as broad.
3. Carapace incurved ventrally, i.e. ventral cavity one-fifth shorter than carapace itself (Fig. 68).
4. In lateral view carapace high, i.e. 2.4—2.5 times as long as high (Fig. 69).
5. Scape reddish yellow to rusty, at least ventrally and usually (almost) entirely.

Distribution — Reported from Sweden, Finland, France, Italy, Hungary (SHENEFELT 1973) and from the USSR (TOBIAS 1986a).

Host unknown.

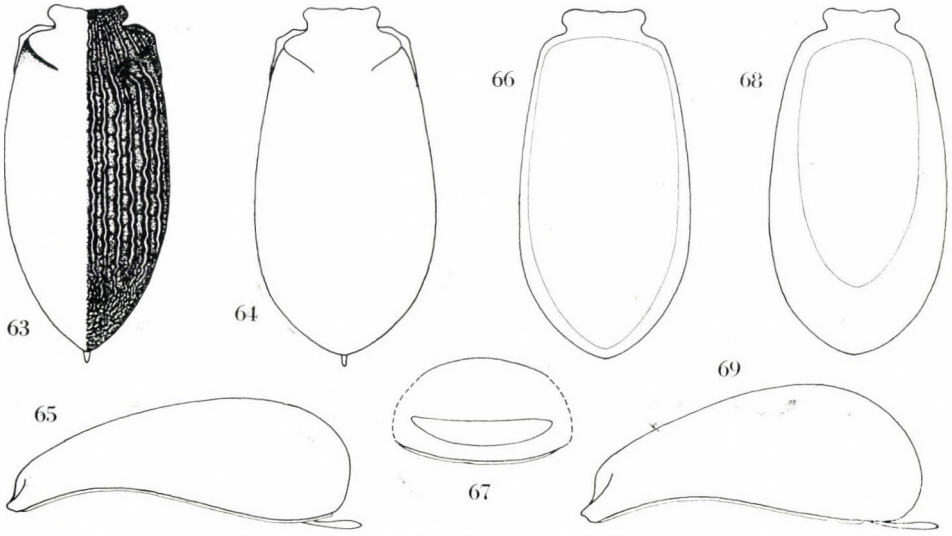
Microchelonus rugicollis (THOMSON)
(Figs 70—77)

Chelonus rugicollis THOMSON, 1874: Opusc. ent. 6: 58 ♀♂, type locality: "Skåne" (Sweden). Lectotype ♂ in the Universitetes Zoologiska Institutionen, Lund.

Microchelonus rugicollis (THOMSON): SHENEFELT 1973: Hym. Cat. (n. ed.) Brac. 6: 902.

Microchelonus temporalis TOBIAS, 1986a: Key for the Insects of the European part of the USSR III/4: 325—326. Holotype ♀ and 3 ♀ paratypes, type locality: "Jaroslavskaja obl., Berditsyno" (USSR), in the Zoological Institute, Leningrad. **Syn. n.**

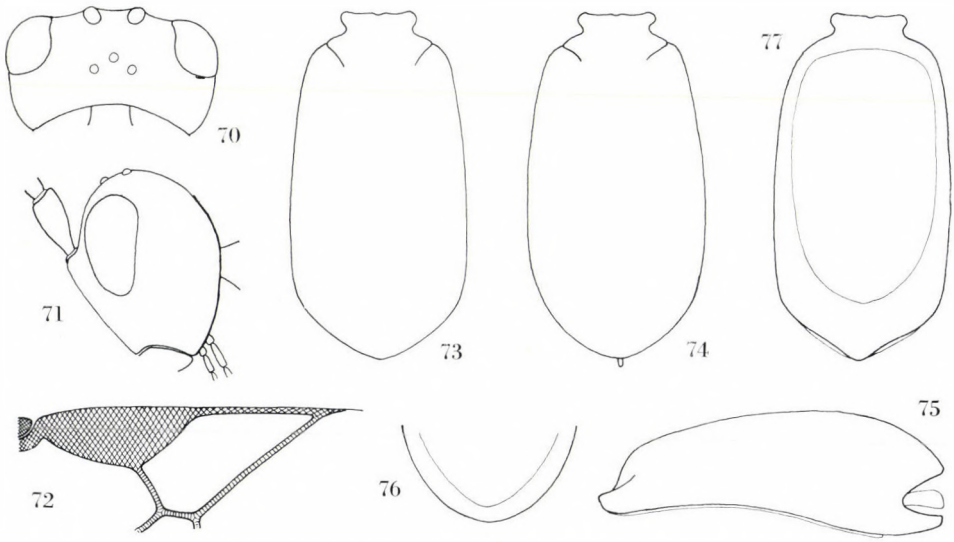
Designation of the lectotype ♂ of *Chelonus rugicollis:* (?) "Rin." (? = Ringsjön) (hardly legible handscript) — "rugicollis m." — third and fourth labels are my lectotype designation as well as the actual name of the species given by me.



Figs 63—67. *Microchelonus rimulosus* (THOMSON): 63—64 = carapace in dorsal view: lectotype ♀ (63) and ♀ (64), 65 = carapace in lateral view, 66 = carapace in ventral view, 67 = posterior end of carapace with sexual aperture (♂) in frontal view. — Figs 68—69. *M. scabrosus* (SZÉPLIGETI): 68 = carapace in ventral view, 69 = carapace in lateral view.

Remarks — 1. As I indicated above the species was described on the basis of both sexes, however, female (or further) syntype specimen(s), is (are) not represented in the Thomson's Collection, Lund. — 2. In addition to the single ♂ lectotype there are two male specimens in Thomson's Collection which I identified as *M. rugicollis*. Their collecting data are as follows, 1 ♂: "Lund 7.88" (= July 1888); 1 ♂: "Ang." (? = Anglia) "Stål". The specimen from Lund may belong to the syntype series. If, however, I interprete well the date of its collecting ("7.88" as July 1888) then it may not represent a syntype specimen as this date was 14 years later than the year of publication of the original description (1874). — 3. The synonymy indicated above was established based upon the examination of the type series of *M. temporalis* as well as the lectotype of *M. rugicollis*.

Description of the lectotype ♂ of *Microchelonus rugicollis* (Thomson) — Body 3.9 mm long. Head in dorsal view (Fig. 70) transverse, twice as broad as long, eye as long as temple, latter moderately rounded, occiput rather strongly excavated. Eye in lateral view twice as high as wide, widest at its upper third, temple broadening ventrally and clearly 1.6 times as broad as eye (Fig. 71). Ocelli small, distance between fore and a hind ocelli as long as and distance between hind two ocelli almost three times greater than diameter of an ocellus; OOL somewhat longer than POL (Fig. 70). Face twice as wide as high, inner margin of eyes slightly diverging



Figs 70—77. *Microchelonus rugicollis* (Thomson): 70 = head in dorsal view, 71 = head in lateral view, 72 = distal part of right fore wing, 73—74 = carapace in dorsal view: lectotype ♂ (73) and ♀ (74), 75 = carapace in lateral view, 76 = posterior end of female carapace in ventral view, 77 = carapace in ventral view.

ventrally. Clypeus 1.6 times as wide below as high medially, its lower margin convex. Malar space 1.5 times as long as basal width of mandible. Maxillary palp one-third shorter than height of head. Head rugose, above rather transversely rugose; clypeus above along its margin uneven, otherwise finely punctate to subpunctate and shiny. — Antenna about as long as body, with 21 joints. First flagellar joint three times as long as broad, further joints gradually attenuating and shortening so that penultimate joint twice as long as broad.

Mesosoma in lateral view 1.6—1.7 times as long as high. Mesonotum between tegulae somewhat less broad than head. Mesosoma rugose, scutellum rugulose, propodeum with a transverse and arched keel ending in a pair of small tubercles. — Hind femur three times as long as broad, widest at its middle; hind tibia and tarsus equal in length, hind basitarsus as long as hind tarsal joints 2—4.

Fore wing shorter than body. Pterostigma (Fig. 72) 2.6 times as long as wide and somewhat longer than metacarp, length of radial cell along metacarp one-fifth shorter than length of pterostigma, latter issuing radial vein distally from its middle; *r1* clearly longer than *r2*, *r3* straight, *cuqu1* twice as long as *r1*.

Carapace nearly as long as head and mesosoma together, in dorsal view almost twice as long as broad about its middle, subparallel-sided, i.e. hardly broadening posteriorly, apically faintly pointed (Fig. 73); in lateral view gradually becoming higher posteriorly, apically incurved ventrally (Fig. 75), i.e. ventral cavity one-sixth shorter than carapace itself (Fig. 77). Basal pair of keels short and converging, merging into rugosity. Carapace anteriorly longitudinally strio-rugose, posteriorly rather longitudinally rugo-rugulose, interspaces rather transversely uneven-subrugulose. Apical aperture of carapace almost three times as wide as high.

Body black. Mandible and palpi dark brown. Antenna brownish black. Tegula brown. Legs brownish black, fore tibia yellow, middle tibia yellow and distally darkening, hind tibia basally dark yellow, distally blackish to black. Tarsi yellow(ish) with brownish pattern.

Distinction of female sex: In ventral view carapace apically less incurved (Fig. 76), i.e. ventral cavity somewhat shorter than carapace itself; in dorsal view carapace posteriorly more rounded (Fig. 74).

With the help of Tobias's key (1986a) the male of *M. rugicollis* runs to *M. ripaeus* Tobias, 1986 (USSR: Kola peninsula, Ural Mts). Based upon its characterization within the key (I do not know *M. ripaeus* in nature) the following features separate it from *M. rugicollis*:

M. rugicollis THOMSON ♂	*M. ripaeus* TOBIAS ♂
1. Sculpture of body less strong.	1. Sculpture of body strong.
2. Eye and temple of equal length.	2. Eye 1.5 times as long as temple.
3. In lateral view malar space about half as long as height of eye.	3. In lateral view malar space one-third as long as height of eye.

In TOBIAS's key (l. c.) the female is included under the name *M. temporalis* TOBIAS which proved to be a junior synonym name of the species *M. rugicollis* (Thomson).

D i s t r i b u t i o n — Sweden, Czechoslovakia (SHENEFELT 1973: 902); USSR (Caucasus Mts, Ural Mts) (TOBIAS l.c.).

H o s t — GYŐRFI (1959: 56—57) recorded its host as *Aluctia hexadactyla* Linné (*Lep., Aluctiidae*) from Hungary, however, the breeding data is in need to be confirmed.

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BRACONIDAE (HYMENOPTERA) FROM KOREA, XIII.*

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Twenty-one braconid species of the subfamily *Meteorinae* are reported from Korea; the species are representing two genera as *Meteorus* HALIDAY (with 17 species) and *Zele* CURTIS (with 4 species). Two species are new to science: *Meteorus beroni* sp. n. and *M. popovi* sp. n. Thirteen species are new to the fauna of Korea. A checklist of eastern Palaearctic species of *Meteorus* and *Zele* is compiled. Most of the braconid material serving for the present elaboration is deposited in the Hungarian Natural History Museum, Budapest. With 26 original figures.

1. List of the species

Twenty-one species of *Braconidae* belonging to the subfamily *Meteorinae* are listed from the Korean Peninsula (i.e. from the Democratic People's Republic of Korea). The subfamily is represented by two genera, *Meteorus* HALIDAY and *Zele* CURTIS, as well as by 17 and 4 species, respectively. In the subsequent faunistic enumeration the two genera and the species are listed in alphabetic order. Detailed collecting data are disclosed for every species in an abbreviated form, i.e. only the collecting numbers ("No. . . . ") are indicated after the species names, the full collecting data (name of the localities, dates of collecting, etc.) are listed separately before the faunistic enumeration. Further details concerning the participants of the collecting trips to Korea during the years 1970—1985 are presented in the previous two papers of my series (PAPP 1989, 1990).

No. 19. Prov. South Phenan: Bong-ha ri, on the river Te-dong, about 45 km E of Pyongyang; 23 May 1970. Netted on meadow and in shrubby undergrowth.
No. 30. Prov. South Phenan: Sa-gam po, about 30 km N of Pyongyang, 24 My 1970. Netted in sparse vegetation on dry part of lake bottom and singling from under coastal stones.
No. 75. Prov. Kanwon: Kum-gang san, environs of Hotel Go-song, 31 May 1970. Singled material at lamp.
No. 141. Prov. South Pyongan: Pyongyan, Pyongyan Hotel garden, 5 August 1971. Singled material at lamp.
No. 143. Same locality, 6 August 1971. Same method.
No. 169. Prov. South Pyongan: Chang-lyong san, 50 km N of Pyongyan and 15 km E of Sa-gam, 13 August 1971. Singled material from ruderal vegetation and bushes on slope facing SW.

* Zoological Collectings by the Hungarian Natural History Museum in Korea, No. 96.

No. 185. Same locality as No. 141. 17 August 1971. Same method.
No. 193. Prov. Ryang-gang: Hyesan, Hyesan Hotel garden, 23 August 1971. Caught in Malaise-trap.
No. 209. Prov. Ryang-gang: Chann-pay plateau, Sam-zi-yan, 1700 m, 27 August 1971. Caught in Malaise-trap in Larix-Betula forest in rain falling from time to time.
No. 225. Prov. South Pyongan, Pyongyan Hotel garden, 31 August 1971. Caught in Malise-trap.
No. 229. Same locality. 1 September 1971. Same method
No. 234. Same locality. 2 September 1971. Same method.
No. 237. Same locality. 4 September 1971. Same method.
No. 251. Kaesong: Mts. Pakyon, Pakyon popo, 27 km NE of Kaesong, 500 m, 9 September 1971. Netting from bushes, shrubs and grass in deciduous forest in the environs of the waterfall.
No. 276. Prov. Ryang-gang: Hyesan, room of Hotel Hyesan, 22 July 1975, 20—23. 30^h. Collected at MV lamp.
No. 278. Prov. Ryang-gang: Chann-Pay plateau, Sam-zi-yan, 1700 m, 23 July 1975, 20—23.30^h. Singled material at MV lamp in cloudy weather with some moonlight.
No. 282. Same locality. 24 July 1975, 16—18.30^h. Sunny weather with cloudy sky, 22—24 °C. Netting in shrubby and grass vegetation of Larix-Betula forest.
No. 285. Same locality. 24 July 1975, cloudy weather with full moon, 20 °C. Singled material at MV lamp.
No. 293. Prov. Ryang-gang: Hyesan, Mt. Ze-dong, 1150 m, 26 July 1975, 10—13.30^h, sunny weather with cloudy sky, 28 °C. Netted material at the edge of the shrubby level of a Larix wood.
No. 296. Prov. Ryang-gang: river Karim, 10 km NEE of Bochonbo, 1100 m, 27 July 1975, 12.30—16.30^h, sunny and warm weather, 32 °C. Netted material in the shrubby vegetation along the river in deep valley.
No. 319. Prov. Gang-von: district On-dzong, Kum-gang san, near Hotel Go-song, 250 m, 5 August 1975, 20—0.1^h, 22 °C. Collected at MV lamp in a coniferous-locust tree forest.
No. 322. Same locality, 6 August 1975, 20—4.30^h. Collected at MV lamp in a coniferous-locust tree wood.
No. 324. Prov. Gang-von: district On-dzong, Kum-gang san, along Ok-ru-dong, 250—300 m, 7 August 1975, 15.30—17^h, cloudy weather with some sunshine. Netted material from a rich herbaceous and shrubby vegetation of a coniferous forest.
No. 325. Same locality as No. 319. 7 August 1975, rainy weather 20—2.30^h. Collected at MV lamp in a mixed coniferous locust tree wood.
No. 358. Kum-gang san, Ruekhaam, about 7 km W of Hotel Kum-gang, 11 July 1977. Caught in Malaise-trap erected at a clearing in the forest.
No. 376. Mt. Pektusan: wooden environs of the Sam-zi-yan Hotel, 19 July 1977. Netted in the grass vegetation on the shore of a small lake behind the hotel (at the edge of the wood).
No. 379. Same locality and date. Collected at MV lamp erected on the shore of a big lake before the hotel (at the edge of the wood).
No. 403. Pyongyang City: Garden of Hotel Pyongyang, 25 September 1978. Material collected by beating the foliage of a climber trained over a trellis near lampshades just before torrential rain (23^h).
No. 406. South Pyongan Prov.: Lake Taesong-ho, 26 September 1978. Swept with a net from various vegetation.
No. 423. North Hwanghe Prov.: Sariwon, 28 September 1978. Collected at mixed light in the window of the hotel (20—22^h).
No. 439. South Pyongan Prov.: Lake Yonpung-ho, 10 km SW of Kaechon, 1 October 1978. Swept from various grasses and small woody plants.
No. 445. Ryang-gang Prov.: Hyesan, 2 October 1978. Collected at mixed light on the balcony of the hotel.
No. 484. Kangwon Prov.: Kum-gang san, 11 October 1978. Collected at mixed light some 50 m from the rest-house.
No. 488. Same locality, 12 October 1978. Swept material mainly from Dryopteris-like fern species, rather cold and windy day.
No. 522. Pyongyang City, Daesong san, 10 km NE of Pyongyang, 11 September 1979. . . . netted on the grassy clearing of a nearby pine forest.
No. 525. Same locality as No. 406, 13 September 1979. Singled and netted in a mixed coniferous-deciduous forest (Pinus, Juniperus, Castanea, Salix, Populus etc. and ruderals).

No. 528. Same locality as No. 406, 13 September 1979. Netted and singled in and around a Platanus-Thuja mixed plantation.
No. 557. Pyongyang City, Lyong-ak san, 15 km W of Pyongyang, 270 m, 20 September 1979. Netted and singled in a mixed deciduous-coniferous forest and on clearings.
No. 563. South Pyongan Prov.: Nampo, Wauto, 22 September 1979. Netted on sedge on a small spot inundated by brackish water.
No. 601. Kangwon Prov.: near Lake Samilpo, 29 September, 1979. Singled and netted around some small lakes.
No. 605. Kangwon Prov.: Kum-gang san, under Mumpil bong, 29 September 1979. Netted and singled on the undergrowth of a coniferous forest.
No. 617. South Pyongan Prov.: Lyong-ak san, 15 km W of Pyongyang, 9 September 1980. Netted in a mixed forest.
No. 624. Pyongyang City, 9 September 1980. At the light of a 160 W MV bulb on the terrace of Hotel Tsang-kan san.
No. 633. Same locality, 10 September 1980. Same method.
No. 783. North Pyongan Prov.: Myoh-yang san, Hotel Myoh-yang, 13 July 1982. Collected from white sheet illuminated by mixed light of the hotel balcony (20.30—04^h).
No. 829. Same locality, 18 July 1982. Same method.
No. 871. Pyongyang City: Hotel Pyongyang, 28 July 1982. Singled material collected around lampshades in the garden of the hotel.
No. 887. Kaesong City: Hotel Janamsan, 30 July 1982. Netted and singled material collected in the city park behind the hotel.
No. 894. South Hwanghae Prov.: Haeju, Suyong-san, 31 July 1982. Collected from white sheet illuminated by mixed light lamp (21—01^h).
No. 923. Pyongyang City: Daesong-san, 17 May 1985. Night collecting at blended light (250 W) by using Honda generator, from 20^h till 22^h.
No. 927. North Pyongan Prov.: Myohyang-san, 20 May 1985. Cool evening. Night collecting at blended light (250 W) on the balcony of the hotel.
No. 938. Same locality, 22 May 1985. Pleasant evening. Same method.
No. 939. Same locality and time. Pleasant evening. Night collecting at blended light (250 W) by using Honda generator, some kilometres off the hotel, by the river Hyangsan-chon.
No. 962. Pyongyang City: Ryongak-san, 30 May 1985. Pleasant night. Same method as No. 923.
No. 969. Same locality as No. 923, 31 May 1985. Cool, windy evening with bright moon in the sky. Same method as No. 923.
No. 1005. Ryanggang Prov.: Samjiyon, 5 June 1985. Night collecting in the park of the hotel. Blended light (250 W) temperature about 20 °C.

* * *

The braconid material collected by the Bulgarian entomologists (Dr. P. Beron and Dr. A. Popov, Sofia) in Northern Korea was also elaborated by me (further details in Papp 1990), their localities are as follows:

No. 1. Pyongyang City, 8 August 1982.
Nos 3—4. North Pyongan Prov.: Myohyang-san, 18 August 1982.
No. 8. Kaesong, 28 August 1982.
No. 9. Prov. Kangwon, Kumgang-san 400 m, Kuryong Falls, sifted litter, 28 August 1982.
No. 11. North Pyongan Prov.: Myohyang-san, 14 August 1982.
No. 12. Kanwon Prov.: Kumgang-san, environs of Hotel, 20 August 1982.

METEORINAE

METEORUS Haliday, 1835

Meteorus abdominator (Nees, 1812) — A Palaearctic species, frequent in Europe. New to the fauna of Korea.
Localities — 1 ♂: No. 225. 1 ♂: No. 296. 1 ♀: No. 783.

Meteorus abscissus THOMSON, 1895 — Reported from a few countries of Europe: Austria, Hungary, Ireland, Italy, Sweden and the USSR (Sochi). New to the fauna of Korea.
Locality — 1 ♂: No. 169.

Meteorus affinis (WESMAEL, 1835) — Distributed in Europe eastwards as far as Sochi and Armenia in the USSR. New to the fauna of Korea.
Localities — 1 ♀: No. 376. 1 ♀: No. 3.

Meteorus beroni sp. n.: for description see p. 324.

Meteorus corax MARSHALL, 1898 — Up to now reported from Switzerland (type locality), Austria, Germany, Sweden (HUDDLESTON 1980: 28—29) ,the USSR (European part, Krasnodarsk, Altay Mts. Far East) (TOBIAS 1986: 184) and Japan (MAETÔ 1986: 412). New to the fauna of Korea. — One of the two females at hand from Korea with indistinct transverse carina on propodeum (loc. No. 282), otherwise the two females agree with the redesription given by HUDDLESTON (l.c.) well.
Localities — 1 ♀: No. 282. 1 ♀: No. 3.

Meteorus eadyi HUDDLESTON, 1980 — Reported from several European countries (HUDDLESTON 1980: 29—30) and from the USSR (Leningrad region, Armenia) (TOBIAS 1986: 187). New to the fauna of Korea. — My single female specimen is identical with the paratype (♀) and agrees with the description except the following features: (1) antenna evenly dark (i.e. basal joints not slightly lighter), (2) pronotum evenly black (i.e. ventrally not testaceous.)
Locality — 1 ♀: No. 488.

Meteorus gyrator (THUNBERG, 1822) — Frequent to common in the Palaearctic Region. New to the fauna of Korea.
Localities — 1 ♀: No. 19. 1 ♂: No. 30. 1 ♀: No. 141. 1 ♀: No. 403. 3 ♀: No. 423. 1 ♀: No. 522. 1 ♀: No. 528. 1 ♀: No. 557. 2 ♀: No. 563. 1 ♀: No. 601. 1 ♀: No. 633. 1 ♀: No. 887. 1 ♀: No. 1005. — 2 ♀: No. 1. 1 ♀: No. 3.

Meteorus ictericus (NEES, 1812) (= *M. adoxophyesi* MINAMIKAWA, 1954) — Frequent to common in the Palaearctic Region.
Localities — 1 ♀: No. 185. 1 ♀: No. 209. 1 ♂: No. 234. 1 ♀: No. 251. 1 ♀: No. 379. 1 ♀: No. 423. 1 ♀: No. 445. 2 ♀: No. 624. — 1 ♀: No. 1. 1 ♀: No. 3. 1 ♀: No. 8.

Meteorus melanostictus CAPRON, 1887 — So far known only from England. New to the fauna of Korea.
Locality — 1 ♂: No. 783.

Meteorus pallipes (WESMAEL, 1835) — Sporadicaly in Europe (Great Britain, Ireland, Netherland, Sweden; USSR: Lithuania, Armenia) and northern China. New to the fauna of Korea.
Localities — 1 ♀: No. 143. 1 ♀: No. 185. 1 ♀: No. 293. 1 ♀: No 1005.

Meteorus popovi sp. n.: for description see p. 327.

Meteorus pulchricornis (WESMAEL, 1835) — Frequent in the Palaearctic Region. New to the fauna of Korea. — Dorsal pits of first tergite more or less distinct.
Localities — 1 ♀: No. 406. 1 ♀: No. 439. 1 ♀: No. 525. 2 ♀: No. 605. 1 ♀: No. 617. 1 ♀: No. 829. 1 ♀: No. 894. 1 ♀: No. 962. — 2 ♀: No. 3. 3 ♀ + 1 ♂: No. 11. — 1 ♀ (in Warszawa, Zoological Institute): Korea, Onpho ad Chongjin, 16 August 1959, leg. PISARSKI et PROSZYŃSKI.

Meteorus rubens (NEES, 1812) — Localities: 9 ♀ + 14 ♂: No. 193. 2 ♀: No. 285. 1 ♀: No. 358. 2 ♀: No. 376. 1 ♀: No. 379. 3 ♀: No. 445. 1 ♀: No. 923. 1 ♀: No. 969. — 5 ♀: No. 11.

Meteorus salicorniae SCHMIEDEKNECHT, 1897 — Described from the German Democratic Republic, reported from Austria, Bulgaria, Hungary and (?)Yugoslavia, not listed in the USSR (HUDDLESTON 1980: 48—49, TOBIAS 1986: 195). New to the fauna of Korea.
Locality — 1 ♀: No. 11.

Meteorus tabidus (WESMAEL, 1835) — Locality: 1 ♀: Korea, Prov. Chong-dzin-si: Musu-ri, distr. Purjong, 1 June 1965, leg. MROCZKOWSKI et RIEDEL.

Meteorus versicolor (WESMAEL, 1835) — Localities: 1 ♀: No. 229. 1 ♀: No. 237. 1 ♂: No. 293. 1 ♀: No. 322. 1 ♀: No. 324. 1 ♀: No. 325. 1 ♂: No. 379. 1 ♀: No. 484. — 1 ♀: No. 3. 2 ♂: No. 11. — 1 ♀ (in Warszawa, Zoological Institute): Korea, Dinyr ad Chongjin, 24 August 1959, leg. PISARSKI et PROSZYŃSKI.

Meteorus zinaidae BELOKOBYLSKIJ, 1987 — Described recently from the Far East Maritime Region and Sakhalin Island (USSR). New to the fauna of Korea.
Localities — 1 ♀: No. 871. — 3 ♀: No. 3.

Meteorus HALIDAY species of the East Palaearctic Region: USSR (E of the river Yenisei), Mongolia, China (N of the river Yangtze), Korea and Japan*

abdominator (NEES, 1812): Korea, USSR Siberia, Far East, Kamtchatka)
abscissus THOMSON, 1895: Korea
acutus MAETÔ, 1988: Japan
affinis (WESMAEL, 1835): Korea
albizonalis MAETÔ, 1988: Japan
alboannulatus BELOKOBYLSKIJ, 1897: USSR (Far East)
angustatus MAETÔ, 1988: Japan
angustifacies BELOKOBYLSKIJ, 1987: USSR (Far East)
baicalensis TELENGA, 1950: USSR (Irkutsk)
brevicauda THOMSON, 1895: China (Kanshu)
cespitator (THUNBERG, 1822): China, Japan, USSR (West Siberia, Baykal region)
consimilis (NEES, 1834): USSR (Turkmenia)
corax MARSHALL, 1898: Japan, Korea, USSR (Far East)
curvus MAETÔ, 1988: Japan
eadyi HUDDLESTON, 1980: Korea
filator (HALIDAY, 1835): Mongolia, USSR (West Siberia, Baykal region)
flavicoxa MAETÔ, 1986: Japan
gotoi MAETÔ, 1988: Japan
graciliventris MUESEBECK, 1954: Japan
gyrator (THUNBERG, 1822): Korea, Mongolia, USSR
hirsutipes HUDDLESTON, 1980: Japan
ictericus (NEES, 1812): Japan, Korea, USSR
ipidivorus TOBIAS, 1896: USSR (West Siberia)
jezoensis MAETÔ, 1988: Japan
kotanii MAETÔ, 1986: Japan
kotenkoi BELOKOBYLSKIJ, 1987: USSR (Far East)
kyushuensis MAETÔ, 1988:: Japan
melanostictus CAPRON, 1887: Korea
micropterus (HALIDAY, 1835): Japan
nixoni HUDDLESTON, 1980: Japan
pallipes (WESMAEL, 1835): Korea
politutele SHENEFELT, 1969: USSR
profligator (HALIDAY, 1835): Japan
pulchricornis (WESMAEL, 1835): Japan, Korea
rubens (NEES, 1812): China, Japan, Korea, USSR
rugosus MAETÔ, 1986: Japan
salicorniae SCHMIEDEKNECHT, 1897: Japan, Korea
subjaculator TOBIAS, 1986: USSR (Altay Mts)
sulcatus SZÉPLIGETI, 1896: Japan, USSR (Far East)
tabidus (WESMAEL, 1835): Korea, Mongolia
versicolor (WESMAEL, 1835): Japan, Korea, Mongolia, USSR
zinaidae BELOKOBYLSKIJ, 1987: Korea, USSR (Far East, Sakhalin)

ZELE CURTIS, 1832

Zele albiditarsus CURTIS, 1832 — Localities: 1 ♀: No. 75. 1 ♀: No. 276. 1 ♂: No. 278. 1 ♀: No. 285. 1 ♀: No. 319. 1 ♀: No. 939. 2 ♀: No. 1005. — 3 ♀: No. 11.

Zele chlorophthalmus (SPINOLA, 1808) — Localities: 1 ♀: No. 285. 1 ♂: No. 783. 1 ♂: No. 927. 1 ♂: No. 938. — 1 ♀: No. 12.

Zele niveitarsis f. **peronatus** (SHESTAKOV, 1940) — Locality: 1 ♀: No. 3.

Zele ruricola MAETÔ, 1986 — Described recently from Japan (Hokkaido, Honshu, Kyushu). New to the fauna of Korea.
Locality — 1 ♀: No. 3.

Zele CURTIS species of the East Palaearctic Region: USSR (E of the river Yenisei), Mongolia, China (N of the river Yangtze), Korea and Japan

admirabilis MAETÔ, 1986: Japan
albiditarsus CURTIS, 1832: Japan, Korea, USSR (Siberia)
caligatus (HALIDAY, 1835): Japan, USSR (Baykal region)
chlorophthalmus (SPINOLA, 1808): Japan, Korea, Mongolia, USSR (West Siberia, Baykal region, Far East)

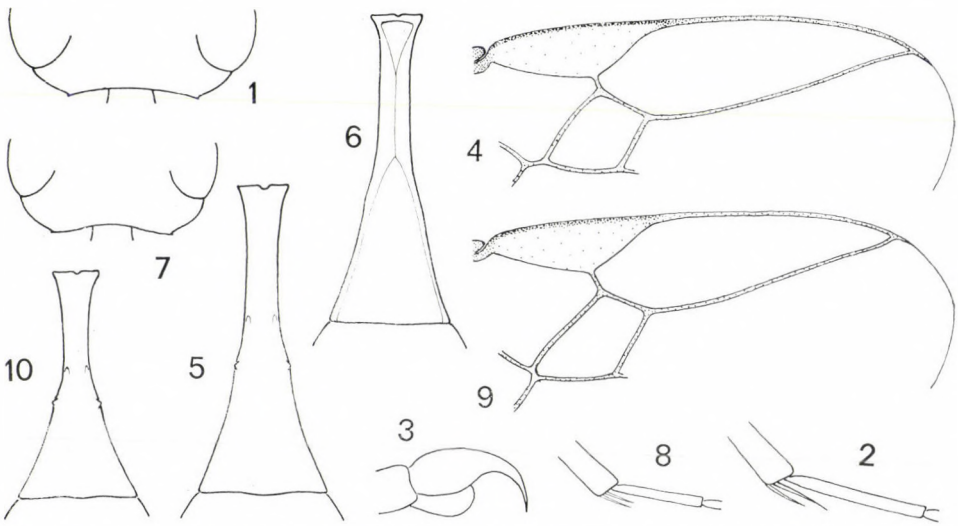
* Owing to my misidentification the following species are deleted from the fauna of Mongolia: *Meteorus jaculator* HALIDAY (PAPP 1967: 192), *M. colon* HALIDAY (= *luridus* var. *deserticola* PAPP) and *M. profligator* HALIDAY (PAPP 1971: 52).

deceptor (WESMAEL, 1835): Japan, USSR
gracilis VAN ACHTERBERG, 1979: Nepal
niveitarsis CRESSON, 1872 f. peronatus (SHESTAKOV, 1940): Japan, USSR (Far East)
ruricola MAETÔ, 1986: Japan, Korea

2. Description of the new species

Meteorus beroni sp. n. ♀
(Figs 1—6, 11)

Description of the holotype ♀. — Body 7 mm long. Head in dorsal view 1.85 times as broad as long, eye three times as long as temple, latter strongly constricted (Fig. 1). Eye in lateral view distinctly 1.5 times as high as wide and 2.54 times as wide as temple, latter evenly wide. Ocelli large, hind pair elliptic in form and fore ocellus round; distance between fore and a hind ocelli just less than half of greatest diameter of hind ocellus, OOL one-third shorter than OD, POL about as long as OOL. Lower half of inner margin of eyes diverging, face quadratic. Segments 4—6 of maxillar palp each 1.66 times as long as segment 3. Mandible twisted. Malar space short, less than half basal breadth of mandible. Tentorial pits distinct, much nearer to eyes than to each other. Clypeus protuberant. Face with horizontal rugulo-striation, clypeus horizontally rugulose, frons striated horizontally and this sculpture interrupted by a smooth and shiny streak, vertex and occiput



Figs 1—6. *Meteorus beroni* sp. n.: 1 = temple in dorsal view, 2 = pair of spurs of hind tibia + basitarsus, 3 = claw, 4 = distal part of right fore wing, 5 = first tergite in dorsal view, 6 = first tergite in ventral view. — Figs 7—10. *M. heliophilus* FISCHER: 7 = temple in dorsal view, 8 = pair of spurs of hind tibia + basitarsus, 9 = distal part of right fore wing, 10 = first tergite in dorsal view.

with fine subpunctation (i.e. almost smooth) and shiny. — Antenna just longer than body and with 36 antennomeres. First flagellomere four times as long as broad, further flagellomeres gradually shortening and attenuating so that penultimate flagellomere twice as long as broad.

Mesosoma in lateral view 1.7 times as long as high. Pronotum laterally strio-rugose. Mesonotum with fine and dense punctation, interspaces rather shorter than diameter of punctures. Notaulix distinct, posteriorly merging in a rugose field. Scutellum almost smooth and shiny (i.e. with very fine and scattered punctation). Mesopleuron (Fig. 11) with dense to confluent punctation, precoxal suture rugo-rugulose with striate elements. Propodeum areolate-rugose, shiny. — Legs thin and long. Hind femur 5.6 times as long as broad. Hind tibia one-fifth longer than hind femur; pair of spurs of hind tibia relatively long, basitarsus 2.5 times as long as inner spur. Hind basitarsus as long as rest of hind tarsus. Claws simple as in Fig. 3. Hind coxa anteriorly finely and densely punctate, posteriorly chagreened-rugulose.

Fore wing just longer than body. Pterostigma (Fig. 4) three times as long as wide, issuing radial vein distally from its middle. Radial vein approaching tip of wing, radial cell along metacarpal vein 1.62 times as long as pterostigma, *cuqul* almost twice as long as *r2*, *r3* 5.8 times as long as *r2*, *n. rec.* antefurcal.

Metasoma about as long as head and mesosoma together. First tergite (Fig. 5) 2.2 times as long a broad at hind, dorsal pits faintly distinct, small spiracles somewhat distally from middle; tergite before dorsal pits uneven, behind pits longitudinally striate, ventral border meeting beneath about middle of petiole (Fig. 6). Further tergites polished. Ovipositor as long as hind tibia, distally clearly pointed.

Ground colour of body and antenna brownish yellow, metasoma rather light brownish yellow. Legs brownish yellow. Fore trochanter pale. Tibiae and tarsi yellowish. Wings hyaline, pterostigma yellow, veins yellowish.

Description of two female paratypes. — Similar to holotype. Body 6.8 (1 ♀) and 7 mm (1 ♀) long. Head in dorsal view 1.79 and 1.84 times as broad as long. Eye in lateral view 2.54 and 2.45 times as wide as temple. Antenna with 35 and 36 antennomeres. *N. rec.* just antefurcal (or almost interstitial) (1 ♀). First tergite 2.38 times and 2.45 times as long as broad at hind.

Male and host unknown.

Type material — Holotype ♀ and 2 ♀ paratypes: "Korea, Prov. Kanwon: Kumgang san, environs of Hotel" (first label) "20. VIII. 1982, leg. Beron et Popov, No. 12." (second label).

Holotype and two paratypes are deposited in the Hungarian Natural History Museum, Budapest Hym. Typ. Nos 7256 (holotype) and 7257—7258 (paratypes).

Etymology — The new species is dedicated to its collector, Dr. PETAR BERON, zoologist (Zoological Institute, Bulgarian Academy of Sciences, Sofia).

The new species, *Meteorus beroni* sp. n., is closely related to *M. heliophilus* FISCHER, 1970 (Europe), their common features are as follows: (1) ocelli large, (2) dorsal pits of first tergite almost indistinct, (3) ventral borders of first tergite touching before anterior base and (4) temple in dorsal view constricted. The two species are separated by the features easy to recognize and are compiled in a tabular form:

M. beroni sp. n.	*M. heliophilus* FISCHER
1. Mesosoma sculptured: mesonotum with fine and dense punctation, mesopleuron (Fig. 11) densely punctate and its precoxal suture widely rugo-rugulose, propodeum areolate-rugose.	1. Mesosoma less sculptured: mesonotum with fine to very fine punctation, mesopleuron (Fig. 12) smooth and its precoxal suture narrow and rugose to weakly rugose, propodeum weakly carinated and rugo-rugulose.
2. First tergite long (Fig. 5), 2.2—2.5 times as long as broad at hind.	2. First tergite less long (Fig. 10), 1.75—1.9 times as long as broad at hind.
3. Antenna with 35—37 antennomeres.	3. Antenna with 27—32 antennomeres.
4. Temple in dorsal view (Fig. 1) relatively more contracted.	4. Temple in dorsal view (Fig. 7) relatively less contracted.
5. Radial cell along metacarp 1.4—1.66 times as long as pterostigma, *cuqu1* less than twice as long as *r2*, n. rec. antefurcal or interstitial (Fig. 4).	5. Radial cell along metacarp 1.3—1.4 times as long as pterostigma, *cuqu1* more than twice as long as *r2*, n. rec. interstitial (Fig. 9).
6. Spurs of hind tibia long, basitarsus only 2.4 times as long as inner spur (Fig. 2).	6. Spurs of hind tibia less long, basitarsus clearly three times as long as inner spur (Fig. 8).
7. Segments 4—6 of maxillar palp each 1.66 times as long as segment 3.	7. Segments 4—6 of maxillar palp each only somewhat (i.e. 1.1—1.2 times) longer than segment 3.
8. Body relatively strong, 6.8—7 mm long, its ground colour brownish yellow.	8. Body less strong, 4.5—5 mm long, its ground colour yellow to dark yellow.

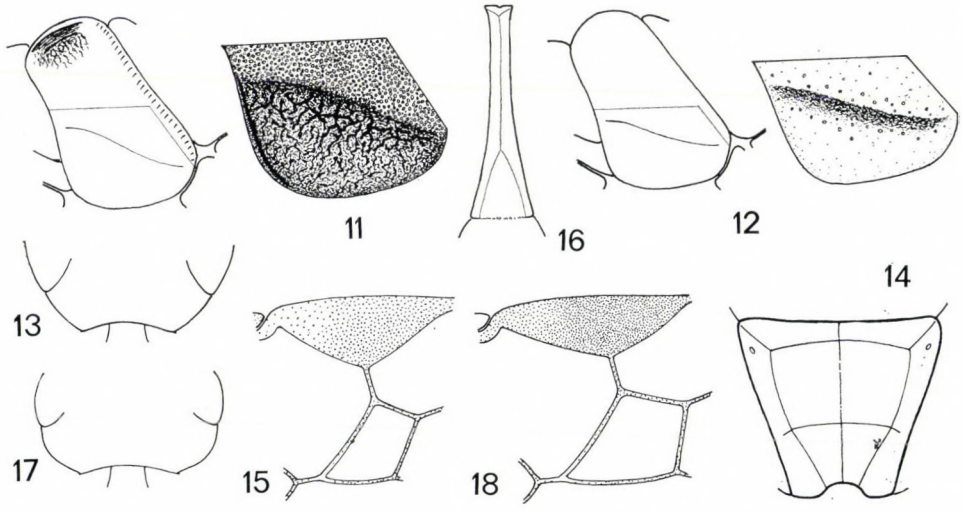


Fig. 11. *Meteorus beroni* sp. n.: mesopleuron with indication of its lower sculpture + precoxal suture. — Fig. 12. *M. heliophilus* FISCHER: mesopleuron with indication of its lower sculpture + precoxal suture. — Figs 13—16. *M. popovi* sp. n.: 13 = temple in dorsal view, 14 = propodeum, 15 = pterostigma + *Cu2*, 16 = first tergite in ventral view. — Figs 17—18. *M. eadyi* HUDDLESTON: 17 = temple in dorsal view, 18 = pterostigma + *Cu2*

Meteorus beroni sp. n. is allied to *M. lionotus* THOMSON, 1895 (England, Sweden, Switzerland, Austria, Greece) considering their common features as follows: (1) ocelli large, (2) temple in dorsal view strongly constricted (cf. Fig. 1), (3) ventral borders of first tergite conjoined far before anterior base (cf. Fig. 6), (4) spurs of hind tibia long, basitarsus only 2.25—2.5 times as long as inner spur (cf. Fig. 2). The two species are distinguished by the features expounded before in items 1., 2., 5., 8. and

9. Ground colour of body brownish yellow without black or dark pattern.	9. Ground colour of body testaceous; head above, metasoma behind and sometimes propodeum black to dark.
10. Antenna with 35—37 antennomeres.	10. Antenna with 31—33 antennomeres.

Meteorus popovi sp. n. ♀
(Figs 13—16, 19—21)

Description of the holotype ♀. — Body 2.3 mm long. Head in dorsal view 1.73 times as broad as long, eye three times as long as temple, latter receded strongly (Fig. 13), occiput excavated. Eye in lateral view nearly round, one-fifth higher than wide, and also one-fifth wider than temple, latter evenly wide. Ocelli small and faintly elliptic; distance between fore and a hind ocelli somewhat longer than greatest diameter of an ocellus, OOL three times as long as OD and 1.4 times as long as POL. Inner margin of eyes strongly convergent (Fig. 19). Face close above clypeus about as wide as high. Base of mandible three times as long as malar space. Tentorial pits much nearer to eyes than to each other. Clypeus moderately protuberant. Head polished, face subpunctulate and shiny. — Antenna about one sixth longer than body and with 22 antennomeres. First flagellomere four times and penultimate flagellomere twice as long as broad.

Mesonotum in lateral view 1.56 times as long as high, smooth to polished. Lateral wing of pronotum above with a crenulo-rugose furrow. Notaulix distinct, posteriorly merging in a small rugose field. Precoxal suture crenulate. Propodeum areolated by carination (Fig. 14), areolae smooth to uneven, shiny. — Legs thin and long. Hind femur six times as long as broad. Hind tibia and tarsus equal in length. Pair of spurs of hind tibia short as usual. Hind basitarsus 0.7 times as long as rest of hind tarsus. Hind coxa rugo-rugulose. Tarsal claws simple as in Fig. 20.

Fore wing as long as body. Pterostigma (Fig. 15) wide, 2.55 times as long as wide, issuing radial vein from its middle, *r2* 1.4 times as long as *r1*, *r3* reaching tip of wing; *cuqu1* and *cuqu2* weakly diverging posteriorly, *n. rec.* antefurcal. Radial cell along metacarpal vein one fifth longer than pterostigma.

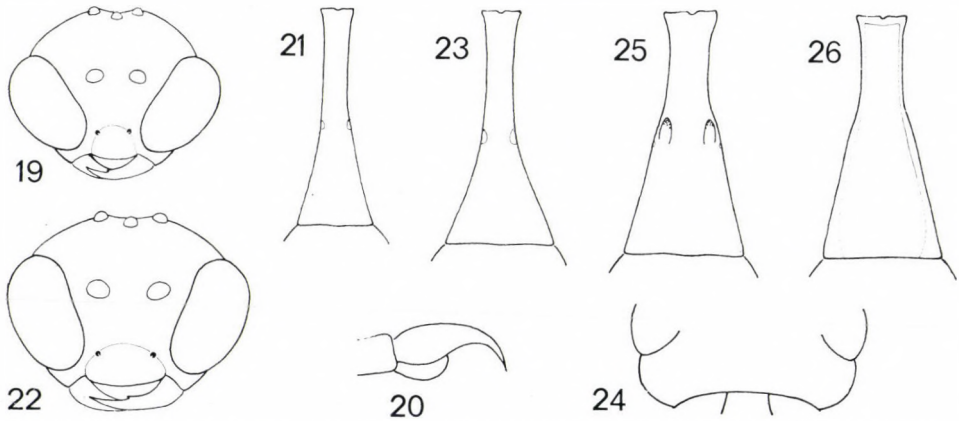
Metasoma just shorter than head + mesosoma together. First tergite three times as long as broad at hind, faintly broadening posteriorly, dorsal pits absent, small spiracles at middle; its surface medially striolate-uneven, otherwise smooth, shiny; its ventral borders conjoining close from anterior base to about its hind third (Fig. 16). Further tergites polished. In lateral view ovipositor somewhat more than twice as long as first tergite or 1.75 times as long as hind tibia.

Ground colour of body black. Face, clypeus, cheek and prothorax brownish yellow. Palpi pale, tegulae and legs yellow. Antenna yellow, its distal half darkening brown. Tergites 1—3 dark brown. Wings hyaline. Pterostigma brown, basally with a pale spot, veins yellowish.

Description of paratype (1 ♀). — Similar to the holotype. Body 3 mm long. Antenna about as long as body; its first flagellomere five times and penultimate flagellomere twice as long as broad. Hind femur 5.5 times as long as broad. First tergite 2.85 times as long as broad at hind, somewhat more broadening posteriorly than that of holotype, its surface antero-posteriorly uneven to somewhat longitudinally rugulose. In lateral view ovipositor 1.62 times as long as first tergite or just longer than hind tibia (hind tibia relatively long, one third longer than that of holotype). Ground colour of body dark brown, tergites 1—3 brown, hind broadening part of first tergite blackish.

Male and host unknown.

Type material — Holotype ♀: "Korea, Prov. North Pyongan, Mt. Myohyang-san" (first label) "Hotel, 14. VII. 1982, leg. BERON et POPOV, No. 11." (second label). — 1 ♀ paratype: „Korea, Kaesong, Mts Pakyon, Pakyon popo, 27 NE from Kaesong, 9. Sept. 1971" (first label) "No. 251, leg. S. HORVATOVICH et J. PAPP" (second label).



Figs 19—21. *Meteorus popovi* sp. n.: 19 = head in frontal view, 20 = claw, 21 = first tergite in dorsal view. — Figs 22—23. *M. filator* (HALIDAY): 22 = head in frontal view, 23 first tergite in dorsal view. — Figs 24—26. *M. vexator* (HALIDAY): 24 = temple in dorsal view, 25 = first tergite in dorsal view, 26 = first tergite in ventral view.

Holotype and 1 ♀ paratype are deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. Nos 7259 (holotype) and 7260 (paratype).

Etymology — The new species is dedicated to its collector, Dr. VASIL POPOV, mamologist (Zoological Institute, Bulgarian Academy of Sciences, Sofia).

The new species, *Meteorus popovi* sp. n., runs to *M. eadyi* HUDDLESTON, 1980 (Europe, Mongolia, Korea) with the help of HUDDLESTON's key (1980); their common features are as follows: (1) ocelli small, (2) pair of dorsal pits of petiole absent, (3) ventral borders of first tergite conjoining close from anterior base to about its hind third (Fig. 16). The species are clearly distinguished considering the following features:

M. popovi sp. n.

1. Body 2.3—3 mm long.
2. Temple in dorsal view receded strongly (Fig. 13).
3. Antenna with 22 antennomeres.
4. Inner margin of eyes clearly convergent (Fig. 19).
5. Ovipositor almost twice to somewhat more than twice as long as first tergite.
6. Pterostigma issuing radial vein from its middle, *cuqu1* and *cuqu2* less diverging (i.e. two veins parallel) (Fig. 15).

M. eadyi HUDDLESTON

1. Body 3.5—4 mm long.
2. Temple in dorsal view receded roundly (Fig. 17).
3. Antenna with 26—31 antennomeres.
4. Inner margin of eyes parallel or at most faintly convergent (Fig. 3 in Huddleston 1980: 12).
5. Ovipositor at most 1.5 times, usually 1.3—1.4 times, as long as first tergite.
6. Pterostigma issuing radial vein distally from its middle, *cuqu1* and *cuqu2* more diverging (Fig. 18).

The new species reminds of *M. filator* (HALIDAY, 1835) and *M. vexator* (HALIDAY, 1835) in several respects (inner margin of eyes convergent, ocelli very small, antenna with 20—25 antennomeres, pterostigma issuing radial vein more or less from its middle (Fig. 15), tarsal claws simple (Fig. 20), however, they can be distinguished by the following features:

M. popovi sp. n.

1. In frontal view inner margin of eyes strongly convergent (Fig. 19).
2. In dorsal view temple receded strongly (Fig. 13).
3. First segment of metasoma (Fig. 21) less broadening posteriorly, 2.8—3 times as long as broad behind.
4. Body 2.3—3 mm long.

M. filator (HALIDAY)

1. In frontal view inner margin of eyes less strongly convergent (Fig. 22).
2. In dorsal view temple receded roundly (cf. Fig. 17).
3. First segment of metasoma (Fig. 23) more broadening posteriorly, 2.1—2.2 times as long as broad behind.
4. Body 4—4.2 mm long.

M. popovi sp. n.

1. Dorsal pits of first tergite absent, tergite itself relatively thin and less broadening posteriorly, 2.8—3 times as long as broad behind (Fig. 21).
2. Temple in dorsal view strongly constricted (Fig. 13).
3. Ventral border of first tergite conjoining anteriorly (Fig. 16).
4. Body 2.3—3 mm long.

M. vexator (HALIDAY)

1. Dorsal pits of first tergite present, tergite itself relatively thick and more broadening posteriorly, 1.9—2.2 times as long as broad behind (Fig. 25).
2. Temple in dorsal view rounded (Fig. 24).
3. Ventral border of first tergite widely separated (Fig. 26).
4. Body 3—4.3 mm long.

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REVISION OF THE GENUS EUGNORISMA BOURSIN, 1946, PART II. TAXONOMIC NEWS, BIOGEOGRAPHIC AND PHYLOGENETIC CONSIDERATIONS WITH DESCRIPTIONS OF TWO NEW GENERA (LEPIDOPTERA: NOCTUIDAE)

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Besides the descriptions of some new *Eugnorisma* taxa (*Eugnorisma goniophora* sp. n., *E. caerulea rubicunda* ssp. n., *E. gaurax funebris* ssp. n. and *E. asad plantei* ssp. n.), the second part of the revision contains some changes in the taxonomic relegations of some 'Paradiarsia', 'Hermonassa' and 'Eugraphe' species. The phylogenetic and zoogeographical analysis of the genus and some related genera, with the descriptions of two new genera, *Ledereragrotis* gen. n. and *Pseudohermonassa* gen. n. are given. With original photoplates and 78 figures.

Introduction

During the taxonomic and phylogenetic analysis of *Eugnorisma* and its relatives we have described some new taxa. It was also demonstrated, that numerous genera, classified formerly — with few exceptions — as belonging to the tribe Agrotini (KOZHANCHIKOV, 1937) have usually a specialized, long, tubular vesica penis which can be accepted as true synapomorphy of these genera e.g. *Euxoa* HÜBNER, *Agrotis* OCHSENHEIMER, *Trichosilia* HAMPSON, *Dichagyris* LEDERER, *Yigoga* NYE, *Hemiexarnis* BOURSIN, *Parexarnis* BOURSIN, *Protexarnis* MCDUNNOUGH, *Chersotis* BOISDUVAL, *Rhyacia* HÜBNER, *Standfussiana* BOURSIN, etc. Their other features of taxonomic importance are as follows: the more sclerotized frons, often with conspicuous protuberances, the relatively short tibiae of the forelegs (in most cases shorter than the first segment of the tarsus), the relatively broad, quadrangular or rounded shape of the valvae, in most cases with cucullus and corona (but the reduction of these may often be a convergent feature).

The larvae belonging to these genera are mostly of "cutworm" type, terricolous and connected — with relatively few exceptions — to montane or eremic grassland habitats. Here is the place to point out that some plesio-

morphic features (e.g. the presence of the cucullus and the corona, the ampulla as in *Diarsia* or in some *Dichagyris*) cannot have the taxonomic value which was attributed to them in some earlier publications of the systematics of Noctuinae. A parallel case of a not closely related group (the genus *Auchmis* HÜBNER) was analysed in an other paper. (RONKAY & VARGA 1990).

It has been shown that *Eugnorisma* BOURSIN suggested being related to *Protexarnis* MCDUNNOUGH in the original description, cannot belong to the tribe Agrotini but is closely connected to *Eugraphe* HÜBNER, *Paradiarsia* MCDUNNOUGH and *Xestia* s. l., etc. At the same time it became evident that the great number of species, referred formerly to *Hermonassa* WALKER, 1865 (BOURSIN 1967) in fact belongs to three different major groups. Two of them are described here as new genera.

I. TAXONOMIC PART

1. Descriptions of some new taxa

Eugnorisma goniophora VARGA, RONKAY et HACKER sp. n.
(Plate I: 1—2)

Holotype: male, "Pakistan. Baltistan, Gilgit 1600 m, 35°53′ N, 74°21′ E, 5. X. 1988, leg. HACKER", slide No. 5479 VARGA. Deposited in coll. HACKER (Staffelstein). — Paratype: 1 female, from same locality and data; coll. HACKER. Slide No. 3331 RONKAY.

Description — Wingspan 35 mm, length of forewing 17 mm. Head and thorax dark grey mixed with some blackish-brown hairs, palpi laterally dark brown. Ground colour of forewings dark grey, strongly suffused with dark brown. Transverse lines obsolescent, double, less sinuous. Subbasal line only a blackish spot at costa antemedial line oblique, dark grey, defined by a fine black line on outer side. Postmedial line slightly sinuous, dark grey, filled with a bit lighter grey, subterminal line a diffuse, waved, brownish shadow with a dark brownish patch at costa. Orbicular and reniform stigmata large, finely encircled with whitish-grey and filled with grey. Orbicular oblique and flattened, reniform more or less moon-shaped; claviform absent. Dark triangles of cell strong and sharp, black with slight bronze shade. Terminal line ochreous-whitish, cilia dark grey. Hindwing nearly unicolorous fumous grey, veins suffused with brown, cellular lunule and transverse line absent. Terminal line whitish, cilia dark grey. Underside of fortewing patternless dark grey, hindwing whitish with intensive greyish suffusion, cellular lunule a very pale spot, transverse line an interrupted, grey shadow. Female similar with a bit darker colouration.

Male genitalia (Figs 1—2): uncus relatively short, curved, tegumen less high, fultura inferior subtriangular, vinculum V-shaped. Valvae narrow,

elongate, apex rounded with a small, less pointed lobe on ventral edge. Pollex small, pointed, sacculus short and wide, clavus absent. Harpe wide-based, short and thick, strongly curved. Aedeagus short, cylindrical, proximally weakly curved, carina less developed, without teeth. Vesica tubular, curved, without spinules, basal diverticulum large and wide, cornutus huge, wide-based, thorn-like.

Female genitalia (Figs 6—7): ovipositor short and wide, gonapophyses short. Ostium bursae wide, strongly sclerotized, ductus bursae strong, flattened and not folded, with two slight rugae on ventral surface, anterior part granulose. Bursa copulatrix very large and spacious, elliptical, apex finely rugulose.

The new species is similar in its appearance to a very dark specimen of a species of the *chaldaica*-group (except *tamerlana*) but it has dark hindwings. It differs from the related *E. eucratides* by darker ground colour of both wings, the lack of the reddish shade and the different shape of the blackish triangles of the cell.

The configuration of the male genitalia is very different from that of the *chaldaica*-group and shows close relationship with *E. eucratides* and *xestioides* by the general shape of the valva, the absence of macrotricha on the pollex and the presence of a large, wide-based cornutus on the basal diverticulum. The specific differences can be found in the structure of the carina — simple in *goniophora*, with a dentated lamina in *xestioides* and with a strong tooth in *eucratides* —, the spinulose field of the vesica — present in *xestioides*, absent in *goniophora* and *eucratides* —, the shape and size of the cornutus, the valvae and the harpae (see Figs 3—5).

The configuration of the female genitalia differs from the other *Eugnorisma* species (with the exception of *E. coryphaea* PÜNGELER) and *E. eucratides* BRSN. by the nonfolded, flattened, but strongly sclerotized ductus bursae, as a plesiomorphic feature in the genus.

Eugnorisma caerulea rubicunda VARGA et RONKAY ssp. n.
(Plate I: 4)

H o l o t y p e: male, Margelan, slide No. 5510 VARGA; coll. Zoologische Staatssammlung Munich (= ZSM). — P a r a t y p e s: 1 male, Altai (coll. ZSM), 1 male from the same locality (coll. ZMHU), 1 male, Lepsa, 2 males, Saisan (coll. ZMHU), 1 male, Lepsa, 2 males, Saisan (coll. ZMHU); 1 male, Sibiria, ex coll. NEUBURGER (coll. HNHM).

D e s c r i p t i o n — Wingspan 36—37 mm, length of forewing 15—16 mm. The new subspecies differs from the nominate race externally rather strongly by the following features: the specimens are relatively small and narrow-winged. The light bluish-grey ground colour is evenly suffused by

a rosy-reddish shine. The transverse lines are less marked, fine. These characteristics give the specimens a special, *chaldaica*-like appearance, therefore, a part of them were misidentified in the collections. The configuration of the male genitalia is very similar to that of the nominate *caerulea* WAGNER, but the valvae are relatively narrow, angulate, the pollex is more acute, the harpae are somewhat more slender and the spinulose field of the vesica is more conspicuously saccate (Figs 8—21).

This subspecies displays a diametral contrasting tendency with the taxa *E. caerulea kurdistana* and *E. caerulea isabellina*, because the latter two can be characterized by the missing of the reddish colouration, the more sharp and distinct transverse markings and the broader shape of the wings. We think that *E. caerulea* has been historically separated into two main chains of geographical races and the genetic isolation between the extreme forms of these race-groups may be nearly on the specific level. *E. c. caerulea* and *E. c. kurdistana* have an overlapping distribution pattern in some parts of E Turkey (e.g. in the Provinces Bitlis and Bingöl) and only very few transitional (?) specimens are known. Therefore we re-examined the ♂♂ and ♀♀ genitalia of all *caerulea*-subspecies but were not able to find any decisive differences.

N o m e n c l a t o r i c a l n o t e s — In KOCAK's (1983) the name "Agrotis Chaldaica var. Caerulea WAGNER, 1932" cannot be used as a valid name as it is preoccupied by *Agrotis coerulea* GUENÉE, 1868, and he gave *Eugnorisma buraki* nom. n. as replacement name for the former taxon. We cannot agree with this statement because the species names are not exactly the same (*caerulea* versus *coerulea*) and because both taxa were described with subgeneric classification which are different in the two cases. WAGNER placed his taxon into the subgenus *Rhyacia* ("Agrotis [Rhyacia] chaldaica var. caerulea") since the GUENÉE's *coerulea* was originally arranged into the subgenus *Spaelotis*, consequently the original combinations are not the same in the two cases under discussion. Therefore, we can use *Eugnorisma caerulea* (WAGNER, 1932) as the correct name for this well-known species and no replacement name is necessary.

Eugnorisma asad plantei VARGA, RONKAY et HACKER ssp. n.
(Plate I: 5)

H o l o t y p e: male, "Pakistan, Baltistan, Babusar Pass, Nordseite 1650 m, 6. X. 1988, leg. HACKER", coll .HACKER. — P a r a t y p e s: numerous males and females from the same locality, further specimens from Pakistan (Karimabad, Nilt, Passu, Gilgit, the Kaghan valley), Kashmir, India (Ladakh: Kharbu, Drass, Lotsun), coll. HACKER, PEKS, PLANTE, VARGA, VARTIAN, WEIGERT, HNHM and ZSM. Slides Nos 3765, 5534 VARGA (males).

Description — Wingspan 36—42 mm, length of forewing 17—20 mm. The new subspecies differs from the nominate *asad* by its larger size, broader shape of wings, much darker, fuscous-grey ground colour with the absence of the light rosy-brown shade being characteristic for *asad asad*. Orbicular spot is usually conspicuously encircled with whitish-grey. In the configuration of the male genitalia *asad plantei* has distally less arcuate valvae and the costal lobe is reduced or absent (see the Figs 85—87 in the first part of the revision).

The new subspecies has a larger area as compared with the nominotypic one; it is distributed from NW Pakistan to Kashmir and Ladakh (? Nepal) and appears in large individual number in its habitats.

Eugnorisma gaurax funebris VARGA et RONKAY ssp. n.

Holotype: male, USSR, Uzhbekistan, Alai Mts, Dugobo, 30. IX. 1985, leg. et coll. VARGA. — Paratypes: 1 ♂, 2♀ from the same locality and data, coll. HNHM and VARGA. Slide No. 3337 VARGA.

Description — Wingspan 29—31 mm, length of forewing 14—15 mm. The new subspecies is similar externally to the nominate subspecies, but is essentially darker, the ground colour of the head, thorax and forewings is dark grey with fuscous shade. The pinkish-rosy shade, typical for *gaurax gaurax*, is entirely absent; the colouration of the hindwings is also darker, suffused with brownish-grey.

This subspecies — without name and description — had been already mentioned in p. 220 of the first part of the revision and figured on Plate II., Fig. 32.

Distribution — The few known specimens of *funebris* were collected in a rocky, gorge-like valley on the northern side of the Alai Mts. at ca. 2500 m altitude; together with a series of *E. puengeleri* and some specimens of *E. eminens* and *E. trigonica*.

2. Taxonomic changes, new combinations

Eugnorisma eucratides (BOURSIN, 1957) comb. n.
Eugnorisma xestioides (HAMPSON, 1905) comb. rest.
Ammogrotis suavis STAUDINGER, 1895 comb. rest.
Eugraphe miniago (FREYER, 1838) comb. n.

3. Descriptions of two new genera

The study of the generotype of *Hermonassa* WALKER, 1865 (*consignata* WALKER, 1865) and some close relatives has shown that the true *Hermonassa* WALKER species have a very distinct genital configuration and they are not

related to *Chersotis* BOISDUVAL, as suggested by BOURSIN (1967). It became evident (see Figs 26—32; 33—44) that two species, classified earlier as "Caradrina" (subg. *Chersotis*, cf. KOZHANCHIKOV 1937, ZHOLOTARENKO 1971) or *Hermonassa* WALKER (BOURSIN 1967 and manuscript) have tubular vesica also an other Agrotini features. For these two species: *multifida* LEDERER, 1870 and *difficilis* ERSHOV, 1877, we erect a new genus described below.

Ledereragrotis VARGA gen. n.

Type species: *Agrotis multifida* LEDERER, 1870 — Ann. Soc. Ent. Belg. 13: 46, t. 2, f. 10.

D i a g n o s i s — Medium-sized, "Agrotis"-like moths, resembling externally to some *Chersotis* BOISDUVAL species. Frons convex, moderately sclerotized, without protuberance. Abdomen depressed dorsoventrally. Male genitalia (Figs 26—32): harpe long and falcate, ampulla present, directed laterally; clavus reduced. Uncus relatively broad and long. Aedoeagus long and straight; vesica tubular and coiled. Female genitalia can be characterized by bilobate bursa copulatrix similarly to some related genera (*Dichagyris* LEDERER, *Parexarnis* BOURSIN, *Protexarnis* MCDUNNOUGH, etc.).

The new genus contains only two species, *Ledereragrotis multifida* LEDERER and *L. difficilis* ERSHOV, 1887, resp. These species are completely allopatric, the former one is distributed in the Central and Western Alpine semiarid areas ("inneralpine Trockengebiete"), Asia Minor, Caucasus and Transcaucasia; the latter in the mountainous steppe and forest steppe areas of Southern Siberia and Mongolia.

The true *Hermonassa* species belong to an other tribe (Noctuini KOZHANCHIKOV, 1937) and they have a short, broad vesica with a specialized dentate carina (Figs 40—44), which is often present in species of different Noctuini genera (e.g. *Spaelotis* BOISDUVAL, *Graphiphora* OCHSENHEIMER, *Paradiarsia* MCDUNNOUGH, *Eugraphe* HÜBNER, numerous *Xestia* HÜBNER species, etc.). The very uniform genus, rich in species, has a large number of taxa in the by monsoon influenced areas of Southern and South-Eastern Asia.

Three species, distributed mainly in Southern and Eastern Siberia and Mongolia, respectively, have a different external appearance and genital configuration, as compared with the true *Hermonassa* WALKER species. One of them, "Hermonassa" *melancholica* LEDERER, 1853 is mentioned in a manuscript of BOURSIN (List of the Palearctic Noctuidae, ined.) as *Pseudohermonassa* but this name has never been published. Because no valid name exists for "H." *melancholica* LEDERER and the two related taxa (*cicatricosa* GRAESER, 1892 = *praecipua* STAUDINGER, 1892; *ononensis* BREMER, 1864), we introduce here this 'in litteris' name with a short description.

Pseudohermonassa VARGA gen. n.

Type species: *Agrotis melancholica* LEDERER, 1853 — Verh. zool.-bot. Ges. Wien, 367, t. 4, f. 3.

Diagnosis — medium-sized, relatively broad-winged, "Agrotis"-like moths, externally similar to some *Xestia* s. l. species. Frons convex, weakly sclerotized. Fore-tibiae longer than first tarsus.

Male genitalia (Figs 45—48): valvae short, apically acute; harpe short, broad, flattened. Vesica saccate, *P. melancholica* LEDERER has a single, large, thorn-like, bulbed cornutus (as in some *Paradiarsia* species), this cornutus absent in *P. cicatricosa* GRAESER and *P. ononensis* BREMER. Carina of these latter two species elongate, double, covered with teeth; in case of *P. melancholica* LEDERER transformed into a dentate, sclerotized plate.

The new genus shows the closest relationship with *Paradiarsia* MCDUNNOUGH (s. str.; type species: *litoralis* PACKARD, 1867); it contains the following species:

melancholica (LEDERER, 1853) (type species)
ononensis (BREMER, 1864) [= *scaramangae* (ALPHERAKY, 1892)]
cicatricosa (GRAESER, 1892) [= *praecipua* (STAUDINGER, 1892)]

The members of the new genus inhabit mainly the loose mountain taiga with large natural clearings in Southern and Eastern Siberia and Northern Mongolia, respectively.

4. *Eugnorisma arenoflavida* (SCHAWERDA, 1936) bona species

For a long time the Iberian specimens of genus *Eugnorisma* BOURSIN, 1946 (except of the Pyrenean chain) were referred to *Eugnorisma pontica* (STAUDINGER, 1891), due to the external similarity between the two taxa due to certain resemblance in some genitalic features (see e.g. AGENJO 1941, 1977; CALLE 1983; and comments in VARGA et RONKAY 1987; YELA et SARTO in press; and FIBIGER in print). In the first part of their revision of genus *Eugnorisma* (VARGA et RONKAY, op. cit.), showed that the distribution area of *Eugnorisma* e.g. *pontica* extends from Greece to Iran (it is an East-Mediterranean species), and referred the Iberian specimens to *Eugnorisma depuncta arenoflavida* (SCHAWERDA, 1934), pointing out that this supposed subspecies "very strongly differs in its appearance from the nominate *depuncta* LINNAEUS". In a preliminary approximation to the problem, the mentioned authors do not found consistant genitalic differences between the nominate *depuncta* LINNAEUS and *arenoflavida* SCHAWERDA (the same ideas are expressed in FIBIGER, in print). After the study of large series of specimens of the two taxa of both sexes, significant and constant divergences were found

by the third author in vesica penis, distal lamina of the aedeagus and cervix and corpus bursae between both taxa. As the nominate *depuncta* LINNAEUS and *arenoflavida* were found at the same place in one locality of the Southern Pyrenean shore, the partial sympatry of the two taxa is evidenced; this fact supports the relegation of the latter one as a distinct species. This opinion has been confirmed by the discussion and second authors.

Material and methods — A large series of specimens of *E. arenoflavida* SCHAWERDA of the Noctuidae collection of the Entomology Section of the M.N.C.N. (Museo National de Ciencias Naturales, Madrid), among them the type of the infrasubspecific form *minaya* AGENJO, 1941 (and therefore, according to the I.C.N.Z., a synonym of *arenoflavida* SCHAWERDA), was examined. The whole material of the private collection of the third author (30 specimens of *E. arenoflavida* SCHAWERDA and 12 of *E. depuncta* LINNAEUS) was dissected and the genitalia were studied. Some specimens from other private and public collections (among them, the collections of the Instituto Alaves de la Naturaleza, Alava, and of the Sociedad Aranzadi, San Sebastian) were also studied.

The genital analysis method used by the third author was the habitual one, many times described in the literature for this type of studies. For everting vesicae penis and extending bursae copulatrix the method explained by LAFONTAINE & MIKKOLA (1987) was used.

Results — As pointed out in VARGA et RONKAY (op. cit.) the external differences between *E. depuncta* and *E. arenoflavida* are conspicuous (see also plate 5, Figs 55 and 56 of CALLE 1983). The following genitalic analysis made it that the genitalia (i.e. of the same general type) are very similar, as expected, but show a number of constant major and minor differences in its features, which could be briefly summarized as follows:

Male genitalia (Figs 22—23) — Major differences:

E. depuncta: diverticulum vesicae broader; dorsal sclerotized lamina at distal end of aedeagus more or less subrectangular, with 15—25 rows of dorsal and lateral spicules.

E. arenoflavida: diverticulum vesicae narrower; dorsal sclerotized lamina at distal end of aedeagus, shapened to its distal part, with 3—5 rows of dorsal spicules.

Minor differences:

E. depuncta: aedeagus longer and thinner, more curved; spinulose field of vesica more sclerotized and expanded; cornutus a bit shorter; valva more elongated; harpe broader and less curved; outer process of harpe longer and narrower.

E. arenoflavida: aedeagus shorter and broader, less curved; spinulose field of vesica lest sclerotized and expanded; cornutus a bit longer; valva shorter and heavily convexed in its central part, both in costal and anal margins; harpe narrower and more curved; outer process of harpe shorter and broader.

Female genitalia (Figs 24—25) Major differences:

E. depuncta: cervix bursae separated from corpus bursae very slightly; corpus bursae with a well-visible posterior lobe in front of cervix bursae.

E. arenoflavida: cervix bursae more prominent; posterior lobe of corpus bursae less developed.

Minor differences:

E. depuncta: ostium bursae a bit broader; corpus bursae larger, longer and broader.

E. arenoflavida: ostium bursae a bit narrower; corpus bursae not so large, shorter and narrower.

Discussion — In the preceding table "major differencis" mean differences in structures involved directly in the interaction, i.e. during copulation. The tip of the aedeagus and the proximal part of vesica with lamella antevaginalis, the ductus bursae and the posterior third of the corpus bursae (i.e. in "locking"), and the way of deposition and reception of the spermatophore may evidence mechanical isolation between the two taxa, and are therefore differences of specific level. "Minor differences" are divergences in structures with no direct usage in the mentioned copulatory mechanisms and therefore lacking of significance in the speciation process (secondary characters), or in structures involved directly in the mentioned mechanisms but less differentiated between the two taxa. The criteria for discriminating these characters are inferred from the "lock-and-key theory" (for Noctuidae, see e.g. LAFONTAINE et MIKKOLA op. cit., and bibliography cited there).

In spite of the observed differences, the genitalia of *E. depuncta* LINNAEUS and *E. arenoflavida* SCHAWERDA show a great number of similarities: unci, tegumina, fulturae inferiores, sacculi and vincula in the male genitalia and papillae anales, ostia bursarum and ducti bursarum in the female genitalia seem to be almost identical in both taxa. Vesica penis is also everted ventrally in both species, and its form may be called, using the term of VARGA et RONKAY (op. cit.), horseshoe-shaped; although this is characteristic of all the *Metagnorisma* VARGA et RONKAY, 1987 species.

The data taken by the third author from the labels of the examined material, the results of his personal captures and the bibliographical data shows that *E. depuncta* LINNAEUS lives only in the Pyrenean chain in the Iberian area, principally in warm slopes and more or less thermic valleys of the Central and Eastern Pyrenees. On the other hand, *E. arenoflavida* SCHAWERDA is distributed widely throughout the Iberian Peninsula, much more than the map in CALLE (1983: map 55) shows: it seems to be not very abundant, but it has been captured in localities from Galicia to the Basque Depression, in the Southern shore of the Navarran (Western) and Aragonian (Central) Pyrenees, in Portugal, in the whole Central Plateau and in the Betic and Penibetic Mountains (Andalusia). According to FIBIGER (in print), who considers *E. arenoflavida* SCHAWERDA as subspecies of *E. depuncta* LINNAEUS, the former one lives in Morocco, too (see in RUNGS 1981 as *E. "depuncta meridionalis* DANEHL (sic!), 1925"). *E. arenoflavida* SCHAWERDA is, then, an Atlanto-Mediterranean (West-Mediterranean) species.

During the night of August, the 9th, 1984, one male of each of each species were captured by the third author at the same place: a 250 W mercury vapour lamp of the street lighting in a Southern Pyrenean valley (Valley of Eriste), in a town called Benasque (Huesca Province, Aragonia). This fact proves the partial sympatry of the two taxa and, as mentioned above, supports the consideration of *E. arenoflavida* SCHAWERDA as a species distinct from *E. depuncta* LINNAEUS.

Conclusions — Considering the constancy of the mentioned morphological differential characters in all the studied specimens and the partial sympatry, we can regard *Eugnorisma arenoflavida* (SCHAWERDA, 1934) as a distinct species; having in mind the appointed morphological similarities, *E. depuncta* and *E. arenoflavida* could be considered two very closely related species resulting of a Pre-Pleistocenic splitting.

II. ZOOGEOGRAPHY

Although the present survey is based on the large materials of several important European collections, it is obvious, that the distribution of most *Eugnorisma* species is incompletely and unevenly known. The data are lacking from some Asian regions of zoogeographical importance. Only *E. depuncta* LINNAEUS has a wide, mostly European range of distribution; its sibling species, *E. arenoflavida* SCHAWERDA is confined to the central part of the Iberian peninsula and the Atlas Mts. (see the previous chapter). Other species of the genus display an irradiation only to Eastern or South-Eastern Europe. *E. pontica* STAUDINGER reaches its northwestern border at the southeastern gate of the Carpathian Basin, while *E. caerulea* WAGNER, *E. chaldaica* BOISDUVAL, *E. puengeleri* VARGA et RONKAY and — last but not least — the generotype, *E. insignata* LEDERER occur only in the eastern steppe area of Southern Russia. All the species mentioned here have also a wide Central Asian-Southern Siberian distribution, principally in arid mountainous and steppe belts. Other species of wide distribution do not penetrate into the steppe areas, e.g. *E. eminens* LEDERER or *E. trigonica* ALPHERAKY. Numerous *Eugnorisma* species are strictly localized to some, mainly mountainous regions of Western or Central Asia. The apparent discontinuities in their distribution are originated only from our poor knowledge in some cases (e.g. *E. rafidain* BOURSIN, *E. tamerlana* HAMPSON, *E. chaldaica* BOISDUVAL, *E. variago* STAUDINGER). However, the subspeciation of some stenochorous species (*E. spodia* PÜNGELER, *E. deleasma* BOURSIN, *E. asad* BOURSIN, etc.) suggests that some *Eugnorisma* species must have true disjunctions of evolutionary significance, too.

True stenochorous species seem to occur in (at least) three, fairly distinct regions. *Eugnorisma asad* BOURSIN, *E. conformis* SWINHOE, *E. eucratides* BOURSIN and *E. goniophora* VARGA, RONKAY et HACKER sp. n. (see the description part) are restricted to the Western Transhimalayan mountains including E Afghanistan (countries of monsoonic influence!). Two of them belong to the *E. insignata* species-group — *asad* BOURSIN and *conformis* SWINHOE —, the two other consist of a pair of species, closely related to each other and perhaps to the hypothetical ancestors of the genus as well.

Some other stenochorous species are confined to the Tien Shan—Alai mountain system (including the Hissaro-Darwaz Mts.) with some irradiations

to the Hindukush and the W Pamir Mts.: *E. deleasma* BOURSIN (2 ssp.!), *E. gaurax* PÜNGELER (2 ssp.!), *E. variago* STAUDINGER (2 ssp.!). The third group contains the E Anatolian-Armenian-W Iranian species: *E. enargiaris* DRAUDT, *E. rafidain* BOURSIN and *E. heuristica* VARGA et RONKAY; all without any subspeciation. *E. semiramis* BOURSIN (SE Turkey, N Iraq + W Iran — "Kurdistan") and *E. spodia* PÜNGELER (Kopet Dagh + W Tien Shan) seem to be bicentric with geographic subspeciation.

Some further, very isolated species occur in Kashmir (*E. fuscisigna* HAMPSON), in Tibet (*E. coryphaea* PÜNGELER) and in W China (*E. xestioides* HAMPSON); each is taxonomically rather peculiar and isolated from other taxa of the genus.

On the basis of the distribution of the stenochorous species, we can state some types of distribution in *Eugnorisma* species, as follows (Figs 71—77):

1. Species with prevailing arboreal distribution.

1.1. Atlanto-Mediterranean: *E. arenoflavida* SCHAWERDA.

1.2. Ponto-Caspian (expansive): *E. depuncta* LINNAEUS; with Pre-Litorina exclaves in the British Isles and S Scandinavia.

1.3. Ponto-Mediterranean (with peripheric subspeciation): *E. pontica* STAUDINGER.

2. Species with prevailing non-arboreal (oreal and/or eremic) distribution.

2.1. E Anatolian (monocentric): *E. enargiaris* DRAUDT.

2.2. E Anatolian-Iranian (without subspeciation): *E. rafidain* BOURSIN, *E. heuristica* VARGA et RONKAY.

2.3. E Anatolian-Iranian (bicentric): *E. semiramis* BOURSIN.

2.4. E Anatolian-Iranian-Turkestanian (polycentric): *E. caerulea* WAGNER (including ssp. *kurdistana* HACKER, KUHNA et GROSS and ssp. *isabellina* VARGA et RONKAY, with steppe exclaves), *E. insignata* LEDERER (including f. *leuconeura*, with steppe exclaves), *E. eminens* LEDERER (without steppe exclaves).

2.5. Turkmenian-Turkestanian (bicentric): *E. spodia* PÜNGELER.

2.6. Turkestanian (monocentric): *E. chaldaica* BOISDUVAL (with steppe exclaves), *E. puengeleri* VARGA et RONKAY (with steppe exclaves), *E. trigonica* ALPHERAKY (purely xeromontane), *E. tamerlana* HAMPSON (mostly eremic).

2.7. Alai-Tien Shan-bicentric: *E. variago* STAUDINGER, *E. gaurax* PÜNGELER.

2.8. E Afghan: *E. deleasma* BOURSIN, *E. atrabaelbops* VARGA.

2.9. E Afghan-Transhimalayan: *E. asad* BOURSIN (bicentric), *E. conformis* SWINHOE, *E. eucratides* BOURSIN, *E. goniophora* VARGA, Ronkay et Hacker.

From this outline we can conclude that

— the size of the area shows no close connection to the subspeciation (because the subspeciation is usually a consequence of the area regression — refugial vs. peripheric isolation);

— two pairs of closely related species (*E. depuncta* LINNAEUS—*E. arenoflavida* SCHAWERDA, *E. gaurax* PÜNGELER—*E. deleasma* BOURSIN) are strictly allopatric, since the sibling species are overlapping in two other cases (*E. insignata* LEDERER—*E. conformis* SWINHOE, *E. eminens* LEDERER—*E. atrabaelbops* VARGA); one of each pair is polycentric-expansive, the other one is stenochorous.

Some *Eugnorisma* species are abundant, in their habitats (e.g. *E. caerulea* WAGNER, *E. insignata* LEDERER, *E. pontica* STAUDINGER in E Turkey and Armenia; *E. eminens* LEDERER, *E. insignata* LEDERER and *E. variago* STAU-

DINGER in NE Afghanistan: *E. asad* in NW Pakistan, etc.) but we known some species which never have been collected in great numbers (*E. rafidain* BOURSIN, *E. atrabaelbops* VARGA, *E. gaurax* PÜNGELER, etc.). The most typical habitats of the *Eugnorisma* species are arid or semi-arid mountains with xerophytic vegetation, often covered with loose stands of scrub-like sclerophyllous forests (e.g. hard-leaved *Quercus*, *Juniperus*, different *Rosaceae*, etc.).

III. PHYLOGENETIC CONSIDERATIONS

The genus *Eugnorisma* BOURSIN, 1946 was characterized in the original description and in some further papers (BOURSIN 1946, 1954) as closely related to *Protexarnis* MCDUNNOUGH, 1929, based on the presence of a precostal lobe which must be homologous (sec. BOURSIN) with the 'digitus' of the *Protexarnis* species. In the first part of our revision we gave a more detailed redescription of the genus, from which only the following items are necessary to mention. Frons usually smooth, semiglobular, without any mark of a more sclerotized protuberance, like 'Triphaenini' genera sensu KOZHANCHIKOV (1937). Fore tibiae are longer than the first joint of the tarsus; the claw-like appendix of the fore tibiae has nearly the same position as in *Xestia* (s. l.) or *Paradiarsia* (s. l.) species. In the male genitalia (Figs 49—70) the cucullus and the corona are usually reduced, the harpe is elongate, often falcate, the aedeagus is with a strongly sclerotized distal shield of the carina covered by tooth-like thorns or transformed into a hook-like emergence. The vesica is spatious, globular, semiglobular or saccate, with a proximal or medial diverticulum, terminated in a spine-like, not bulbed cornutus. The females of the *Eugnorisma* species usually have a strongly sclerotized ostium and ductus bursae, the latter is folded or plicate. All these features contradict the taxonomic relegation suggested by BOURSIN. The genus *Protexarnis* is closely allied to *Parexarnis* BOURSIN, 1946 and to some other genera (e.g. *Ledereragrotis* gen. n. for *multifida* LEDERER and *difficilis* ERSHOV; *Hemiexarnis* BOURSIN and *Dichagyris* LEDERER s. l.). It means, that *Protexarnis* belongs to the tribe Agrotini sensu KOZHANCHIKOV (*versus* FRANCLEMONT et TODD 1983) and the reduction of the corona may be only a convergent character. *Protexarnis* species usually have a long, tubular vesica with helicoid coiling; the ostium and the ductus bursae are less sclerotized, the bursa is bilobate (as in *Parexarnis*, *Dichagyris*, etc.). All these facts confirm our opinion that the genera *Eugnorisma* and *Protexarnis* (and *Hemiexarnis*, *Parexarnis*, etc.) cannot be closely related to each other.

In order to the correct phylogenetic relegation of the genus *Eugnorisma* we have to analyze all features, mentioned in the characterization of the genus. Some of them (e.g. the smooth frons, the reduced cucullus and corona and the number of rows of the spines on the tibiae and tarsi) do not have any

phylogenetic significance because of their convergential appearance in numerous genera of Noctuinae. We have already pointed out that the uniform configuration of the vesica, the shield-like sclerotized plate of the carina and the heavily sclerotized ostium and ductus bursae are the mean indications supporting the phylogenetic coherence of the genus. At the same time these features suggest the more close relationship to the genera *Eugraphe* HÜBNER, 1821, *Paradiarsia* MCDUNNOUGH, 1929, and, at all, to the *Xestia*-complex. All these genera have globular or saccate vesica which is strengthened at the sinus penis by one (or two) dentated crest(s). We think that the sclerotized shield of the carina in the *Eugnorisma* species can be derived from this structure and, therefore, it can be considered as a synapomorphic feature for all *Eugnorisma* species. The presence of a lateral pollex is a common character of numerous *Xestia* s. l., *Paramathes* BOURSIN, *Eugraphe* and *Paradiarsia* s. l. species the heterogeneity of the genus *Paradiarsia* is an obvious fact but this problem can be solved only in the scope of a Holarctic revision), however it can disappear in some species and/or species groups, as a convergent reduction (see subg. *Metagnorisma* VARGA et RONKAY, 1987, *Eugraphe* (*Hypernaenia*) *denticulata* WARREN, *Ammogrotis suavis* STAUDINGER, *Paradiarsia litoralis* PACKARD, 'Paradiarsia' *sobrina* BOISDUVAL, etc.). The reduction of the lateral diverticulum and cornutus can be observed in some *Paradiarsia* and in the most *Xestia* species, and — within the genus *Eugnorisma* — in two distinct species, *E. enargiaris* DRAUDT and *E. semiramis* BOURSIN. The spinulose field near to the ductus ejaculatorius occurs regularly in *Eugnorisma* species. It can serve as a distinctive feature as opposed to *Eugrapha*, *Paradiarsia*, *Paramathes*, *Xestia*, etc. However, it is difficult to decide, whether its missing in two, closely related *Eugnorisma* species (*E. eucratides* BOURSIN and *E. goniophora* VARGA, RONKAY et HACKER) is a result of a reduction or it is a primary common feature with the related genera. The transformation of the granulous structure of the vesica into such a spinulose field shows hardly any well-defined phylogenetic trend; it may appear and disappear in other, not closely related groups (e.g. *Parexarnis*, *Protexarnis*), too. Therefore, the exact sister-group relationships of the mentioned genera can be analyzed only within a complete revision of the tribe Noctuini. Presumably, *Eugraphe* (or at least one species group within *Eugraphe*) may be the closest relative of *Eugnorisma*, but some species of the small, heterogeneous genus *Paramathes* BOURSIN, 1954 (e.g. *P. tibetica* BOURSIN, *P. perigrapha* PÜNGELER) also have to be taken into consideration.

The relations within the genus *Eugnorisma* are far less confused. Only one species is difficult to be judge because of the lack of the male, *E. coryphaea* PÜNGELER. Two species seem to form a special group, missing the spinulose field of the vesica. Based on the position and shape of the cornutus, we think

that *E. xestioides* HAMPSON must be their closest relative. The subgenus *Metagnorisma* described in the first part forms an other compact, well-defined group within the genus. Because they have three important synapomorphies with the other species of the genus *Eugnorisma* (the globular vesica with the spinulose field and the dentated lamina of the carina) we cannot separate it on generic level. The reduction of the pollex can be regarded as an autapomorphy of this subgenus, its role is seemingly adopted by the strongly sclerotized base of the harpe which is relatively short and broad. Other two features: the presence of signa and the less sclerotized ostium bursae seem to be rather plesiomorphic ones, disappeared in other *Eugnorisma* species.

Another important apomorphic feature of the genus is the pollex covered by scale-like macrotricha, being characteristic of two species groups (*insignata-and trigonica*-group). The very long, falcate harpe and the strong, spinulose shield of the carina are the synapomorphies of the species *E. chaldaica*, *E. puengeleri* and *E. tamerlana*; since the hook-like transformation of this shield seems to be apomorphic for the *spodia-caerulea* species-pair. The disappearance of the large diverticulum and the cornutus in *E. enargiaris* and *E. semiramis* — as they are very dissimilar in all other features — must be only an accidental congruence.

All the mentioned characteristics are considered in the cladogram (Fig. 78) from which two species are omitted: *E. fuscisigna* HAMPSON (because we had no opportunity to study any specimen) and *E. coryphaea* PÜNGELER (because its taxonomic relegation is uncertain as the male is unknown).

The *Eugraphe* species differ from *Eugnorisma* in some essential points: they have a bulbed cornutus sitting usually on a very short diverticulum (or missing, see *E. ornata* STAUDINGER) and the high, narrow tegumen. As the peculiar species, *miniago* FREYER shows both of these features but nothing from the *Eugnorisma*-apomorphies, we consider it as a modified member of the genus *Eugraphe*. Furthermore, 'Eugraphe' *suavis* STAUDINGER must be excluded from this genus because it has elongate and acute valvae without any pollex, the harpe is very short and thick and it has a fairly typical clavus (as a plesiomorphic character). In addition, the moth has a somewhat curious external appearance. Therefore we suggest the restitution of the original, often misidentified (KOZHANCHIKOV 1937) genus, *Ammogrotis* STAUDINGER, 1895, which contains only this single known species.

Spatio-temporal aspects of the evolution in *Eugnorisma* — The phylogenetically oldest members of the genus are strictly localized, relict-like species, occurring in some isolated mountainous regions of E-SE Asia having more or less intensive monsoonic influence. They are presumable reductional relicts (UDVARDY 1969) and their former distribution is confuse. Some other, also relict-like stenochorous species occur in E Anato-

lia-Armenia and Central Asia, respectively. However, they are relic species only in a zoogeographical sense, because they can be characterized by some (partly convergently derived) characters as the lack of the cornutus in *E. enargiaris* and *E. semiramis*, the appearance of a pale yellowish ground colour versus the greyish one in *E. heuristica*, *E. enargiaris*, *E. variago*, etc.

Some of the stenochorous species reach a NW border of their distribution at the more cold-continental mountains of N and E Afghanistan, e.g. *E. conformis* and *E. asad* does not occur either in the main chain of the Hindukush Mts. or in the NE (Badakhshan) edge of the country (Mts. Darwaz and the Pamir). At the same time, some expansive members of the genus, which are distributed widely in the arid continental Central Asiatic Mts. (*E. insignata*, *E. eminens*, *E. puengeleri*) are able to reach the mountains of E Afghanistan (Nuristan) and NW Pakistan, too. Other species have a southern limit in the cold-continental NE Pamir and the Hissaro-Darwaz region (*E. deleasma*, *E. variago*). Others do not occur southwards from the Alai and W Tien Shan Mts (*E. spodia psammochrea*, *E. gaurax*, *E. chaldaica*). From the Central Asiatic species only *E. tamerlana* shows an adaptation to desert habitats (in Transcaspia, Turkmenia and Uzhbekistan).

The evolution and distribution of the species groups having macrotricha on the pollex has particular importance. It seems that this group also differentiated in the semi-arid mountains of Central Asia, perhaps mostly in the W Tien Shan, where special types of xerophilous broad-leaved forests grow ('apple-forests'). One part of these species — the *trigonica* group — remained only in the arid — semi-arid high mountains. The distribution of the more recently dispersed, 'successful' species, *E. trigonica* covers nearly exactly the entire area of the purely allopatric species-pair *E. gaurax*—*E. deleasma*. The latter two show a marked tendency for evolving into geographically isolated endemic races: *E. deleasma reducta* — E Hindukush, *E. deleasma hissarica* — Hissaro-Darwaz Mts., *E. deleasma deleasma* — Pamir; *E. gaurax gaurax* — W Tien Shan, *E. gaurax funebris* — Alai Mts. The other part of the species — the *insignata* group — is more vigorously differentiated; one species is also widely distributed in the steppe areas (*E. insignata*). The most conspicuous species of this group, *E. semiramis*, shows a western, localized (disjunct?) distribution in the "Kurdistan" triangle of Turkey, Iraq and W Iran and Farsistan (Iran), respectively. Its genital configuration suggests that the subgenus *Metagnorisma* can be derived from a similar but more ancient western wave of dispersal, passing an important biogeographical filter during the Neogene (Upper Miocene) xerophilization of the Eastern Mediterranean vegetation. These *Metagnorisma* species show reductional tendencies in the male genitalia and connected to some (semi-open) xeric arboreal habitats. It seems to be evident that their dispersal into the W Palaearctic and their connection to (at least partly) xerophilous forest or scrub-forest habitats depends closely

on each other. The species, witnesses of the more ancient speciation wave of this subgenus, are obviously relict-like ones (*E. arenoflavida* in SW Europe and NW Africa, *E. heuristica* and *E. rafidain* in Asia Minor). The more continuous, Ponto-Mediterranean distribution of *E. pontica* with peripheric subspeciation in the Armenian plateau, W Iran and Transcaspia may be a more recent (Upper Pleistocene and postglacial) phenomenon; similarly to the formation of the nearly continuous European range of *E. depuncta* from a Ponto-Caspian arboreal center. The expansion of *E. depuncta* must have taken place before the Litorina transgression, because the species could reach the British Isles and S Scandinavia before the major Holocene re-forestation and the expansion of the humid, closed, broad-leaved forests of *Carpino-Fagetea* which have begun in the Atlanticum. *E. arenoflavida* is surely not a peripheric isolate of this very young postglacial expansion but a relict species, an early stage of the evolution of the subgenus, lacking the connection to the Eastern Mediterranean relatives.

The occurrence of some C Asiatic—South Siberian species at the easternmost steppe belts of Europe can be regarded as an other recent distributional phenomenon, connected to the postglacial history of the zonal steppe biome. It is supported by the fact that one can observe no subspeciation in these cases. On the other hand, it is a well-known phenomenon, that zonally distributed plant and animal species of the E-SE steppe zone can be derived from relatives inhabiting the mountainous steppe (xeromontane) habitats of the vast Central-Asiatic Mts. (VARGA, 1975, 1989).

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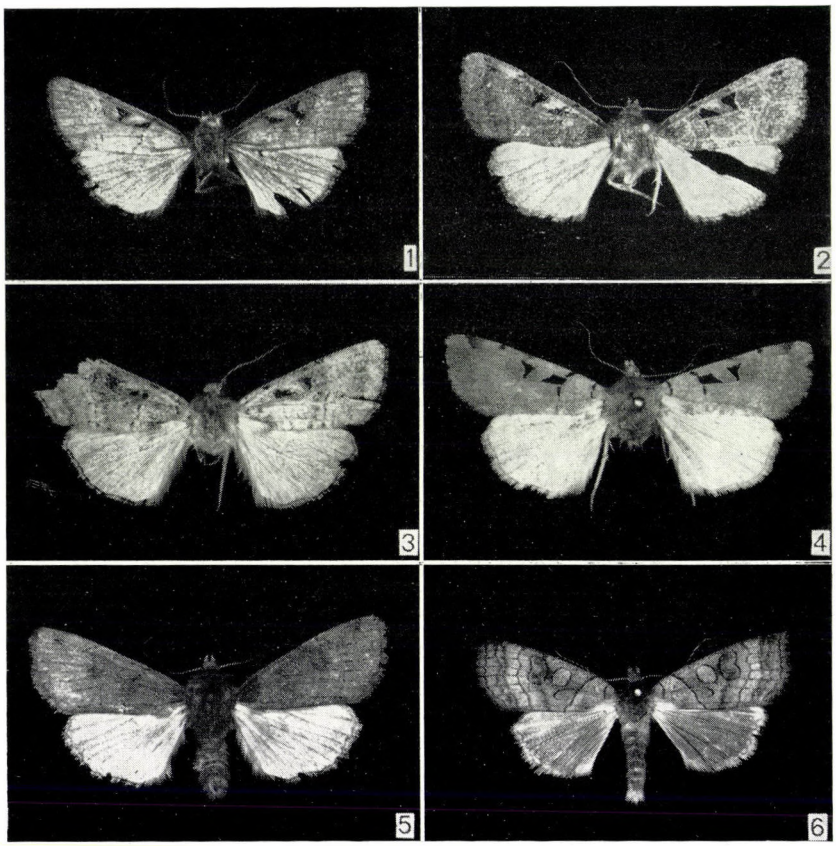
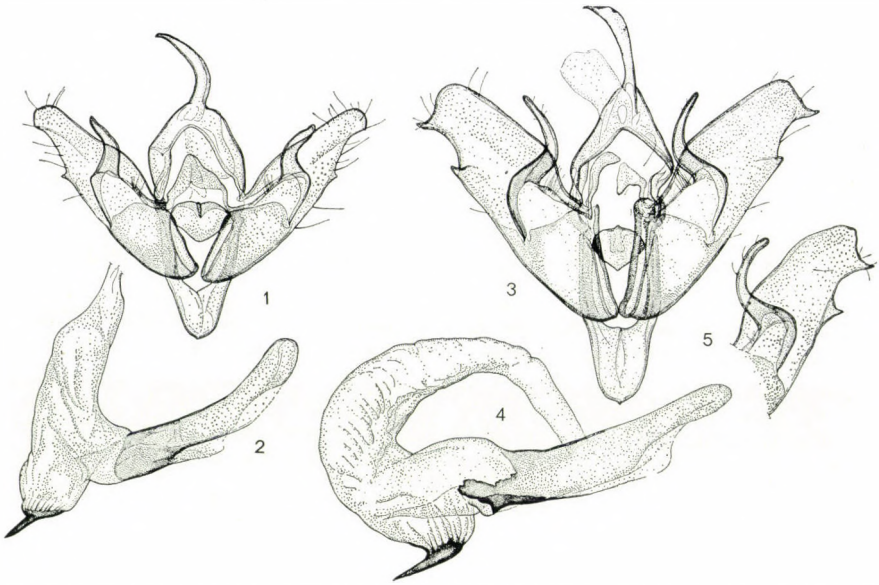
Plate I



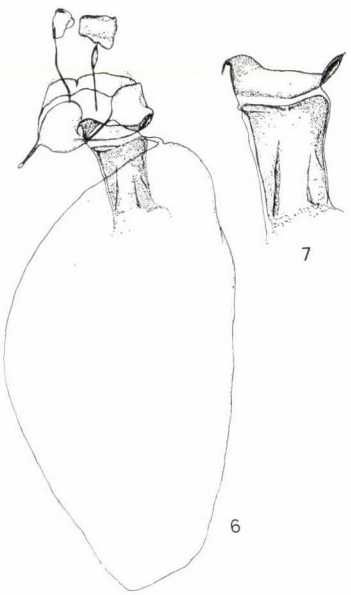
1. *Eugnorisma goniophora* sp. n. Holotype, Pakistan. 2. *Eugnorisma goniophora* sp. n. Paratype, Pakistan. 3. *Eugnorisma eucratides* BOURSIN: Afghanistan, Nuristan. 4. *Eugnorisma caerulea rubicunda* ssp. n. Paratype, Sibiria. 5. *Eugnorisma asad plantei* ssp. n. Paratype, Pakistan, Babusar Pass. 6. *Eugnorisma xestioides* HAMPSON: China, N Yuennan.

Plate II

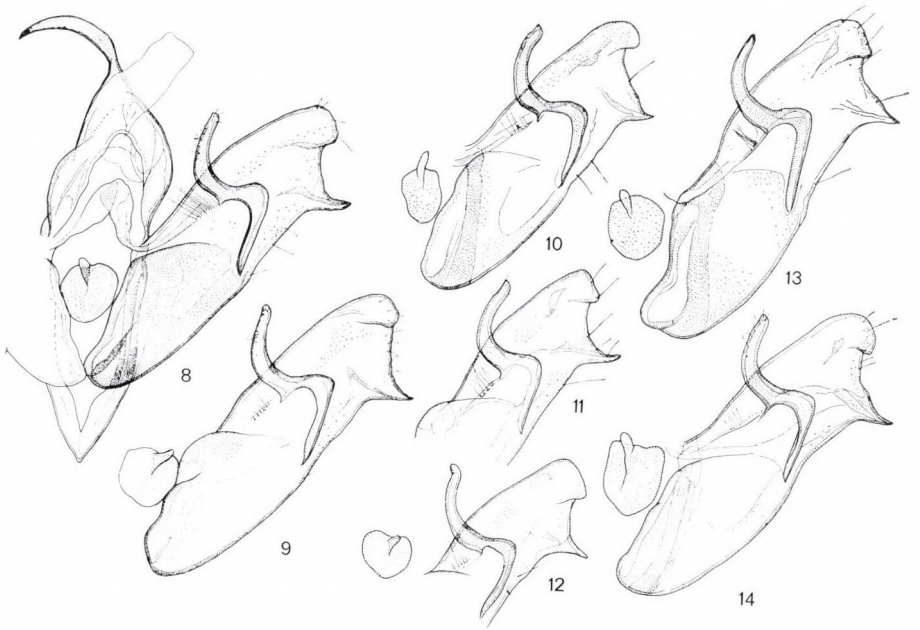
7. *Eugraphe funkei* STAUDINGER: Afghanistan. 8. *Eugraphe ornata* STAUDINGER: Afghanistan. 9. *Paleamathes tibetica* Boursin: China, Richthofen Mts. 10. 'Paramathes' *picata* BANG-HAAS: Algeria. 11. *Paradiarsia litoralis* PACKARD: Canada. 12. *Xestia* (*Anomogyna?*) *coelebs* STAUDINGER: China, Tibet (Kuku-Noor).



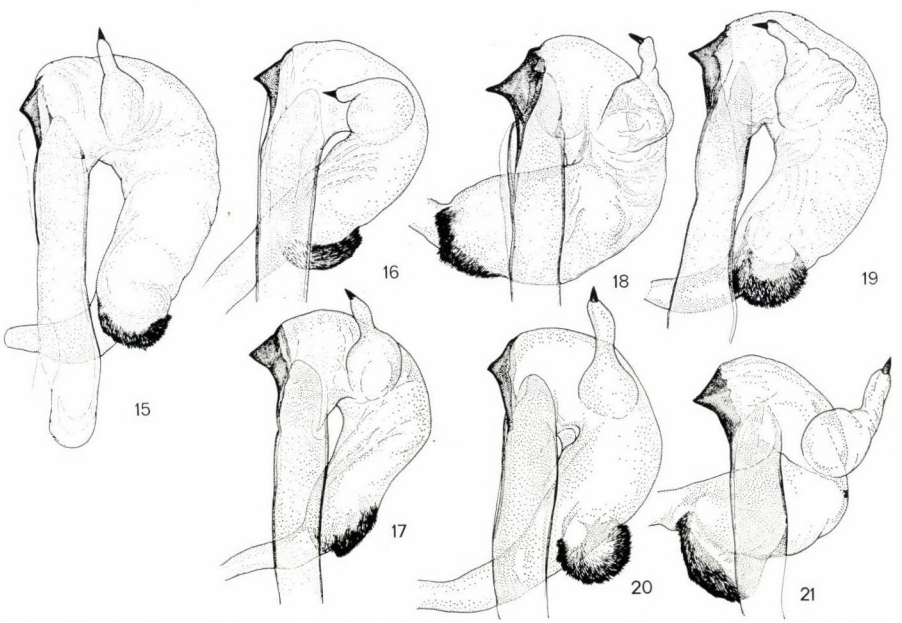
Figs 1—5. 1—2 = *Eugnorisma goniophora* sp. n. Holotype, Pakistan, 3—5 = *Eugnorisma eucratides* BOURSIN: 3—4 = Afghanistan, Nuristan, 5 = Paghman.



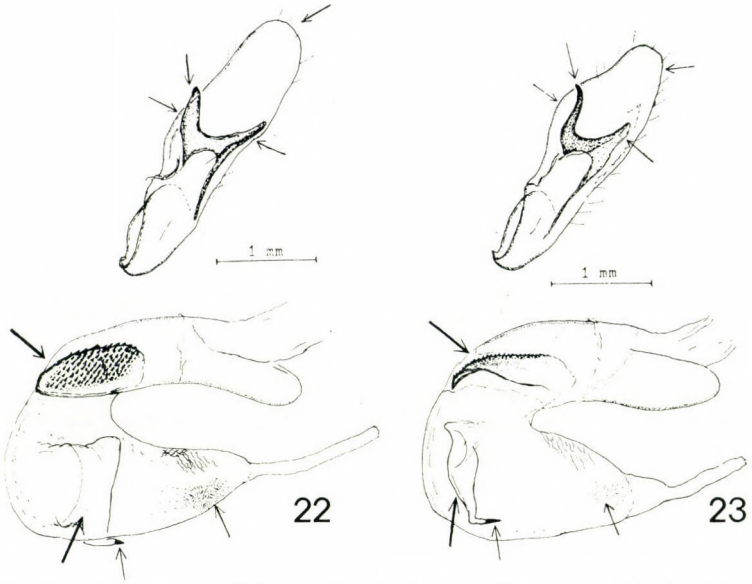
Figs 6—7. *Eugnorisma goniophora* sp. n. Paratype, Pakistan.



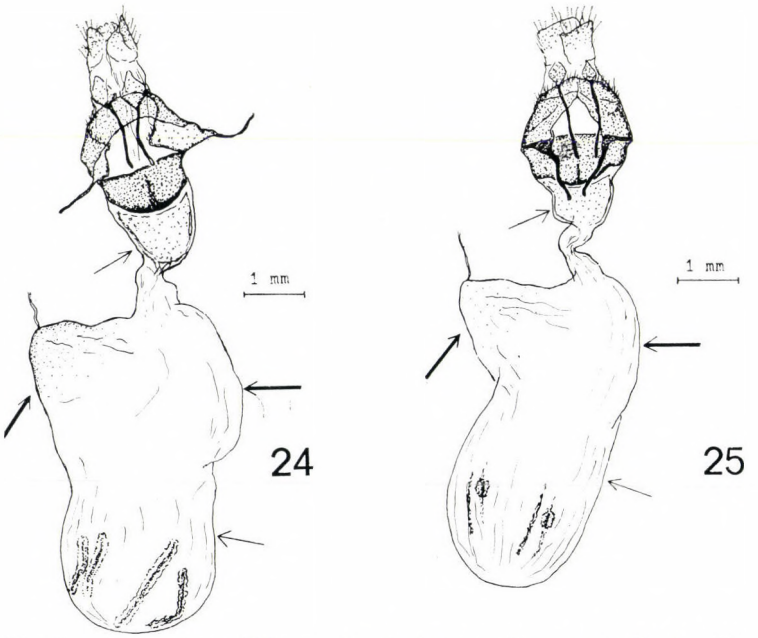
Figs 8—14. 8—10 = *Eugnorisma caerulea* WAGNER: 8 = paratype, Turkey, 9 = Turkey, Erzurum, 10 = Armenia, Geghard. 11—12 = *E. caerulea rubicunda* ssp. n. 11 = holotype, Margelan, 12 = paratype, Altai. 13 = *E. caerulea kurdistana* HACKER, KUHNA et GROSS: paratype, Turkey. 14 = *E. caerulea isabellina* VARGA et RONKAY: paratype, Iran.



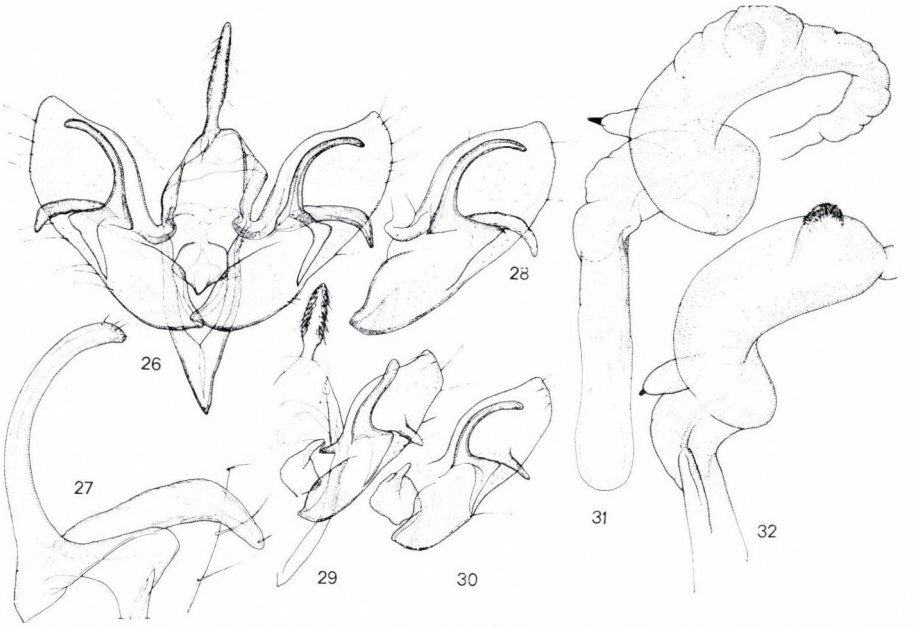
Figs 15—21. 15—17 = *Eugnorisma caerulea* WAGNER: 15 = paratype, Turkey, 16 = Turkey, Erzurum, 17 = Armenia, Geghard. 18 = *E. caerulea kurdistana* HACKER, KUHNA et GROSS: paratype, Turkey E. 19 = *E. caerulea isabellina* VARGA et RONKAY: paratype, Iran. 20—21 = *E. caerulea rubicunda* ssp. n.: 20 = paratype, Altai, 21 = holotype, Margelan.



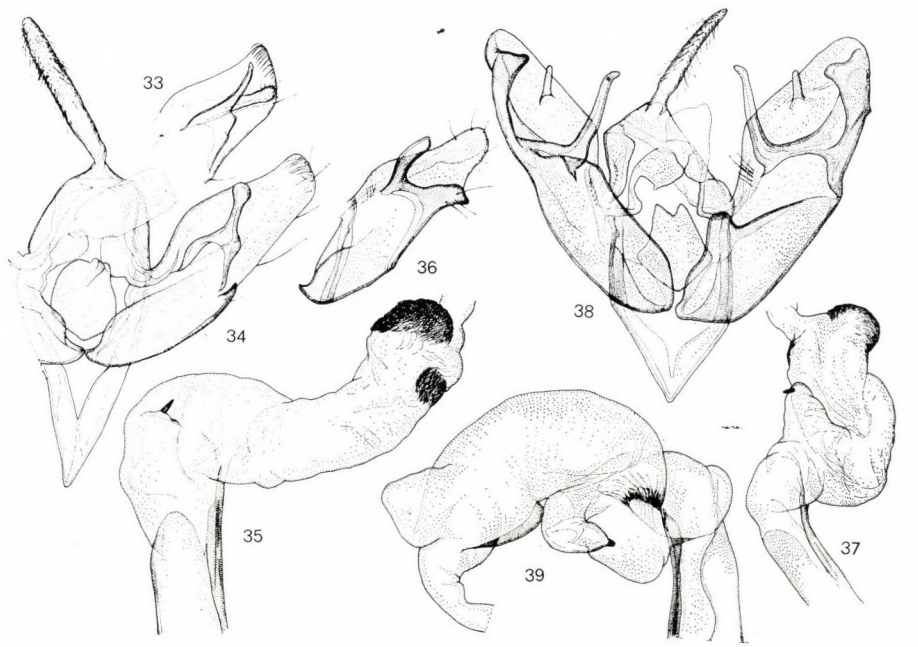
Figs 22—23. 22 = *Eugnorisma* (*Metagnorisma*) *depuncta* LINNAEUS: Spain. 23 = *E.* (*M.*) *arenoflavida* SCHAWERDA: Spain.



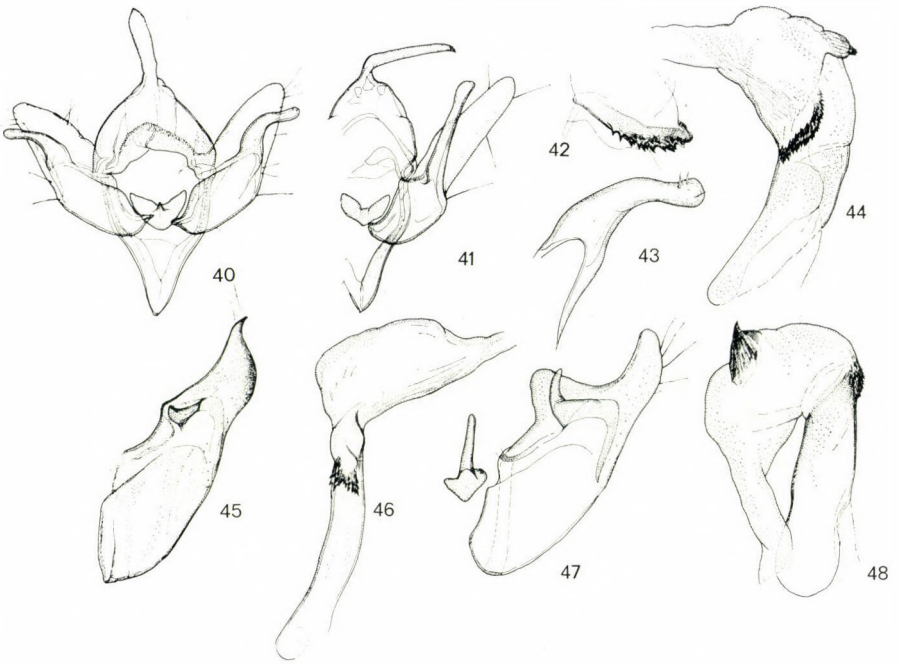
Figs 24—25. 24 = *Eugnorisma* (*Metagnorisma*) *depuncta* LINNAEUS: Spain. 25 = *E.* (*M.*) *arenoflavida* SCHAWERDA: Spain.



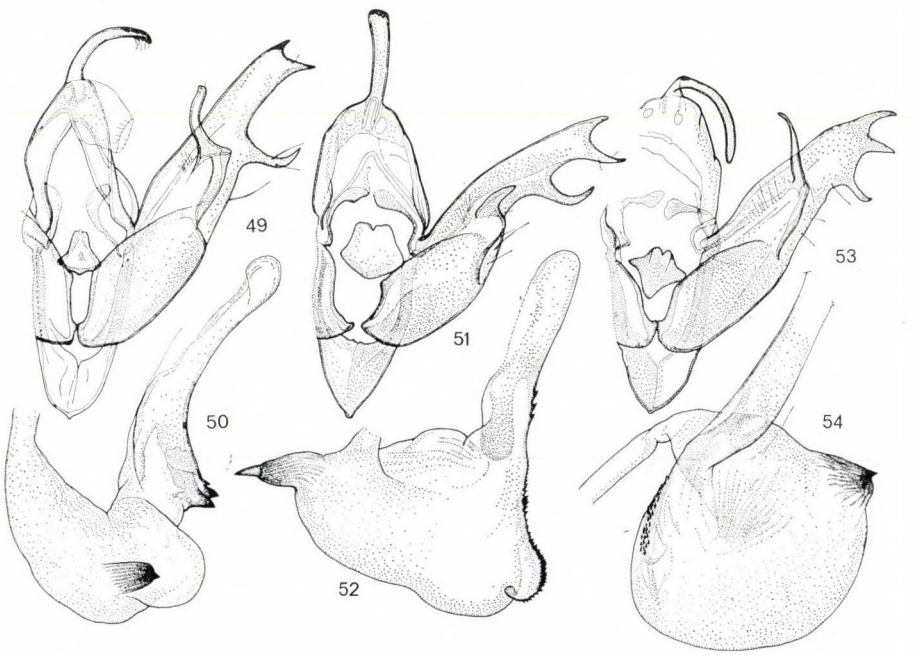
Figs 26—32. 26—28 and 31. *Ledereragrotis multifida* LEDERER: 26—27 = Alpes, 28 and 31 = Caucasus. 29—30 and 32 = *L. difficilis* ERSHOV: Mongolia.



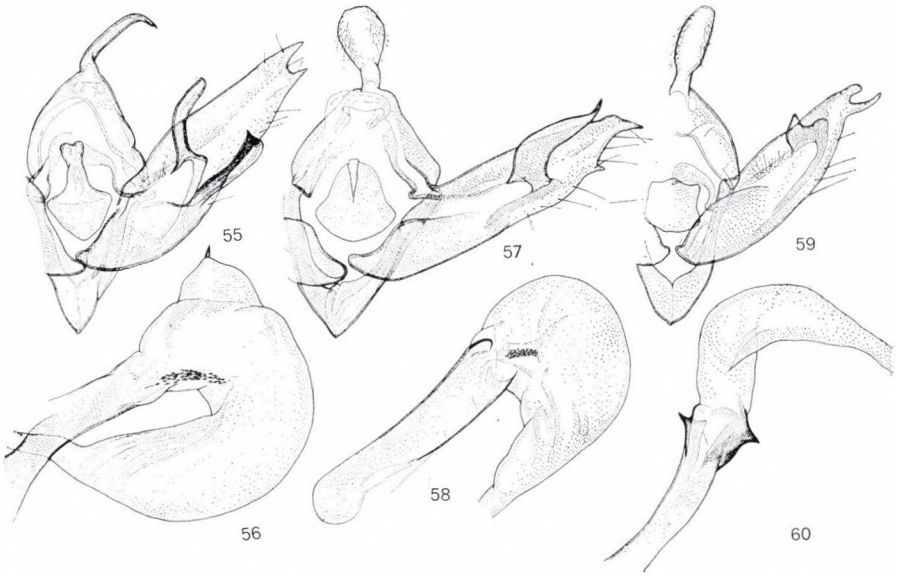
Figs 33—39. 33 = *Dichagyris grisescens* STAUDINGER: holotype. 34—35 = *Parexarnis damnata* BOURSIN: Iran. 36—37 = *Protexarnis monogramma* HAMPSON: Afghanistan, Badakhshan. 38—39 = *Protexarnis squalida* GUENÉE: Mongolia.



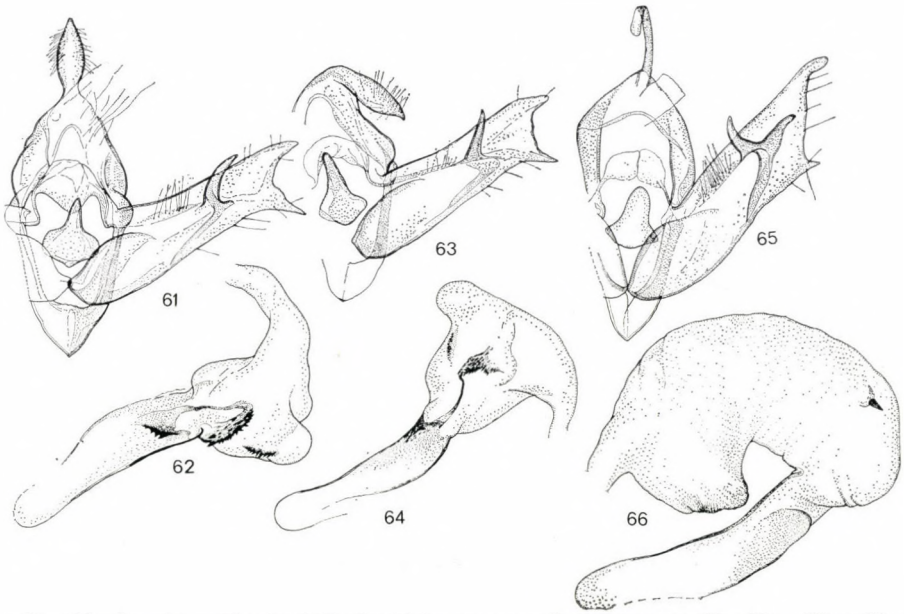
Figs 40—48. 40 and 42—43 = *Hermonassa consignata* WALKER: Nepal. 41 and 44 = *H. stigmatica* WARREN: Nepal. 45 = 46 = *Pseudohermonassa cicatricosa* GRAESER: Mongolia. 47—48 = *P. melancholica* LEDERER: Mongolia.



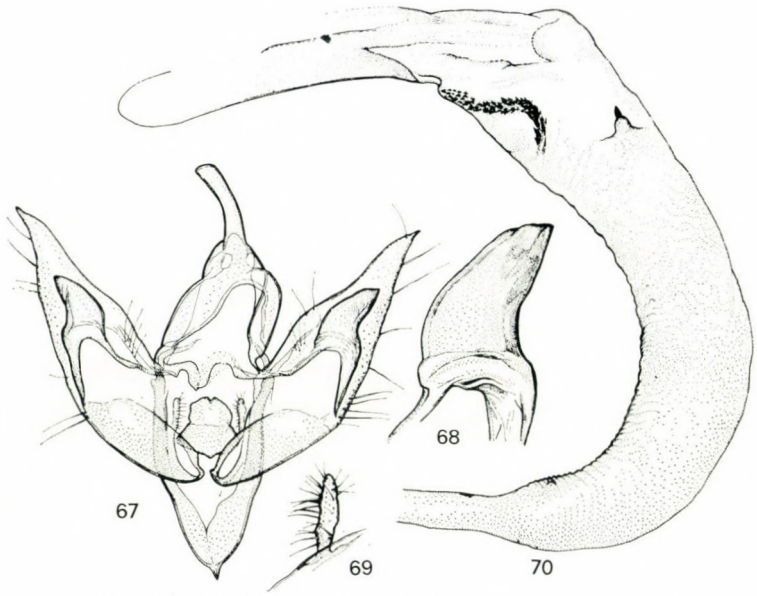
Figs 49—54. 49—50 = *Eugraphe funkei* STAUDINGER: Afghanistan. 51—52 = *E. decussa* STAUDINGER: Afghanistan. 53—54 = E. *marcida* CHRISTOPH: Turkestan.



Figs 55—60. 55—56 = 'Paramathes' *picata* BANG-HAAS: Algeria. 57—58 = *Palaeamathes tibetica* BOURSIN: China, Richthofen Mts. 59—60 = *Xestia* (*Anomogyna*?) *coelebs* STAUDINGER: China, Kuku-Noor.



Figs 61—66. 61—64 = *Xestia* (*?Pachnobia*) *senescens* STAUDINGER: 61—62 = Tien Shan, 63—64 = Kuldja. 65—66 = 'Opigena' *albifurca* ERSHOV: Mongolia.



Figs 67—70. *Ammogrotis suavis* STAUDINGER: Mongolia.

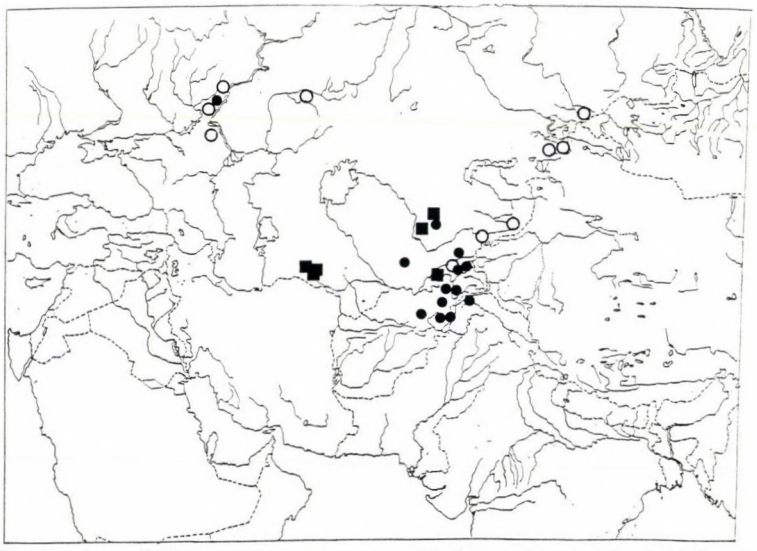


Fig. 71. Distribution of *E. tamerlana* HAMPSON (dark quadrate), *E. chaldaica* BOISDUVAL (empty circle) and *E. puengeleri* VARGA et RONKAY (full circle).

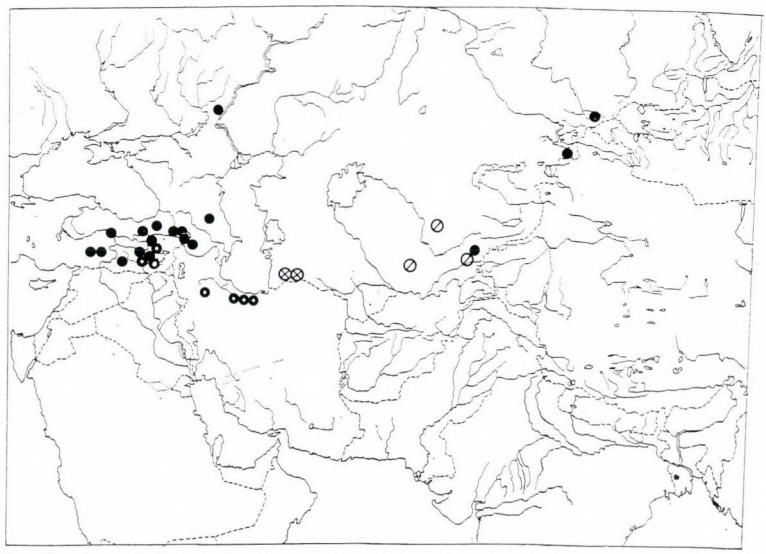


Fig. 72. Distribution of *E. spodia* PÜNGELER (large circles; the two subspecies with different marks) and *E. caerulea* WAGNER (small circles; the sspp. *kurdestana* HACKER, KUHNA et GROSS and *isabellina* VARGA et RONKAY with white centre).

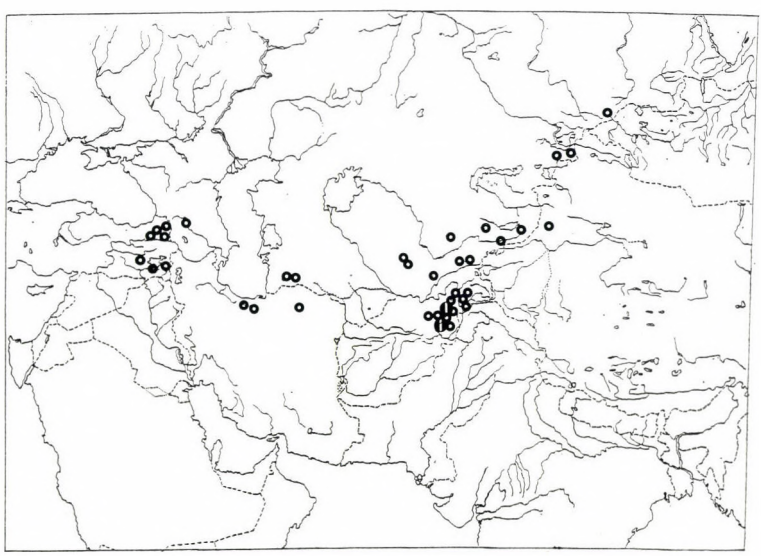


Fig. 73. Distribution of *E. eminens* LEDERER (small circle) and *E. atrabaelbops* VARGA (large circle with transverse bar).

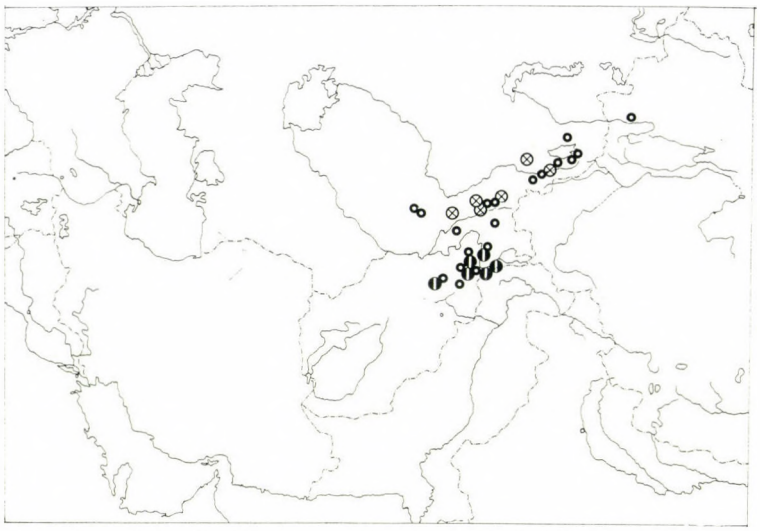


Fig. 74. Distribution of *E. trigonica* ALPHERAKY (small circles), *E. gaurax* PÜNGELER (large circles with X-mark) and *E. deleasma* BOURSIN (large circles with white bar).

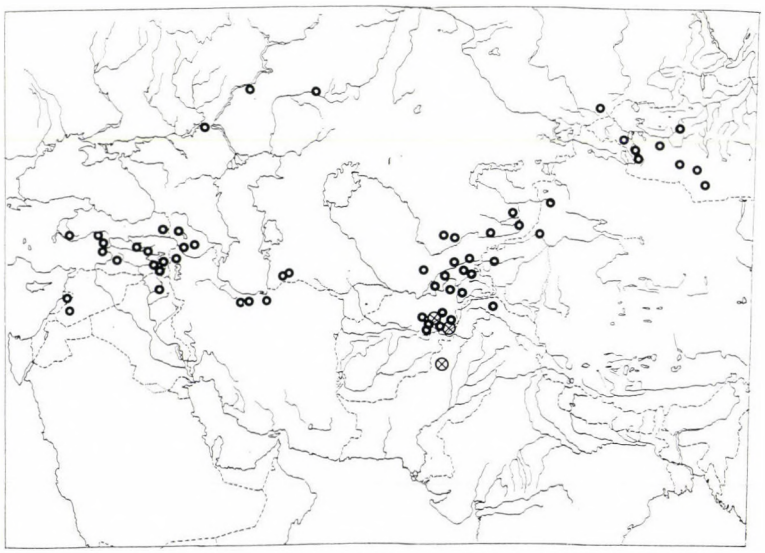


Fig. 75. Distribution of *E. insignata* LEDERER (small circles) and *E. conformis* SWINHOE (large circles with X-mark).

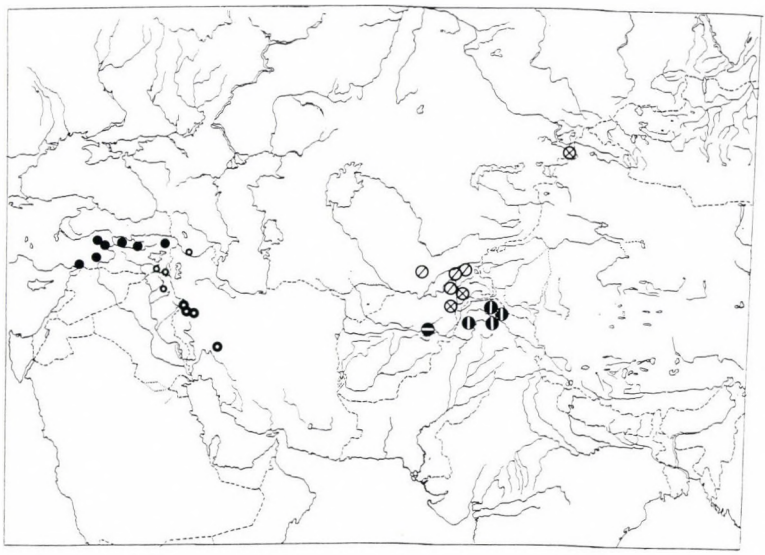


Fig. 76. Distribution of *E. enargiaris* DRAUDT (full circles), *E. semiramis* BOURSIN (nominate race marked with small circles, ssp. *farsica* BOURSIN with medium circles with white centres), *E. variago* STAUDINGER (large circles with X or /-marks) and *E. asad* BOURSIN (large circles with white transversal or longitudinal bars).

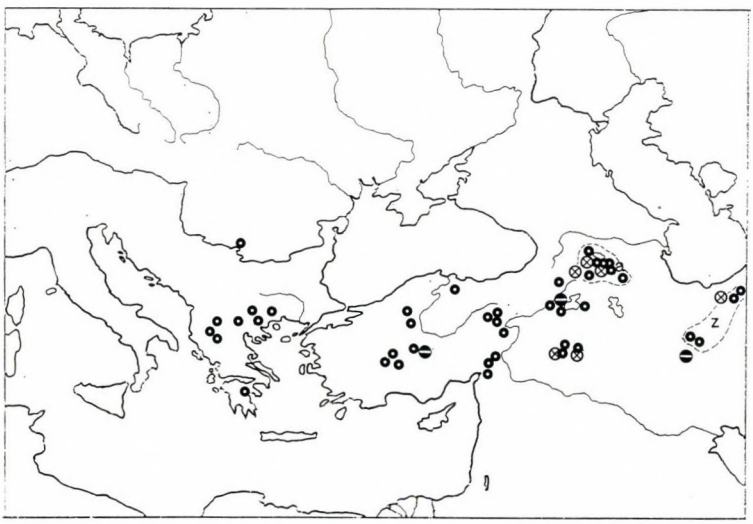


Fig. 77. Distribution of *E.* (*M.*) *pontica* STAUDINGER (small circles), *E. rafidain* BOURSIN (large circles with white bars) and *E. heuristica* VARGA et RONKAY (large circles with X-mark).

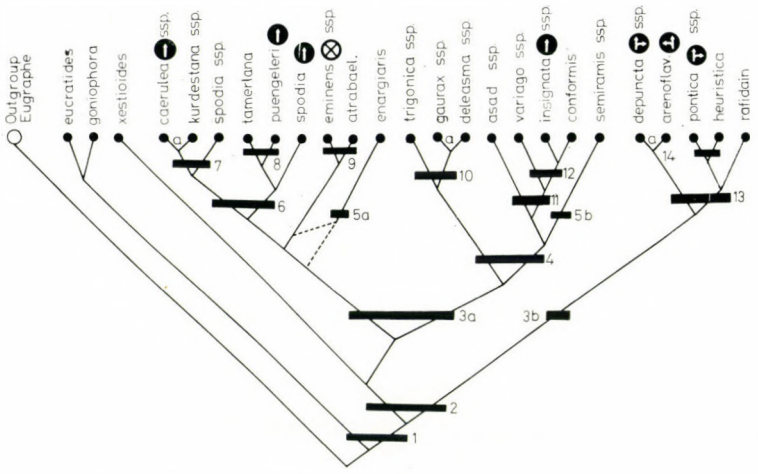


Fig. 78. The cladogram of the *Eugnorisma* species (the synapomorphies indicated by numbers and markings are as follows: 1 = diverticulum with strong cornutus, heavily sclerotized ostium and ductus bursae; 2 = spinulose field of vesica present; 3a, 3b- signum absent versus signum present, apex bursae rugulose versus apex bursae membranous; 4 = pollex covered with macrotricha; 5a, 5b = reduction of cornutus; 6 = characteristic wing pattern; 7 = hook-like sclerotization of carina; 8 = elongate valvae with falcate harpe; 9 = characteristic black pattern of forewings; 10 = characteristic, 'trigonic' black markings; 11 = vesica broad, saccate, diverticulum long and curved, ostium bursae broad, triangular; 12 = apex bursae conical; 13 = reduction of pollex; 14 = valvae broad and rounded. a = allopatric pairs of species; circle with X-mark- expansive species; circle with arrow-mark- expansive species with penetrance to steppe belt; circle with bifid arrow-mark- expansive species with penetrance to xerophil-mesophilous arboreal zone).

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DESCRIPTION OF TWO MIRARADUS SPECIES FROM THE ORIENTAL REGION (HETEROPTERA: ARADIDAE)

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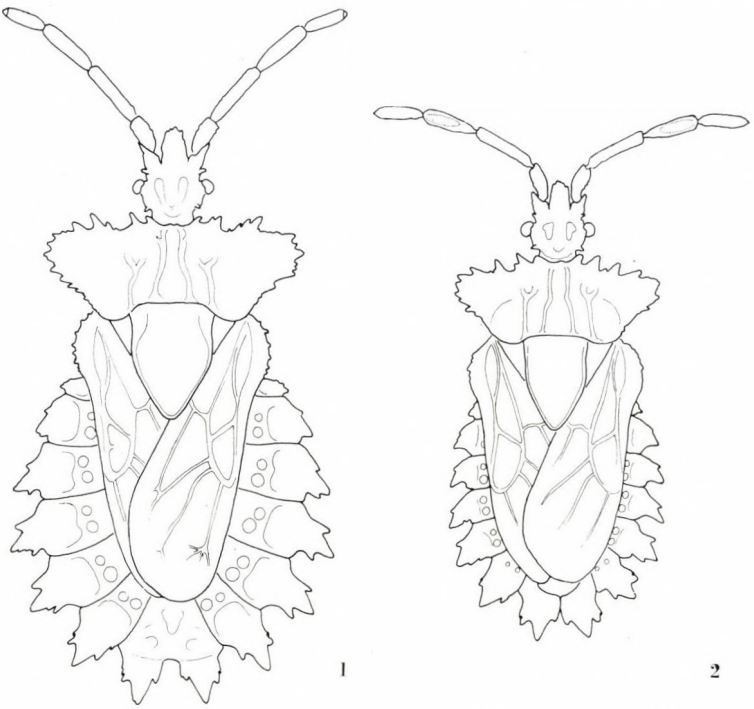
Miraradus assam sp. n. and *M. presentatus* sp. n. are described. Both species are closely related to *M. mirabilis* (BERGROTH, 1892). With 16 original figures.

Description of two *Miraradus* species is given below. Both are represented by a few specimens in either sex thus the material allowed the investigation of the sexual dimorphism. It is most expressed in the wider abdomen of the female, but also in wider scutellum and pronotum (though showing two different species, Figs 1—2 are characteristic of sexual dimorphism too). No significant difference in the relation of antennal joints was found. These make the correctness of identification of the male of *M. mirabilis* (BERGROTH, 1892) dubious (VÁSÁRHELYI 1981), that, nevertheless, does not touch the identity of the two new species.

All the figures were made with drawing apparatus. Measurements are given as averages of all available males and/or females in each case.



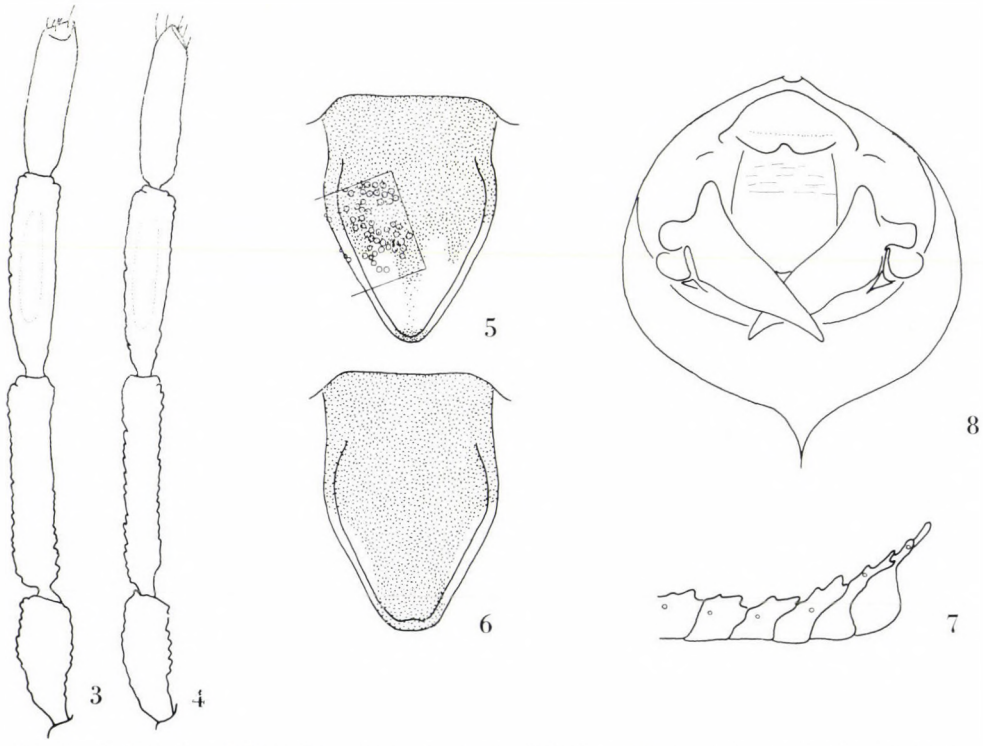
Figs 1—2. 1 = *Miraradus presentatus* sp. n.: female paratype, 2 = *M. assam* sp. n.: male holotype

Miraradus assam sp. n.
(Figs 2, 4, 5, 7, 9, 11, 12, 14)

♂, ♀, macropterous (Fig. 2), brown with yellow and dark brown markings. In the key to the *Miraradus* species (VÁSÁRHELYI 1980) it runs to *M. mirabilis*.

Head somewhat longer than wide across eyes. Antenniferous tubercles pointed, reaching far beyond middle of clypeus. Preocular tubercles distinct, shorter than pointed postocular tubercles. Eyes protruding, pedunculate. Vertex with two triangular callous spots. Antennae long, joint I with more than half surpassing clypeus, II cylindrical, III in apical 3/4 yellow and here flattened, IV cylindrical, more slender than II. Relative length of antennal joints I to IV as 19 : 31: 27 : 23 (male) and 18 : 32 : 27 : 23 (female). Labial atrium widely open. Rostrum almost reaching hind margin of prosternum, proportions of rostral joints as 42 : 33 : 28.

Pronotum 2.9 (male) and 3.1 (female) times as wide as long (on holotype male only 2.7 times), with laterodorsally directed alate lateral margin.



Figs 3—8. 3, 6, 8 = *Miraradus presentatus* sp. n., 4, 5, 7 = *M. assam* sp. n., 3—4 = antenna, 5—6 = coloration of scutellum, 7 = tip of abdomen of male, lateral view, 8 = external genitalia of male, dorsal view.

Disc with 4 longitudinal carinae, lateral ones missing, anterior part with smooth, black spots. Pronotal margin yellow anteriorly besides neck region, at the posterior end of median longitudinal carinae and on the tip of larger lateral teeth. Hemelytra yellow on anterior part of basal dilatation and along some veins. Legs long, slender, tibiae with 2 wide, yellow rings. Pulvillus absent. Scutellum large, subpentangular, 1.5 (male) and 1.4 (female) times as long as wide, flat, lateral margin raising, tip curled upwards. Disc with low, V shaped elevation, granules not forming median carina. Coloration depicted by Fig. 5.

Abdomen strongly widened with expanded dorsolaterotergites, brown. Apodemal impressions and hind border of dorsolaterotergites yellow. Tergite VIII mediolaterally also yellow. Spiracles II—VI ventral, VII—VIII lateral. Ventrolateral apodemal impressions oval, not devided into two. Tip of abdomen of males often bent upwards (Fig. 7).

Male genitalia: tergite IX represented by a shiny, finely punctate and rugose plate, hind margin evenly arcuate (Fig. 14). Paramer (Figs 9, 11) with a small tubercle basally and with a large apical plate curled in both dimensions. A fine ridge running along hind margin. The shape of the paramer seeming to be simple but sophisticated. One should avoid misleading comparisons of drawings made from uncertain views. Parandrium relatively small, consisting of an anterior, shiny, wrinkled and a posterior, haired part.

Measurements (male—female): total length of body 7.8—8.6 mm, width of head 1.23—1.34 mm, length of pronotum 1.22—1.32 mm, width of pronotum 3.58—4.03 mm, length of scutellum 1.57—1.77 mm, width of scutellum 1.04—1.25 mm, width of abdomen 3.62—5.02 mm, length of antenna 3.49—3.85 mm.

Type material — H o l o t y p e (male) "India, Assam, Manas, 22—X—78, 200 m, Besuchet, Löbl", "Aradus (M.) mirabilis Bergr., det E. Heiss 1981". — P a r a t y p e s (1 male, 4 females): same as holotype, 1 male: "India, Meghalaya, Khasi Hills, Cherrapunjee, 1200 m, 26—IX—78, Besuchet, Löbl", "Aradus (M.) mirabilis Bergr., det E. Heiss 1981". — Most of the type material is deposited in the Natural History Museum in Genéve, 1 male and 1 female paratypes are deposited in the Hungarian Natural History Museum, Budapest.

The species is closely related to *M. mirabilis* and *M. presentatus* sp. n. Differences from the latter will be treated in the original description. It differs from *mirabilis* in the relative length of antennal joints, in the different shape of pronotum (lateral "wings" much broader on *mirabilis*) and in details of the male genitalia.

My thanks are due to Dr. B. HAUSER (Genéve) for providing me the material under his care.

Miraradus presentatus sp. n.
(Figs 1, 3, 6, 8, 10, 13, 15, 16)

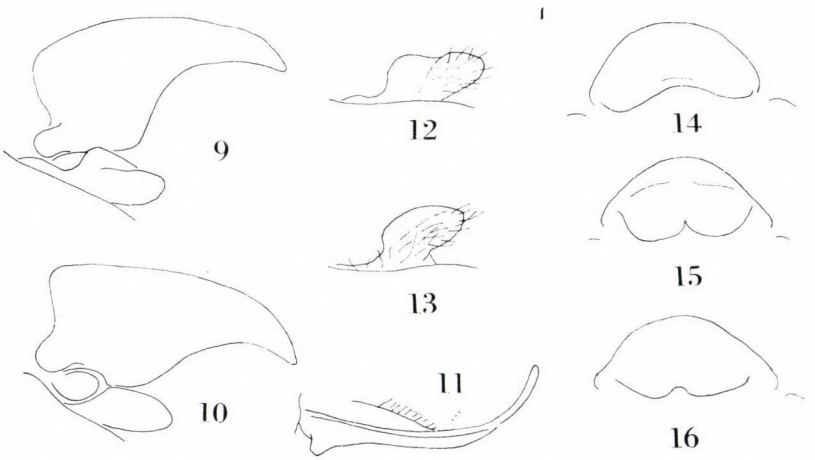
♂, ♀, closely related to *M. assam* and *M. mirabilis* (Fig. 1). Its comparison to *M. assam* is given here as a description. General colouration is similar, ground colour more blackish (which may be the consequence of different collecting treatment as well).

Head with somewhat longer antenniferous tubercle. Antennal joint III longer, IV shorter Relative length of antennal joints I to IV as 19 : 31 : 29 : 21 (male) and 18 : 33 : 29 : 20 (female)

Scutellum more pointed at apex (from dorsal view) but the roundedness of the apex depending on the degree of curling upwards, thus showing a certain individual variation. Yellow colouration different, the lighter colour covering only a stripe along the posterolateral margin.

Male genitalia: Tergite IX with hind margin deeply cut out medially (different on the two males available, see Figs 15—16). Paramer similar in structure but apical plate more broad. Parandrium with smaller, rounded, shiny anterior part. From anterior view (when parandrium seen from the "edge") this basal part forming a rounded, spoon like hole (Fig. 10) this being also different in *assam* (Fig. 9).

Measurements (male—female): total length of body 7.9—8.4 mm, width of head 1.25—1.32 mm, length of pronotum 1.23—1.32 mm, width of pronotum 3.8—4.2 mm, length of scutellum 1.6—1.8 mm, width of scutellum 1.2—1.4 mm, width of abdomen 3.8—5.2 mm, length of antenna 3.45—3.58 mm.



Figs 9—16. 9, 11, 12, 14 = *Miraradus assam* sp. n.; 10, 13, 15, 16 = *M. presentatus* sp. n., 9—10 = paramer, posterodorsal view, 11 = paramer, ventral view, 12—13 = parandrium, posterior view, 14—16 = tergit IX, dorsal view.

Type material — Holotype, male, and paratypes (1 male, 2 females): "Vietnam, 15 km NW of Da Lat", „No. 316, 17. X. 1988. leg Vásárhelyi". The specimens were collected under the bark of lying trunks on the roadside (MAHUNKA et al. 1989). Deposited in the Hungarian Natural History Museum, Budapest.

The species can be distinguished from *M. mirabilis* by the differences treated under the description of *M. assam*, and, in addition, by the different colouration of the scutellum.

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ÜBER NEUE RIESENREGENWÜRMER UND ANDERE MARTIODRILUS-ARTEN AUS EKUADOR (OLIGOCHAETA: GLOSSOSCOLECIDAE). REGENWÜRMER AUS SÜDAMERIKA 8.

A. ZICSI

Bodenzoologische Forschungsgruppe der Ungarischen Akademie der Wissenschaften, am Lehrstuhl für Tiersystematik und Ökologie der Eötvös-Loránd Universität, H-1088 Budapest, Puskin utca 3, Ungarn

(Eingegangen am: 15. November 1989)

Description of three new species of the genus *Martiodrilus* MICHAELSEN, 1936 is given: *Martiodrilus ischuros* sp. n., *M. michaelseni* sp. n. and *M. kuehnelti* sp. n. The rediscovery of three further species: *Martiodrilus crassus* (ROSA, 1895), *M. iserni* (ROSA, 1895) and *M. validus* (COGNETTI, 1904) is reported, with addional details to the original description. With 15 original figures.

Die Riesen- bzw. Grossformen der Gattung *Martiodrilus* MICHAELSEN, 1936 lassen sich — wie dies anhand meiner Aufsammlungen in Ekuador erkannt wurde — in zwei Gruppen teilen. Der einen Gruppe gehören die unpigmentierten, weissen Arten, der anderen Gruppe die verschieden pigmentierten, graubraun, rötlichbraun bis schwarzbraunen Formen an. Die letzteren unterscheiden sich ausser der Pigmentation auch in der Lebensweise von den unpigmentierten Arten, insoweit diese senkrechte, tief in den Boden gehende Gänge anlegen und ihre Exkremente als turmförmige oder häufchenförmige Gebilde an die Bodenoberfläche ablegen (ZICSI 1988 a—b).

In vorliegender Arbeit soll die Bekanntmachung einiger pigmentierter Riesen- bzw. Grossformen sowie die Beschreibung unpigmentierter Arten der Gattung *Martiodrilus* MICHAELSEN, 1936, bei denen eine Verdickung der vorderen Dissepimente erkannt werden konnte, erfolgen.

In den vergangenen Jahren ist es mir auch gelungen den grössten Teil der *Martiodrilus*-Arten aus dem Andengebiet im Museo ed Istituto di Zoologia Sistematica della Universita, Torino und im Zoologischen Institut und Museum von Hamburg einzusehen. Anhand des Typen-Materiales ist es mir nun ermöglicht eine Revision dieser Arten fortlaufend durchzuführen, mein neugesammeltes Serienmaterial mit den Typen zu vergleichen. An dieser Stelle soll ausser der Beschreibung neuer Arten auch die systematische Stellung von *Martiodrilus validus* (COGNETTI, 1904) geklärt werden, die ohne Einsicht des Typenmateriales ständige Bestimmungsschwierigkeiten verursachte.

Für einen Arbeitsplatz im Museum von Hamburg, Genf und Torino, wo ich den grössten Teil meiner Bestimmungen durchführen konnte, spreche ich Herrn Prof. Dr. M. DZWILLO, Herrn Dr. Cl. VAUCHER und Herrn Dr. A. ROLANDO auch an dieser Stelle meinen besten Dank aus.

Martiodrilus MICHAELSEN, 1936

Diagnose — Normale Borsten in 8 Längslinien. Männliche Poren intraclitellial. Chylustaschen 7—8 Paar im Bereich des 7.—14. Segmentes, Kompositenschlauchtaschen bzw. Wabentaschen. Geschlechtsapparat holoandrisch und metagyn. Samensäcke kurz nicht unter Durchbrechung der Dissepimente weit nach hinten reichend. Samentaschen vorhanden.

Aus dem Andengebiet sind bisher zwei Riesenformen, deren Länge konserviert über 600 mm betrug, aus der Gattung *Martiodrilus* beschrieben worden. Aus Ekuador wird *Anteus crassus* ROSA, 1985 Prov. Coca, aus Kolumbien *Anteus columbianus* MICHAELSEN, 1900 angeführt. *Martiodrilus crassus* (ROSA, 1895) wurde anhand eines Exemplares beschrieben und soll eine Grösse von 630 mm, einen Durchmesser von 22 mm sowie 135 Segmente besitzen. Von allen bisher bekanntgewordenen Arten der Gattung *Martiodrilus* unterscheidet sich diese Art durch die hohe Zahl der Samentaschen (5 Paar) und dadurch, dass die Öffnungen dieser in Gruppen zu 2—6 in den Intersegmentalfurchen 5/6—9/10 angeordnet sind. *Martiodrilus columbianus* (MICHAELSEN, 1900) verfügt über verschiedene Grössendimensionen (260, 340, 430, ?600 mm, MICHAELSEN 1900a, b, 1913) und soll eine Segmentzahl von 155—226 besitzen. Leider liegt vom Riesenexemplar nur der vordere Teil vor, über den in der erwähnten Arbeit (MICHAELSEN 1913) keine nähere Beschreibung gegeben wird. Laut Originalbeschreibung soll diese Art über drei Paar Samentaschen verfügen, die Samentaschenporen liegen in den Intersegmentalfurchen 6/7—8/9. Bei einer späteren Nachuntersuchung der Tiere (MICHAELSEN 1918) konnte festgestellt werden, dass echte Samenkämmerchen vorhanden sind.

Ohne nähere Fundortangaben zu erwähnen wird von PICKFORD (1940) aus Ekuador ein Exemplar eines Riesenregenwurmes, unter der Benennung *Thamnodrilus crassus* (ROSA, 1895) in der Literatur angeführt. Aus der ausführlichen Beschreibung geht einwandfrei hervor, dass sich dies Exemplar in vielen Beziehungen von *M. crassus* unterscheidet. Der Gürtel des nicht ganz adulten Tieres reicht bis zum 28. Segment, die Pubertätsstreifen bis 1/2 27. Segment (bei *crassus* Gürtel vom 14., 15—26., 27. Segment, Pubertätsstreifen vom 20.—26. Segment). Es konnten nur in 4 Intersegmentalfurchen (5/6—8/9) Samentaschenporen in Gruppen zu 4 oder 5 nachgewiesen werden. Obwohl PICKFORD die Unterschiede erkannt und eventuell auch an die Aufstellung einer neuen Art oder Unterart gedacht hat, reiht sie das einzige Exemplar zu *M. crassus* und gibt die Bezeichnung ?"Hypotypus"?.

Es ist anzunehmen, dass von *M. columbianus* noch weitere Vorkommen und Beobachtungen, jedoch ohne genaue Artenangaben, in der Literatur angeführt sind (LATHAM 1966, AYALA et al. 1972). Es handelt sich um Tiere die abgetötet eine Grösse von 470 mm, lebend 1090 mm erreichen und deren Lebensweise von AYALA et al. eingehend studiert und beschrieben wurde.

Im vorliegenden Material sind in verschiedenen Teilen Ekuadors Riesenexemplare erbeutet worden, die z. T. unversehrt, z. T. in verschiedenen Entwicklungsstadien sich befinden und in gewissen Merkmalen voneinander abweichen. Zwei meiner Exemplare scheinen mit der von ROSA beschriebenen *crassus* identisch zu sein, da sich der Gürtel bei diesen vom 15.—26. Segment erstreckt, die Pubertätsstreifen vom 20.—26. Segment verlaufen und bei denen 5 Paar Samentaschen im 6.—10. Segment, ebenfalls in Gruppen angeordnet,

nachgewiesen werden konnten. Da der Typus von ROSA nicht erlangt werden konnte, meine Tiere in sehr gut konserviertem Zustand vorliegen, soll eine kurze Diagnose meiner Exemplare angeführt werden.

Martiodrilus crassus (ROSA, 1895)

Länge 556—560 mm, Dicke am Vorderkörper 27—30 mm, hinter dem Gürtel 20—22 mm. Segmentzahl 211—261. Die verschiedenen Grössenangaben beruhen offensichtlich auf verschiedener Konservierungsweise, es ist anzunehmen, dass das Exemplar von ROSA etwas erweicht war, da es bedeutend länger angegeben ist (630 mm), jedoch viel wenigere Segmente besitzt (135). Dies lässt vermuten, dass es sich nicht um ein vollkommenes Tier handeln kann, wie oft beobachtet werden konnte, werfen diese Riesenformen schnell Teile ihres Körperendes ab. Farbe rauchgrau bis schwarz.

Kopf eingezogen, 1.—2. Segment verschmolzen. Die vorderen Segmente vom 3.—11. ungeringelt breit, 12. und 13. Segment dreifach geringelt, die übrigen und auch die des Gürtels doppelt geringelt.

Borsten entlang des Körpers eng gepaart. Ventrale Borsten vom 7. bzw. 8. Segment, ventrolaterale Borsten vom 28. Segment beginnend zu erkennen. Borsten der Gürtelregion auf Drüsenpapillen angeordnet, zu Geschlechtsborsten umgewandelt. Diese Borsten erreichen eine Länge von 4 mm und sind mit 15—17 Einkerbungen versehen. Weibliche Poren am hinteren Rand des 14. Segmentes in Höhe der Borstenlinie b. männliche Poren auf Intersegmentalfurche 20/21 in Höhe der Pubertätsstreifen. Samentaschenporen auf Intersegmentalfurche 5/6—9/10 in Gruppen von 1—3.

Gürtel vom 15.—26. Segment, Pubertätsstreifen vom 20.—26. Segment.

Innere Organisation: Dissepimente 6/7—10/11 stark verdickt, trichterförmig ineinandergelegt, 11/12—14/15 bedeutend schwächer verdickt. 8 Paar Chylustaschen im 7.—14. Segment, nierenförmige Gebilde mit abgeschnürtem Kopfende. Lateralherzen im 7.—9. Segment, Intestinalherzen im 10. und 11. Segment.

Männliche Geschlechtsorgane: Zwei Paar Testikelblasen im 10. und 11. Segment, sie schliessen die Hoden und Samentrichter ein. Zwei Paar mässig grosse Samensäcke im 11. und 12. Segment. Die Samentaschen im 6.—10. Segment, die in Gruppen von 1—3 vorhanden sind, liegen tief eingebettet in der Muskelwand, die vorderen sind mit kleinen Samenkämmerchen versehen in denen kleine Samenklumpen erkannt werden konnten.

Fundorte: Prov. Napo, El Reventador AF/511* 1 Ex. 1987 leg. G. ONORE. — G/986752** 1 Ex. Prov. Napo, El Reventador, X. 1986, leg. G. ONORE.

* Beziehen sich auf die Inventarnummern des Tiersystematischen und Ökologischen Lehrstuhles der Universität, Budapest.

** Beziehen sich auf die Inventarnummern des Naturhistorischen Museums, Genf.

Martiodrilus ischuros sp. n.

[?Syn: *Martiodrilus crassus* (ROSA, 1895) PICKFORD, 1940]

Aus dem westlichen Teil der Anden (Prov. Cotopaxi) liegen mir aus einer Höhe von 2000—2200 m in verschiedenen Entwicklungsstadien mehrere Riesenexemplare einer Art vor, die sich in gewissen Kennzeichen von der vorausgehend als *M. crassus* beschriebenen Art ROSA's unterscheiden, mit der von PICKFORD beschriebenen Form hingegen grosse Ähnlichkeit zeigen.

Länge des Holotypus in konserviertem Zustand 440 mm (lebend erreichen die Tiere auch eine Länge von 750—800 mm), Dicke 30 mm, Segmentzahl 238. Länge der Paratypen 400—500 mm, Dicke 30—37 mm, Segmentzahl 230—270. Farbe rauchgrau bis schwarzgrau.

Kopflappen eingezogen. 1.—2. Segment verschmolzen. Segmente vom 3.—10. Segment gross, ungeringelt, die darauffolgenden doppelt geringelt. Segmente des Gürtels ungeringelt. Borsten am ganzen Körper gepaart. Ventrale Borsten sind vom 5., dorsolaterale vom 6. Segment zu erkennen. Borstenverhältnis hinter dem Gürtel aa : ab : bc : cd : dd = 10 : 2 : 10 : 2 : 35. Borsten ab des 7.—10. Segmentes sitzen auf kleinen Anschwellungen und zeigen Übergänge zu Geschlechtsborsten, sind an der Spitze ornamentiert. Die Borsten ab der Gürtelregion sind zu Geschlechtsborsten umgewandelt und mit Einkerbungen ornamentiert. Die Borsten hinter dem Gürtel sind gewöhnliche Hakenborsten, die der ventralen und dorsalen Reihe etwas abweichend voneinander.

Weibliche Poren am hinteren Rand des 14. Segmentes in der Borstenlinie b, männliche Poren nicht erkannt. Gürtel vom 1/2 14., 15.—28., 1/2 29. Segment. Bei vollkommen geschlechtsreifen Tieren dick, drüsig sattelförmig, bei weniger stark entwickelten Exemplaren meistens nur dunkel gefärbter angedeutet, weniger drüsig verdickt. Pubertätswällen konstant vom 20.—28. Segment, bandförmige Gebilde.

Innere Organisation: Dissepimente vom 6/7—9/10 sehr stark verdickt, trichterförmig ineinandergelegt. Die folgenden Dissepimente 10/11—11/12 noch schwach verdickt, die übrigen bis zu 14/15 kaum verdickt. Schlund wird durch zahlreiche kräftige Querbinden an der Innenwand in Höhe der 6/7—7/8 Dissepimente befestigt. Muskelmagen im 6. Segment, breitet sich weit nach hinten aus. Chylustaschen 8 Paar im 7.—14. Segment, Wabentaschen, am Ende deutlich abgeschnürt. Lateralherzen im 7.—9. Segment, Intestinalherzen im 10. und 11. Segment, mächtig gross.

Männliche Geschlechtsorgane: Zwei Paar oesophageale Testikelblasen im 10. und 11. Segment, sie schliessen die Hoden und Samentrichter ein. Zwei Paar Samensäcke im 11. und 12. Segment, einfache, kleine Gebilde. Samantaschen 4 Paar im 6.—9. Segment, sind tief in die Muskelwand eingebettet, die Öffnungen der Samentaschen sind einfach oder doppelt ausgebildet. Ver-

einzelt lassen sich in den winzigen Samentaschen glänzende Samenklumpen erkennen.

Die neue Art steht *M. crassus* (ROSA, 1895) am nächsten. Unterscheidet sich jedoch von dieser durch die Lage des Gürtels und die der Pubertätsstreifen. Bei *crassus* wurden Samenkämmerchen nicht erwähnt, doch kann dies darauf beruhen, dass Rosa die Samentaschen nicht näher untersucht hat. Bei meinen *crassus* Exemplaren sind solche ähnliche Gebilde ebenfalls erkannt worden. In letzterer Beziehung ähnelt sie auch dem *M. columbianus* (MICHAELSEN, 1900), unterscheidet sich aber von dieser ebenfalls in der Lage des Gürtels und der Pubertätsstreifen.

Fundorte: Holotypus AF/512. Prov. Cotopaxi, San Francisco de las Pampas, Las Penas Coloradas, 2000 m. 8. II. 1986. leg. ZICSI, LOKSA et ONORE. — Paratypen: AF/513, 3+2 juv. Ex., G/986753. 1 Ex. Fundort wie beim Holotypus. — AF/519, 1 Ex. und G/986754, 1 Ex. IV. 1986. leg. ONORE. — G/985897, 1 Ex., IV. 1985 leg. ONORE. Fundort wie beim Holotypus in einer Höhe von 2000—2200 m.

Martiodrilus iserni (ROSA, 1895)

Syn. *Thamnodrilus buchwaldi* MICHAELSEN, 1902 (Cognetti, 1906).

Es handelt sich um eine sehr verbreitete, im Leben auch eine Grösse von 350—500 mm erreichende, in der Paramo-Schwarzerde von Ekuador, aber insbesondere in der Prov. Pichincha und von da nördlich vorkommende, weitverbreitete Art. Sie wurde von uns in einer Höhe von 2600—3600 m in Wäldern, Buschwäldern und in der Grasvegetation gleicherweise in grossen Mengen angetroffen. Es ist eine Art die in der Trockenperiode die Fähigkeit besitzt in selbstverfertigten Kämmerchen sich in Ruhestadien zurückzuziehen, wo sie in eingekneultem Zustand die ungünstigen Perioden überstehen kann. Bereits im Monat Mai des Jahres 1988 haben wir in 60—70 cm Tiefe des Bodens eingekneulte Tiere im inaktivem Zustand angetroffen. Durch die grossen Exkrementmengen die an die Bodenoberfläche von diesen Tieren gefördert werden, nimmt sie intensiv an der Bodenbildung in der Paramo-Schwarzerde teil.

Es ist mir gelungen die von COGNETTI und MICHAELSEN bestimmten Tiere (Torino OL. 432. 2 Ex., Hamburg V 5772. 2 Ex., V 6358. 1 Ex.) nachzuuntersuchen. Den Typus selbst konnte ich nicht erlangen. Da meine Tiere in allen wesentlichen Merkmalen mit der ausführlichen Beschreibung der oben erwähnten Autoren übereinstimmt, verzichte ich auf eine Wiederholung dieser (COGNETTI 1906, MICHAELSEN 1902, 1918).

Fundorte: Prov. Pichincha AF/332. 1 Ex., AF/334. 2+2 juv. Ex. G/986739. 1+1 juv. Ex. Hinter Pifo. Bachrand auf Wiese und Strauchvegetation 2600—2900 m. 18. II. 1986. leg. ZICSI et LOKSA. — AF/426. 2+2 juv. Ex., G/987165. 1+2 juv. Ex. 9. IV. 1987 leg. ZICSI, LOKSA et PONCE, Fundort wie zuvor. — AF/1666. 1+2 juv. Ex. 11. V. 1988, leg. ZICSI et CSUZDI. — AF/427. 5 Ex. La Merced, Finca los Cypresses, 26. II. 1986, leg. ZICSI, LOKSA et BENAVIDES. —

AF/429. 3+3 juv. Ex., G/986740. 1+2 juv. Ex. Pululagua, 12. II. 1986, leg. ZICSI et LOKSA. — AF/430. 13 praead. Ex. 7. IV. 1987, leg. ZICSI, LOKSA et ORNECSÁK. — AF/428. 2+8 juv. Ex. La Merced, 1. IV. 1987, leg. ZICSI et LOKSA. — AF/432. 5+7 praead. Ex. Vor Nono 3600 m, 4. II. 1986. leg. ZICSI, LOKSA et BENAVIDES. — AF/433. 5+4 juv. Ex., G/987166. 3+1 juv. Ex. 7. IV. 1987, leg. ZICSI et LOKSA, Fundort wie zuvor. AF/434. 11+4 Ex., — G/987175. 6+4 juv. Ex. Cochasqui Pyramiden, Grasland, 26. IV. 1987, leg. ZICSI et LOKSA. — AF/435—437. 17+15 juv. Ex. Antisana Vulkan 3400—3600 m 16. IV. 1987, leg. ZICSI et LOKSA. — AF/1663 u. 1672. 15+7 Ex. leg. ZICSI et CSUZDI 17. V. 1988, u. 15. V. 1989. leg. ZICSI, LOPEZ et DE VRIES, Fundort wie zuvor, AF/438—439. 4 Ex, Pichincha Gebirge bei Quito 3000—3200 m, 4. II; 1986. leg. ZICSI et LOKSA. — AF/440. 5+3 Ex. G/987169. 1+5 juv. Ex. Nadelwald bei Quito, 2900 m. 19. IV. 1987, leg. ZICSI et LOKSA. — AF/1669 1 Ex. Neben der Autobahn bei Quito, 22. V. 1988. leg. ZICSI et LOKSA. AF/441. 1 Ex. San José de Minas, Wald, 21. IV. 1987 leg. ZICSI, LOKSA et BENAVIDES. — Prov. Imbabura: AF/442. 1 praed.+2 juv. Ex, 47 km. von Otavalo in Richtung Selva Alegre, Wald, 3000 m 22. IV. 1987, leg. ZICSI, LOKSA et BENAVIDES.

Martiodrilus validus (COGNETTI, 1904) (Abb. 1—7)

Dem *Martiodrilus iserni* (ROSA, 1895) an Grösse und in der Lebensweise nahestehend ist die weiter südlich von Quito, in der Provinz Bolivar, Cañar und Azuay vorkommende *Martiodrilus validus* (COGNETTI, 1904). Leider konnte vorerst ohne Überprüfung des Typenmateriales diese Art nicht mit Sicherheit identifiziert werden, da anhand der Originalbeschreibung zwei ganz verschiedene Arten als *M. validus* angesehen werden mussten. Da diese beiden Arten, abgesehen von einigen Merkmalen die aus der Originalbeschreibung nicht ersichtlich waren, auch lebend und in der Lebensweise sich so stark unterscheiden, konnten sie nicht als eine Art betrachtet werden. Anhand des inzwischen erlangten Typenmateriales aus Torino und des von MICHAELSEN von Loja (Prov. Loja) als *M. validus* bestimmten Materiales der Sammlung aus Hamburg konnten folgende Feststellungen gemacht werden: In der Sammlung von Torino waren als Typen die Exemplare aus Cuenca (Prov. Azuay) 2580 m (Inv. Nr. OL 444) bezeichnet. Hier lagen noch die in der Originalbeschreibung aus Sigsig (Prov. Azuay) 2550 m (Inv. Nr. OL. 445) und aus Lloa (Prov. Pichincha) 3070 m (Inv. Nr. 1076) stammenden Tiere vor.

Das als Typen bezeichnete Material enthielt 9 Exemplare von denen 2 Tiere einwandfrei einer anderen Art angehörten, mit denen ich mich in einer späteren Arbeit näher befassen werde. Die von mir untersuchten 7 Exemplare stimmen mit denen aus Sigsig überein und sind auch mit den Aufsammlungen aus der Prov. Azuay (Cuenca und Sigsig) die ich hier 1988 durchführte und als *M. validus* betrachtete, identisch. Die 7 Syntypen aus Cuenca müssen als *Martiodrilus validus* (COGNETTI, 1904) angesehen werden, da die an dritter Stelle angeführten 5 Exemplare aus Lloa wieder einer anderen Art angehören, die zwar gewisse Übereinstimmung in einigen Merkmalen mit *validus* aufweisen, jedoch eine ganz andere Art representieren. Von dieser Art konnte ich in den vergangenen Jahren zahlreiche Exemplare sammeln, bereits beim Sammeln der Tiere liess sich der deutliche Unterschied zwischen den beiden Arten

erkennen. Sie wird in dieser Arbeit als neue Art für die Wissenschaft beschrieben.

Bei den von MICHAELSEN (V. 6979) als *validus* angeführten zwei Exemplaren handelt es sich wieder um eine andere Art (MICHAELSEN 1918), auf die ich in einer anderen Arbeit zurückgreife. MICHAELSEN wurde wahrscheinlich durch die Annahme, dass der Ort Lloa mit der Stadt Loja identisch ist (vergl. Fussnote auf S. 89) irregeführt und da die Originalbeschreibung von *validus* unzulänglich war, reihte er seine Exemplare aus Loja zu *validus*.

Von *M. validus* stehen mir auch aus der Provinz Bolivar sehr zahlreiche Exemplare zur Verfügung die in der Grösse und auch in der Lage des Gürtels und der Pubertätsstreifen etwas abweichen, aber sonst in allen Merkmalen mit *validus* übereinstimmen. Da das Typenmaterial leider keine ganz adulten Tiere besitzt, muss bei der Neubeschreibung dieser Umstand berücksichtigt werden, obwohl der Lectotypus und Paralectotypen aus der Sammlung von Torino designiert werden müssen.

Äussere Merkmale: Länge 280—510 mm, Dicke 8—12 mm, Segmentzahl 235—351. Farbe rotgrau bis schwarzgrau.

Kopflappen eingezogen, Segmente 1—2 verwachsen. Vordere Segmente ungeringelt. Borsten am ganzen Körper eng gepaart. Ventrale und dorsolaterale Borsten im 6. oder 7. Segment beginnend. Borsten am Vorderkörper ab = cd, aa fast doppelt so gross wie bc. Borstendistanz am Hinterkörper aa : ab : bc : cd : dd = 8.3 : 1 : 4.5 : 1 : 27. Borsten ab des 8., 9. und 10. Segmentes sind von winzigen Papillen umgeben und zu Geschlechtsborsten umgewandelt, diese Borsten sind am Ende mit 12—13 Kerben ausgestattet. Borsten ab vom 17.—28. Segment ebenfalls von kleinen Papillen umgeben und zu Geschlechtsborsten umgewandelt (Abb. 1). Grösse der Borsten 1,5 mm am Ende mit 15—16 Kerben versehen.

Weibliche Poren am hinteren Rand des 14. Segmentes, in Intersegmentalfurche 14/15 zwischen der Borstenlinie ab. Männliche Poren von Aussen nicht erkannt, von Innen verläuft die Samenrinne bis in die Intersegmentalfurche 19/20, eine genaue Ausführung konnte ebenfalls nicht festgestellt werden.

Gürtel vom 14., 15.—27. 1/2 28., 28. Segment, sattelförmig, Pubertätsstreifen vom 20. 1/2 20.—1/2 26. 26., 1/2 27. Segment.

Samentaschenporen 3 Paar im 6/7—8/9. Segment, winzige Öffnungen in Höhe der Borstenlinie cd.

Innere Organisation: Dissepimente 6/7—9/10 sehr stark verdickt, trichterförmig ineinandergelegt, 10/11 weniger verdickt, 11/12—14/15 sehr schwach, zart verdickt. Schlund durch zahlreiche Querbinden an der Innenwand in Höhe des 6/7—7/8 Dissepimentes befestigt. Muskelmagen im 6. Segment. 8 Paar Chylustaschen im 7.—14. Segment, schwach gebogene Gebilde, am Ende Kopf abgeschnürt, Wabentaschen. Die vorderen Chylustaschen vom

7.—12. Segment heller, zarter, die letzteren robuster mit abgeschnürtem schwarzen Kopf. Lateralherzen im 7.—9. Segment, schlingenförmig, Intestinalherzen im 10. und 11. Segment gross, Herzen im 12. Segment wieder schlingenförmig. Hinteres dorsales Blutgefäss vom 12.—18. Segment perlschnurartig verdickt.

Männliche Geschlechtsorgane: 2 Paar oesophageale Testikelblasen im 10. und 11. Segment, schliessen Hoden und Samentrichter ein. Zwei Paar Samensäcke im 11. und 12. Segment, mässig grosse einfache Gebilde. Samentaschen drei Paar im 7., 8. und 9. Segment, Ausführungsgang mehr oder weniger stark in die Muskelwand eingebettet, Samentaschenampulle einfach oder doppeltgelappt, manchmal mit zwei Kämmerchen jedoch nur mit einem Ausführungsgang (Abb. 2—7). Die Form der Samentaschen kann sehr verschieden sein, doch alle sind sehr plattgedrückte Gebilde, die von vorne nach hinten zu an Grösse zunehmen. Nephridien im Vorderkörper sehr lange Gebilde, vom 18. Segment beginnend mir einem Blindsack versehen.

Aufgrund der neugefassten Diagnose steht *validus* dem *M. iserni* sehr nahe. Unterscheidet sich von diesem eindeutig in der Form der Samentaschen.

Fundorte: Lectotypus OL. 444/a Cuenca, Prov. Azuay, 2550 m leg. FESTA, 1896. — Paralectotypen: OL. 444. Fundort wie beim Lectotypus 6 Ex.
Prov. Bolivar. AF/611—612. 25 adulte und praeadulte Ex. Cashca Totoras, 3200 m, Grenze der Waldgrenze und Grasvegetation, 3. IV. 1987. leg. ZICSI, LOKSA et COLOMA. — AF/613. 30 praedulte Ex. Fundort wie zuvor, leg. COLOMA II. 1987. Prov. Cañar: AF/1676

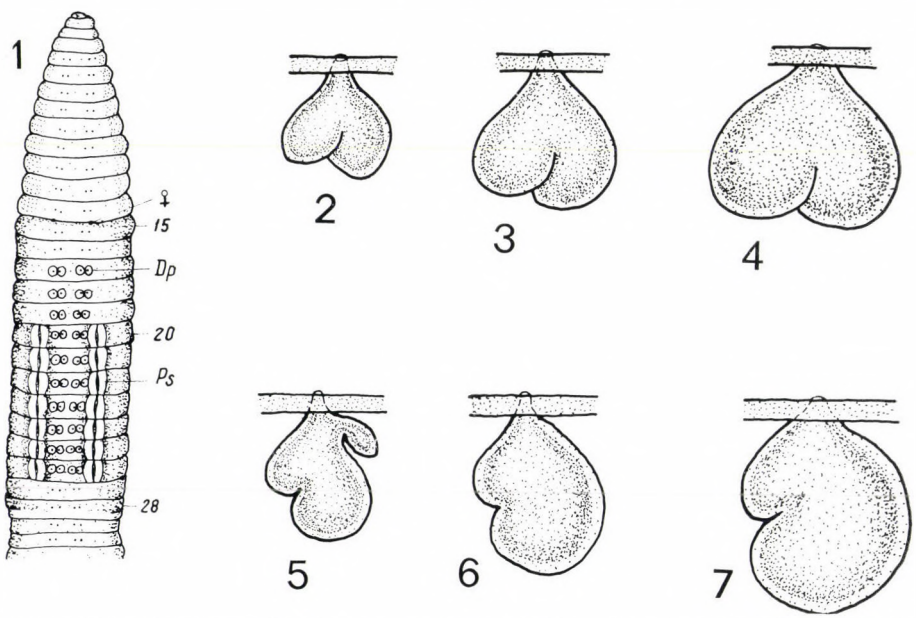

Abb. 1.—7. *Martiodrilus validus* (COGNETTI, 1904): 1 = Ventralansicht, Dp = Drüsenpapillen, Ps = Pubertätsstreifen, 2—7. Form der verschiedenen Samentaschen des 7., 8. und 9. Segmentes.

3 Ex. 12 Km vor El Tambo 3100 m, Wiese mit Strauchvegetation, 25. IV. 1988. leg. ZICSI et CSUZDI. — AF/1684 3 Ex. 44 km von Cuenca in Richtung Biblian, 2700 m, 4. V. 1988, leg. ZICSI et CSUZDI. — Prov. Azuay: AF/1677. 11 adulte und 11 juv. Ex., 16 km hinter Cuenca in Richtung Loja, Wiese, 26. 4. 1988, leg. ZICSI et CSUZDI. — AF/1678 17+5 juv. Ex., 34 km von Cuenca oberhalb Gualaceo in Richtung Sigsig, 2200 m, 3. V. 1988, leg. ZICSI et CSUZDI. — AF/1679. 3 Ex., 39 km von Cuenca in Richtung Sigsig, 2300 m, 3. V. 1988, leg. ZICSI et CSUZDI. — AF/1680 3 Ex. Hinter Sigsig 2700 m, Wiese, 3. V. 1988, leg. ZICSI et CSUZDI. — AF/1682. 1 Ex., 11 km von Sigsig in Richtung Chordeleg, 2200 m, 3. V. 1988, leg. ZICSI et CSUZDI. — AF/1683. 7+2 Ex. Zwischen Chordeleg und Sigsig, 2300 m, 3. V. 1988. leg. ZICSI et CSUZDI.

Martiodrilus michaelseni sp. n.
(Abb. 8—11)

Syn: *Rhinodrilus* (*Thamnodrilus*) *iserni* (ROSA, 1895) part. COGNETTI, 1904, p. 16; 1905, p. 42 loc. Papallacta Ecuador nella Regione orientale, coll. Festa. — *Rhinodrilus* (*Thamnodrilus*) *validus* COGNETTI, 1904 part (COGNETTI 1904, p. 12; 1905, p. 44) loc. Lloa, 3070 m. coll. Festa.

Ausser den oben angeführten Exemplaren der obigen Lokalitäten, die mir aus der Sammlung von Torino zur Verfügung stehen, wurden auch von mir zahlreiche Exemplare von verschiedenen Fundorten gesammelt, die ausschliesslich in der Paramo-Schwarzerde des ekuadorianischem Andengebietes lagen.

Äussere Merkmale: Länge des Holotypus 150 mm, Dicke 10 mm, Segmentzahl 130. Bei den übrigen Tieren: Länge 75—160 mm, Dicke 7,5—11,5 mm, Segmentzahl 97—154. Farbe weiss, unpigmentiert.

Kopflappen eingezogen, 1. und 2. Segment verwachsen. Segmente vor dem Gürtel undeutlich doppeltgeringelt. Borsten ventral und dorsolateral vom 5. oder 6. Segment zu erkennen. Borsten am ganzen Körper eng gepaart. Borsten *cd* vor dem Gürtel enger als *ab*, hinter dem Gürtel ist die Borstendistanz der beiden Borstenreihen nahezu gleichgross. Borstendistanz hinter dem Gürtel $aa : ab : bc : cd : dd = 6{,}8 : 1 : 7{,}7 : 1 : 37{,}5$. Borsten *ab* des 12., 18.—25. Segment von kleinen Papillen umgeben. Borsten in der Gürtelregion zu Geschlechtsborsten umgewandelt. Borsten des 18. und 19. Segmentes 1,8 mm lang mit 12—13 Kerben. Borsten des 20.—25. Segmentes 1,2 mm lang mit 7—8 Kerben versehen. Die normalen Borsten sind 1,2 mm lang ohne Ornamentierung.

Weibliche Poren auf der Innenseite des 14. Segmentes in der Borstenlinie *b*. Männliche Poren auf dem 21. Segment, von Aussen sehr schwer zu erkennen. Nephridialporen oberhalb der Borstenlinie *cd*. 3 Paar. Samentaschenporen auf Intersegmentalfurche 6/7—8/9. zwischen der Borstenlinie *cd* und den Nephridialporen, es sind kleine runde Öffnungen auf einer winzigen Erhebung. Gürtel sattelförmig vom 15.—26. Segment, Pubertätsstreifen vom 20.—25. Segment, intersegmental unterbrochen und etwas hervorstehend (Abb. 8)

Innere Organisation: Dissepimente 6/7—13/14 gleichmässig, mässig verdickt, weitaus nicht so stark trichterförmig verdickt wie bei *M. validus*.

Schlund durch eine kräftige Querbinde an die Innenwand in Höhe des 7/8 Dissepimentes befestigt. Muskelmagen im 6. Segment. Schlingenförmige Lateralherzen im 7.—9. Segment, Intestinalherzen im 10. und 11. Segment. Chylustaschen 8 Paar im 7.—14. Segment, stäbchenförmige Gebilde, die am freien Ende verengt, nicht deutlich abgeschnürt sind. Es sind typische Wabentaschen. Mitteldarm vom 26. Segment mit einer grossen, ziemlich dick saumförmigen, geschweift eingebogenen Typhlosolis versehen. Nephridien im Hinterkörper ohne Blindsack.

Männliche Geschlechtsorgane: 2 Paar Hoden und Samentrichter im 10. und 11. Segment die in oesophageale kleine Testikelblasen eingeschlossen sind. Die Testikelblasen sind ventral miteinander verbunden. 2 Paar mit den vorhergehenden Testikelblasen in Verbindung stehende Samensäcke ragen vom Dissepiment 10/11 und 11/12 in das 11.—12. Segment hinein. Die ungelappten, runden Samensäcke des 11. Segmentes sind etwas kleiner als die des 12. Segmentes. Samentaschen 3 Paar im 7., 8. und 9. Segment, es sind plattgedrückte birnenförmige Gebilde mit sehr kurzem Ausführungsgang. Der Aus-

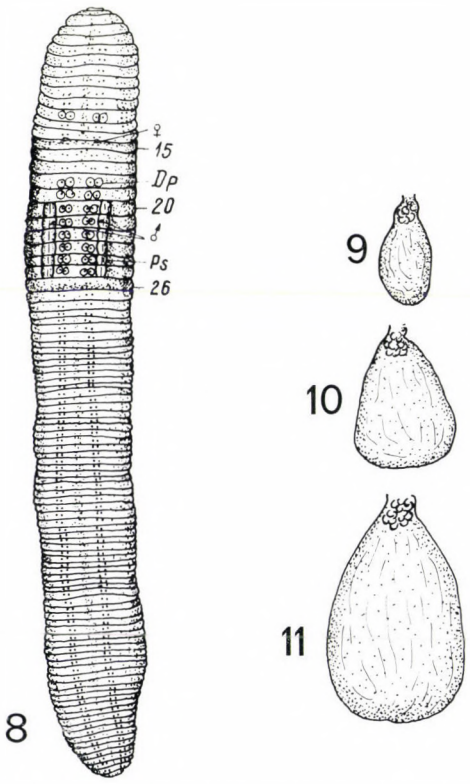

Abb. 8—11. *Martiodrilus michaelseni* sp. n.: 8 = Ventralsansicht, Dp = Drüsenpapillen, Ps = Pubertätsstreifen, 9—11 = Form der Samentaschen des 7., 8. und 9. Segmentes.

führungsgang ist bei vielen Exemplaren mit Samenmassen gefühlt, ohne ein Kämmerchen zu bilden (Abb. 9—11).

Die neue Art unterscheidet sich von allen unpigmentierten Arten dieser Gattung insbesondere durch die Form der Samentaschen, von *M. validus* durch die Farbe, Art der verdickten Dissepimente und Form der Pubertätsstreifen.

Die neue Art wird zu Ehren dem bekannten und berühmten Oligochaetenspezialisten nach Herrn PROF. DR. W. MICHAELSEN benannt.

Fundorte: Holotypus, AF/1648, Prov. Pichincha. Zwischen Pifo und Papallacta. 14 km von Pifo entfernt. Wiese, 4000 m, 9. IV. 1987, leg. ZICSI et LOKSA. — Paratypen: AF/462. 1+1 juv. Ex. Fundort wie beim Holotypus. — Prov. Pichincha: AF/336. 1+2 juv. Ex. Fundort wie zuvor, 10 km von Pifo entfernt, Bachrand, 3600 m, 18. II. 1986., leg. ZICSI et LOKSA. — AF/458. 1+1 juv. Ex. Fundort wie zuvor, 12 km von Pifo entfernt, 16. II. 1986, leg. ZICSI et LOKSA. — AF/335. 1+1 juv. Ex. Fundort wie zuvor. 8 km von Pifo entfernt, Bachrand, 3200 m, 18. II. 1986, leg. ZICSI et LOKSA. — AF/306. 1+1 juv. Nationalpark Pasochoa, 2800 m, 6. II. 1986, leg. ZICSI, LOKSA et BENAVIDES. — AF/463. 5 Ex. Fundort wie zuvor, Wald, 2880 m. 15 IV. 1987, leg. ZICSI, LOKSA et BENAVIDES. — AF/459. 2+3 juv. Ex. Pichincha Gebirge vor Nono, 3800 m, Wiese am Wegrand, 8. IV. 1987, leg. ZICSI et LOKSA. — AF/461. 7+6 juv. Ex. Fundort wie zuvor, 3600 m, 4. II. 1986, leg. ZICSI et LOKSA. — AF/460. 1 Ex. Antisanilla, 16. IV. 1987. leg. ZICSI et LOKSA. — AF/465, 467, 468. 10+1 juv. Ex. Antisanilla 3100—3300 m, 17. IV. 1987, leg. ZICSI et LOKSA. — AF/1662., 1671., 1670. Antisana 3500—3700 m, 17. V. 1988, leg. ZICSI et CSUZDI. 15. IV. 1989, leg. ZICSI et LOKSA. — AF/1647. 14. Ex. Iliniza Vulkan, bei El Chaupi, 13. V. 1988, leg. ZICSI et CSUZDI. — AF/1656, 9 Ex., AF/1659. 8+2 juv. Ex. AF/1646. 2+1 juv. Ex. Iliniza Vulkan zwischen 2800—4000 m, 13. V. 1988, leg. ZICSI et CSUZDI. — AF/466. 2+1 juv. Ex. Pichincha Gebirge, 3100 m bei Quito, 19. IV. 1987, leg. ZICSI et LOKSA. — AF/1649. 2 Ex. 1674. 1 Ex. Oberhalb Lloa alte Verkehrstrasse, 2900—3100 m, 29. IV. 1989, leg. ZICSI, LOKSA et DE VRIES. — AF/1650. 3+1 juv. Ex. 10 km von Lloa in Richtung Rio Blanco, 29. IV. 1989, leg. ZICSI, LOKSA et DE VRIES. — AF/1658. 3 Ex. 46 km von Quito entfernt in Richtung St. Domingo, 7. V. 1988, leg. ZICSI et CSUZDI. — AF/1665. 1+1 Ex. Fundort wie zuvor 56 km von Quito entfernt, 3600 m, 7. V. 1988, leg. ZICSI et CSUZDI. — AF/1661. 2 Ex. Cayambe-Vulkan San Marcos Laguna, 4200 m, 6. V. 1988, leg. ZICSI et CSUZDI, AF/1668. 1+1 juv. Ex. 3 km von Pingtang. Finca Lopez, 15. V. 1988, leg. ZICSI et CSUZDI. — Prov. Napo: Umgebung von Papallacta AF/1652., 1653., 1655., 39+32 juv. Ex. 3100—3300 m, Wiese, 1. V. 1988, leg. ZICSI et CSUZDI. — Prov. Cotopaxi: AF/293. 2+3 juv. Ex. Zwischen Pujili und Zumbagua, 3800 m, Wiese, 16. II. 1986., leg. ZICSI et LOKSA. — AF/302. 5+9 juv. Ex. Fundort wie zuvor Pueblo Quemado, 4000 m, 16. II. 1986, leg. ZICSI et LOKSA.

Martiodrilus kuehnelti sp. n.
(Abb. 12—15)

Holotypus: Länge 120 mm, Breite 5 mm, Segmentzahl 176. — Paratypen: Länge 95—125 mm, 4—5,5 mm, Segmentzahl 95—125.

Farbe weiss, unpigmentiert.

Kopf kurz, rüsselförmig, tief eingezogen. Borsten *ab* meistens vom 4. Segment, Borsten *cd* vom 6. oder 7. Segment beginnend. Borsten am Vorderkörper eng gepaart, am Hinterkörper und besonders am Körperende weitläufig gepaart. Borstenentfernung *ab* = *cd*, dies Verhältnis bleibt am ganzen Körper gleich, allein hinter dem Gürtel ist die Borstenreihe *cd* bedeutend enger als *ab*. Auch die Entfernung der Borsten *aa* und *bc* ist gleich, am Vorderkörper *aa* etwas grösser als *bc*, am Hinterkörper *bc* etwas grösser als *aa*. Borsten am

Körperende stark hervortretend und gebogen. Beim Holotypus Borsten *ab* des 20. und 29. Segmentes von grossen Papillen umgeben, zu Geschlechtsborsten umgewandelt. Die Borstenpapillen tragenden Segmente variieren bei den einzelnen Exemplaren, so konnten solche am 11.—13. und 19.—21., 29. Segment erkannt werden. Einige dieser Borsten sind zu Geschlechtsborsten umgewandelt. Borstendistanz vor dem Gürtel *aa* : *ab*: *bc*: *cd*: *dd* = 33: 5: 23 : 5 : 58, hinter dem Gürtel *aa* : *ab* : *bc* : *cd* : *dd* = 32 : 4 : 29 : 3 : 61. Geschlechtsborsten des 20. Segmentes 1,1 mm Lang mit 5—7 Einkerbungen, Geschlechtsborsten der Gürtelregion 0,6 mm lang und mit 4—5 Einkerbungen versehen.

Samentaschenporen auf Intersegmentalfurche 6/7—8/9 in Höhe der Borstenlinie *cd*.

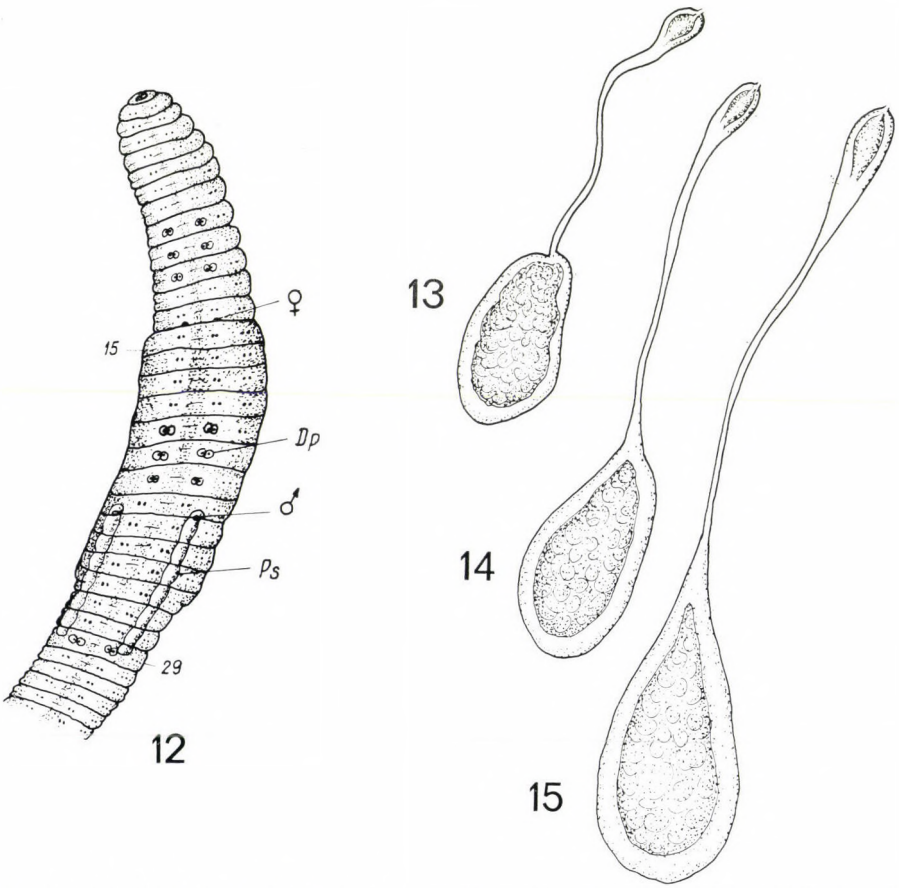

Abb. 12—15. *Martiodrilus kuehnelti* sp. n.: 12 = Ventralansicht, Dp = Drüsenpapillen, Ps = Pubertätsstreifen, 13—15 = Form der Samentaschen des 7., 8. und 9. Segmentes.

Weibliche Poren hinten auf dem 14. Segment. Männliche Poren auf Intersegmentalfurche 22/23, ausserhalb der Borstenlinie *b*, auf den Pubertätsstreifen.

Gürtel sattelförmig vom 15.—1/2 26. Segment, auf dem letzten Segment nur auf der Dorsalseite deutlich ausgebildet. Pubertätsstreifen vom 1/2 22.—1/2 29. Segment, auch bei praeadulten Tieren sehr konstant gelegen. Pubertätsstreifen sind von den Segmenten deutlich unterbrochen (Abb. 12).

Innere Organisation: Dissepimente 6/7—10/11 stärker verdickt, 11/12—14/15 schwächer verdickt, nach hinten zu abnehmend.

Muskelmagen im 6. Segment, gross und rund. Chylustaschen (Kompositenschlauchtaschen) im 7.—14. Segment, gebogene Gebilde mit deutlich abgeschnürtem Kopfende. Die Chylustaschen sind in allen Segmenten von gleicher Form. Schlingenförmige Lateralherzen im 7.—9. Segment, grosse wurstförmige Intestinalherzen im 10. und 11. Segment. Schlingenförmige Herzen im 12. Segment. Zwei Paar oesophageale Testikelblasen im 10. und 11. Segment. Zwei Paar Samensäcke im 11. und 12. Segment. Ovarien im 13. Segment. Mitteldarm im 18. Segment beginnend. Typhlosolis im 21. Segment beginnend. Die Samenrinnen verlaufen innen entweder sehr nahe nebeneinander oder weit voneinander und nähern sich nur in den Gürtelsegmenten einander.

Samentaschen 3 Paar im 7., 8. und 9. Segment. Löffelförmig ausgebreitetet Amulle mit langem Ausführungsgang der doppelt so lang wie die Ampulle ist. Ausführungsgang etwas angeschwollen, jedoch ohne Samenkämmerchen (Abb. 13—15).

Die neue Art ist in der Sammelgattung *Martiodrilus*, innerhalb der Artengruppe mit verdickten Dissepimenten hinter dem Muskelmagen, durch die weit hinter den Gürtel reichenden Pubertätsstreifen alleinstehend. Von den anderen Arten dieser Gattung, die keine verdickten Dissepimente hinter dem Muskelmagen besitzen, unterscheidet sie sich ausser diesem Kennzeichen noch, durch die Zahl und Form der Samentaschen (Artenkreis *agricola*, *savanicola*, etc.).

Die neue Art wird dem verstorbenem Univ. Prof. Dr. Wilhelm Kühnelt zu Ehren benannt, der sich auf dem Gebiet der taxonomischem Zoologie grosse Verdienste erworben hat.

Fundorte: Holotypus AF/1452. Prov. Cotopaxi, zwischen Pujili und Zumbagua 3800 m. Paramo-Schwarzerde. 16. II. 1986. leg. Loksa et Zicsi. — Paratypen: AF/292. 7 ad. Ex., 10 praead. Ex. und 15 juv. Ex. Fundort wie beim Holotypus. AF/295. 4 ad. Ex., 1 praead. Ex., 2 juv. Ex. Fundort wie beim Holotypus 4200 m. AF/300. 3 ad. Ex., 1 juv. Ex. Fundort wie beim Holotypus bei Pueblo Quemada 3900 m. AF/304. 17 praead. Ex., 11 juv. Ex. Prov. Pichincha; Nationalpark Pasochoa, 2800 m. Paramo-Schwarzerde, 6. II. 1986, leg. Benavides, Loksa et Zicsi. — AF/1453. 18 ad. Ex. 10 praead. Ex., 15 juv. Ex. Fundort wie AF/304. 15. IV. 1987, leg. Benavides, Loksa et Zicsi. — AF/337. 4 ad Ex. 10 km von Pifo. in Richtung Papallacta 3600 m. Paramo-Schwarzerde, 18. II. 1986, leg. Loksa et Zicsi AF/1454. 2 praead. Ex+2 juv. Ex. Fundort wie bei AF/337. 3800 m, 9. IV. 1987, leg. Loksa, Ponce et Zicsi. AF/1455. 1 Ex. ad. Zwischen Pifo und Papallacta, 4300 m, 14. IV. 1989, leg. Loksa et Zicsi. AF/1664. 8 Ex. 56 km von Quito in Richtung St. Domingo, 3600 m, 7. V. 1988,

leg. ZICSI et CSUZDI. — AF/1661. 2 Ex. San Marcos Laguna, 4200 m, 6. V. 1988, leg. ZICSI et CSUZDI. — AF/1660 Iliniza Machachi, 2800 m, 13. V. 1988, leg. ZICSI et CSUZDI. — AF/1657. 6 Ex. Iliniza, Hinter El Chaupi, 2500 m, 13. V. 1988, leg. ZICSI et CSUZDI. — AF/1651. 2 Ex. 10 km von Lloa entfernt in Richtung Rio Blanco, 29. IV. 1989, leg. ZICSI, LOKSA et DE VRIES. — AF/1675. 6 Ex. Oberhalb Lloa alte Verkehrsstrasse 2900—3100 m, 29. V. 1989, leg. ZICSI, LOKSA et DE VRIES.

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