Kramerius 5

Digital library

Conditions of use

The Czech Academy of Sciences Library provides access to digitalised documents only for non-commercial, academic and study purposes and only for the personal requirements of library users. Some of the documents in the Digital Library of the Czech Academy of Sciences are subject to copyright. By using the digital library and the generation of a copy of part of a digitalised document the user undertakes to observe these conditions, which must comprise part of each copy made. No further copying of any kind of materials from the digital library is possible without the written permission of the Czech Academy of Sciences Library.

Main title: **Acta entomologica bohemoslovaca**
Publisher: **Academia**
Published in: **1965-1992**
Periodical volume number: **80**
Periodical item's number: **6**
Periodical item date: **31.11.1983**
ISSN identifier: **0001-5601**
SICI identifier: **nezjištěn**
Pages: **451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464**

Acta ent. bohemoslov., **80** : 451—472, 1983
ISSN 0001 — 5601

A new genus and species of Epipyropid moth from Iran ectoparasitic on a new *Mesophantia* species, with a revision of the host genus (Lepidoptera, Epipyropidae; Homoptera, Flatidae)

FRANTIŠEK KRAMPL and JIŘÍ DLABOLA*

Department of Entomology, National Museum, Praha

Taxonomy, Epimesophantia dlabolai gen. n. et sp. n., world list, new combinations' morphology, wing-coupling, Mesophantia 3 spp. n., distribution

Abstract. *Epimesophantia dlabolai* Krampl gen. n. et sp. n. is described from 2 ♂♂ 2 ♀♀ reared from larvae living as ectoparasites on the homopteran *Mesophantia kanganica* Dlabola sp. n. swept from *Seidlitzia rosmarinus* in Iran. The systematic position of *E. dlabolai* sp. n. in the Epipyropidae is discussed with taxonomic notes on related genera and species-groups and the world species are reviewed. The new species is closely related to the European *Epimesophantia schawerdae* (Zerny) comb. n. described from Spain. A modified wing-coupling atypical of the family is described: the frenulum in both sexes of *E. dlabolai* sp. n. consisting of a bunch of bristles, the retinaculum of small spines. *Mesophantia* Melichar (Flatidae) is revised, three new species being described: *M. kanganica* Dlabola, *M. sabzevaranica* Dlabola and *M. tisina* Dlabola spp. n., and the species are keyed and their distribution discussed.

The use of the sweeping method for collecting insects during the 3rd Czechoslovak Expedition of the National Museum to Iran in 1977 yielded several Flatid specimens of the relatively common Iranian genus *Mesophantia* MELICHAR. To study oviposition and behaviour these were placed alive in a glass tube with a twig of the host plant, *Seidlitzia rosmarinus*. After several days all specimens were found dead, having been parasitized by unidentified larvae. Within two weeks the larvae completed their development, pupated and emerged as adults — moths belonging to the family Epipyropidae. The study in detail of this ectoparasitic moth-species indicated that it represents an unknown species and genus, being related to the unique West-Palaearctic *Epipyrops schawerdae* ZERNY. The present paper describes and compares the new taxa with other ones within the Epipyropidae. The main generic characters, especially in venation, are discussed with respect to the distribution of the individual taxa to be concluded in several taxonomic notes on some genera and species-groups. Wing structure examination of the new species disclosed a modified wing-coupling device in both sexes, which has not yet been known in the family.

Hitherto the homopteran genus *Mesophantia* MELICHAR (Flatidae) was considered to be monobasic, with the unique species *M. pallens* MELICHAR. The study of extensive material from several localities in the southern and

* Although this paper is presented jointly, the description of the new Epipyropid is the sole responsibility of the first author, and the descriptions of the new Homopterans that of the second author, as indicated in the text.

eastern regions of Iran has now shown that three other closely related, and in external characters very similar species which are described as new in the present paper, also belong to it, including the host species of the Epipyropid moth.

Epimesophantia KRAMPL **gen. n.**

Derivatio nominis: epi- = being upon and *Mesophantia* — name of the host genus (Homoptera, Flatidae); feminine.

Type-species: *Epimesophantia dlabolai* KRAMPL sp. n.

Diagnosis: Male and female of similar size. Head small; without ocelli and chaetosema; mouth-parts reduced, antenna bipectinate, bifid at apex and reaching in male to about one-third of forewing. Foreleg without epiphysis, mid- and hindlegs without spurs and spines. Forewing broad, triangular, hindwing relatively broad, a little shorter than forewing. Venation (Fig. 1) characteristic: in forewing complete, 10 veins arising from the discal cell, which is divided by two internal veins, the upper arising from about middle of anterior margin, the lower from base. In hindwing R_1 missing, cell simple, without any internal vein, 5 veins arising from cell, M_1 strongly arched at base, CuP and 1A + 2A free and traceable throughout whole course, 3A only outlined. Wing-coupling in both sexes comprising a comparatively short frenulum, consisting of a bunch of rather bluntly tipped bristles, being almost of the same length and arising separately from a common socket at the humeral angle of the hindwing; the bases of the frenular bristles are tightly embedded together in the socket; retinaculum of forewing specialized, consisting of an elongate patch of dense small, short, equal spines on the underside of the anal part of the wing, near the base, all turned towards the apical part of the wing.

Note. Both the bases of the frenular bristles and the spines of the retinaculum are clearly discernible only under higher magnification — 80× or more — after the wings have been placed a microscope slide and the area with spines descaled. The extended brush of the frenular bristles is clearly recognizable on the dry, pinned male (holotype) of *E. dlabolai* sp. n. This special wing-coupling has not previously been mentioned in the Epipyropidae; in this family the frenulum is usually simple and the retinaculum absent (cf., e.g. JORDAN, 1928; COMMON, 1970; HOPP, 1928).

Differential diagnosis: Despite the considerable similarity in external characters to certain other genera, which is very usual within the Epipyropidae, the new genus is well characterized by the absence of R_1 in the hindwing and by the complete venation of the forewing, especially the presence of all 10 veins arising separately from the discal cell (R_{1-5}, M_{1-3} and $CuA_{1,2}$). No other known Epipyropid genus shows these features. The comparison and relationships to other genera are discussed in more detail below.

Distribution: Southern Palaearctic: Spain, Israel and Iran. Two Epipyropid specimens caught in 1956 in Israel and deposited in the British Museum have been tentatively identified as *E. schawerdae* ZERNY, but the identification still needs to be confirmed.

Epimesophantia dlabolai KRAMPL **sp. n.**

(Figs. 1—3; Plate I, Figs. 1—4; Plate II, Figs. 6—11)*

This species is named for Dr. Jiří Dlabola who caught and reared these moths in Iran.

---

* Plates I and II will be found at the end of this issue.

Male. Expanse 8.0—8.4 mm, length of forewing 3.7—4.4 mm, length of body (dried) 2.7 mm.

Head small, rounded, relatively roughly covered with blackish scales with white tips; bases of antennae and space between them with large white scales; eyes small, somewhat projecting laterally, narrowly edged with white

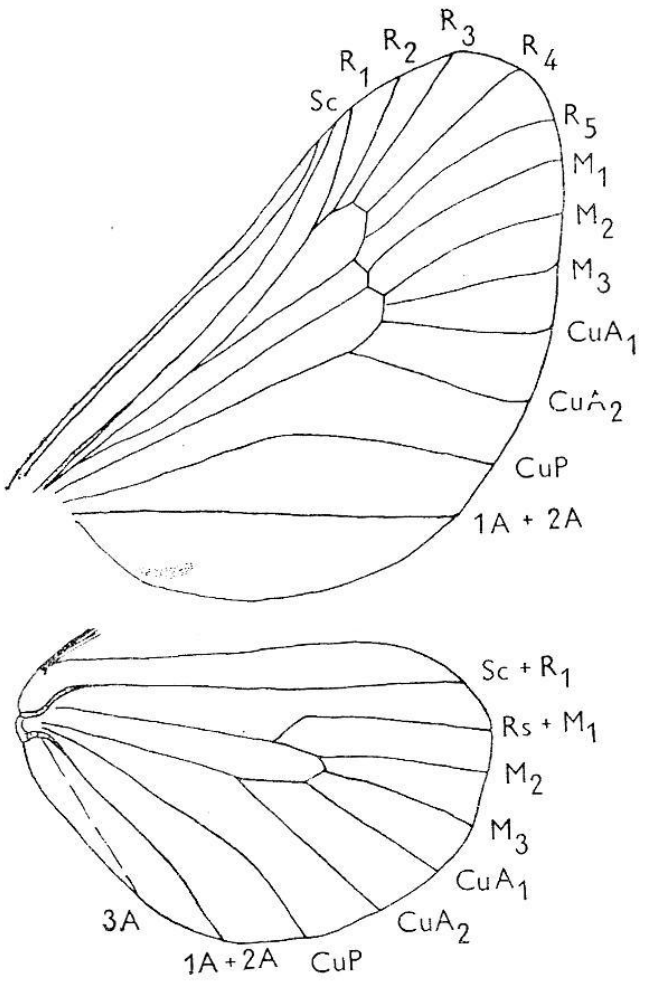
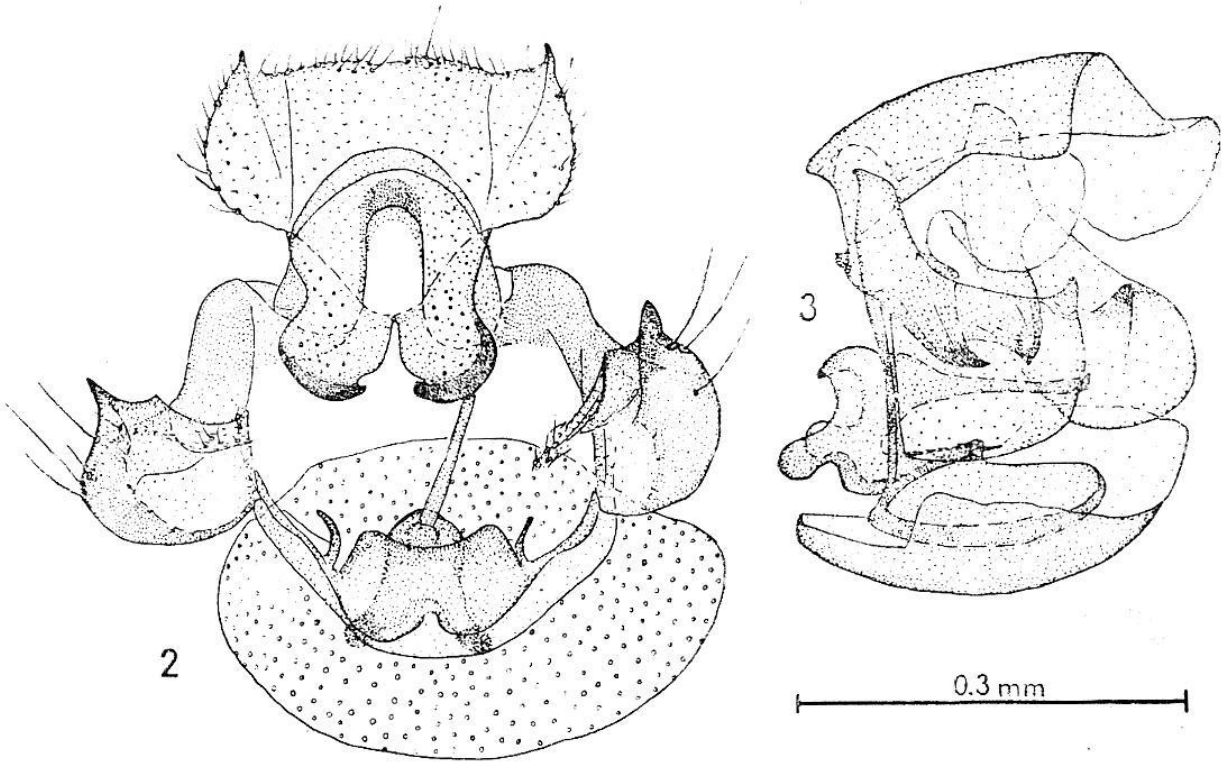


Fig. 1. The male wing venation of *Epimesophantia dlabolai* gen. n. et sp. n.

scales anteriorly and with long, narrow, white scales posteriorly; space between eyes (frons) broadly trapezoidal, turned rather ventrally, measuring a little less than twice diameter of eye. Mouth parts entirely reduced and no part is visible among dense scaling. Antenna 13-segmented including the two basals, bipectinate, reaching a little more than one-third of costa of forewing; scape stout, rounded, with pecten of short scales; pedicellus smaller, shaft bifid at apex, with 11 pairs of long, ciliated branches, the longest branch being four times longer than the segment from which it arises; shaft white-scaled dorsally, spotted with fuscous above the base of each branch; branches dark brown, also white-scaled, spotted with fuscous. Thorax apparently blackish (in type series most scales are missing). Abdomen rather short and slender, densely covered with short, broad, fuscous and blackish scales with whitish tips; anal tuft small, ochreous. Legs fuscous, irrorate with whitish

ips of most scales, tarsi narrowly lined white; foreleg with broad coxa, tibia without epiphysis; mid- and hindlegs without spurs and spines.

Forewing broad-triangular, costa slightly arched in outer half, apex rounded, termen oblique and slightly excurved, dorsum strongly arched. Wing surface clothed with comparatively broad, rather short, coarse scales



Figs. 2—3. The male genitalia of *E. dlabolai* gen. n. et sp. n.: 2 — ventral view (depressed on slide), 3 — lateral view (natural position).

of uniform size and shape, serrated at tips, rather pale, fuscous or brownish grey and less blackish or black, all with more or less traceable whitish or white tips. The scales of similar colour are grouped to produce a network pattern or marking, especially in outer half of wing, where the blackish scales are arranged in transverse patches. Cilia with scales of different length, broadened and whitish apically; dorsum with narrower, sometimes hairy scales. Hindwing a little shorter than forewing, relatively broad and rounded, length-width ratio, including cilia, 5 : 3; costa almost straight up to rounded apex; wing surface clothed with broad, unicolorous, fuscous scales of same shape and size as on forewing, only costal area and cilia with narrower, sometimes hairy, whitish-tipped scales; basal two-thirds, along veins CuP, 1A + 2A and 3A, with long, fine, dark grey hairs. Wing-coupling is described in the generic diagnosis.

Genitalia (Figs. 2—3; Pl. I, Fig. 3). Tegumen stout, anterior margin with semicircular excavation, laterally with large, semicircular lobes; uncus does not differentiated; gnathos represented by the two strongly sclerotized, arcuate, conical processes, not fused medially; valva stout, broad and relatively short, gradually narrowing from the inner side to a pointed, strongly sclerotized clasper; saccus enlarged posteriorly as a rounded plate, as long

as valva, aedeagus somewhat longer than valva, distal half slender, tubular, proximally extended and laterally connected with anellus and juxta (phallobasis), projecting anteriorly to a pair of bulbous processes; juxta forming posteriorly a plate, reaching about a half of aedeagus in the lateral view. The ventral part of the genitalia is covered by the large, strongly sclerotized, semicircular 8th sternite.

Female. Expanse 8—9 mm, length of forewing 3.7—4.9 mm, length of body 2.7—3.6 mm.

Head and thorax as in male but head with more white scales, antenna shorter, reaching about one-sixth of costa of forewing, bipectinate, bifid at apex, with only 7 to 8, much shorter branches, coloured similarly as in male. Abdomen stout and long, exceeding tornus, covered dorsally and ventrally by fuscous, whitish-tipped scales and ended by sclerotized tegumen, from which the broad papillae anales protrude. Legs of similar shape and scaling as in the male.

Forewing more elongated towards the apex than in male, with costa nearly straight up to three-fourths from base, then arched, apex rounded, termen more oblique and excurved, gradually becoming the arched tornus and dorsum, respectively. Hindwing narrower and a little longer than in male, length-width ratio 3 : 2, similarly scaled as in male, including long hairs along anal veins. Underside of both fore- and hindwings clothed with unicolorous, fuscous scales, but area between costa and Sc vein, as well as submarginal area, with whitish-tipped scales.

Venation of male and female (Fig. 1) is very similar, corresponding to somewhat different shape of wings, and no variation was observed in the four specimens examined. Forewing venation complete and all veins well separated; 10 veins arising from the discal cell which is divided by the two internal veins: the upper arising from about middle of anterior margin to below R_5, the lower from base to below M_1; Sc reaches costa at about four -thirds, where it is connected with a distinct trachea, running from base along costa; R_5 and M_1 parallel, M_2 and M_3 closely approximated at base; CuP excurved anteriorly; 1A + 2A nearly straight. In hindwing R_1 missing; Sc free and straight, only at base strongly curved towards dorsum; cell simple, without internal vein, from which 5 well separated veins arise: $R_S + M_1$ arising very archedly from four-fifths of anterior margin, M_3 from angle, being distinctly divided at base from the upper M_2 and lower CuA_1, CuA_2 arising from posterior margin at two-thirds; CuP and 1A + 2A free, distinct in whole course, but 3A only outlined where the wing is usually folded down.

Material. Holotype (Pl. I, Fig. 1): ♂, S. Iran, Kangan (27.50 N, 52.03 E), larva 22. iv. 1977, adult emerged 6—10. v. 1977, Exped. Nat. Mus. Praha (Loc. no. 306). Paratypes: 1 ♂ (right wings and antenna broken, descaled and mounted on a slide together with genitalia), 2 ♀♀ (one with left forewing missing and abdomen broken), same data as holotype; all specimens in coll. Nat. Mus. Praha.

Differential diagnosis: The new species is sufficiently different from the only other, similar and apparently closely related, species of the genus, *E. schawerdae* (ZERNY, 1929), originally described from Spain from a female caught at light. The females of both species are similar in size, appearance and venation, but *E. schawerdae* has the fore- and hindwings distinctly broader,

the costa of the forewing is straight almost up to the apex and the coloration of the forewing seems to be rather unicolorously blackish grey, without too contrasting black scales (see the colour photograph in BUSTILLO & RUBIO, 1976). The main difference is in pectination of the antennae, *E. schawerdae* having 11 or 12 branches (the 2 specimens from Israel have 12 branches) and *E. dlabolai* sp. n. only 7 or 8 branches.

Biological notes

Several living specimens of *Mesophantia* MELICHAR were placed in a glass tube with a small twig of *Seidlitzia* without any sign that ectoparasites were present upon their bodies. Inspection next morning disclosed four larvae covered with nearly white wax layer on the dorsum and creeping alive into the shelter. One larva was observed starting to spin its cocoon. The hosts were later found dead in the tube. During the next few days all four parasites spun their white cocoons. A certain humidity in the tube was kept by periodically applying drops of water on some days. After about a fortnight two dead, fully developed adults were found on 8 May and on the following days two live moths emerged.

Examination of the four host specimens of *Mesophantia* under the microscope revealed the damage to the wax coating and cuticle on the ventral part of their bodies. One female was deeply injuried between the hindleg coxae and the thorax-abdomen connection (Pl. I, Fig. 5); in another specimen there was only a narrow aperture; one female had the superficial part of the integument partly destroyed, including the wax coating on the sites of wax producing glands; one male was found to have its wax coating almost intact on the whole body including the tegmina. Our observations indicate that sometimes the final instar larva not only consumes the superficial structures and wax layer upon the ventral part of the host body but may tunnel inside, probably consuming muscles and internal organs of the basal abdominal segments (cf. MARSHALL, 1970). This so affects the relatively small host that it succumbs. Therefore the moth larva may be considered to be rather parasitoid than a true parasite. The fully developed larva leaves the host to spin a cocoon, which is dimorphic, perhaps depending on sex, with or without a sombrero-like structure on the upper side (Pl. I, Fig. 4). The cocoon is white, oval-shaped, the lower side nearly flat and broadly fastened to the substratum, and the upper side convex with rather rough surface. After emergence of the adult the yellowish brown, weakly sclerotized pupal cuticle protrudes from the cocoon, as is usual in the Zygaenoidea (e.g. *Zygaena* F., *Apoda* HAW. etc.). Biological observations as well as the general appearance of the pupa in large extent correspond with those described e.g. in the Indian species *Epieurybrachys eurybrachydis* (FLETCHER) (KRISHNAMURTI, 1933).

Host species and its distribution

The homopteran host was recognized as belonging to an unknown species of the genus *Mesophantia* (Flatidae), described below as *M. kanganica* DLABOLA sp. n. This species was collected in the environs of Kangan (Loc. No. 306), on the sea shore of the Persian Gulf, and also on some ecologically quite different inland localities in southern and south-eastern Iran which, because of the low humidity, may not be suitable for the ectoparasite moths.

The bugs were swept from solitary bushes of *Seidlitzia rosmarinus* (EHRENB.) BOISS. (Salsolaceae) at the end of April, 1977. The genus *Mesophantia*, for many years considered to be monotypic is known at present from four closely related and similar species occurring in the hotest coastal zone in southern and south-eastern Iran and also from the higher elevated biotopes in the mountains of southern, eastern and north-eastern Iran. An isolated record is also mentioned from south-east Afghanistan (Nuristan) — see Fig. 30. The family Flatidae has previously been observed as the host of Epipyropid moths in North America, where *Fulgoraecia barberiana* (DYAR) is parasitic on *Metcalfa pruinosa* (SAY) (KATO, 1940), and in Tanzania, where *Fulgoraecia epityraea* SCHEVEN is parasitic on *Ityraea patricia* MELICHAR (SCHEVEN, 1974).

Systematic position of *Epimesophantia* KRAMPL gen. n. and some remarks on the relationships within the Epipyropidae

Most of 32 known species of Epipyropidae are very similar in external characters and they undoubtedly represent a monophyletic group, distinctly separated in evolution and ecologically immensely specialized. Up to the present nine genera were recognized — six of them monobasic — principally distinguished by different venation. Only JORDAN (1928), HEINRICH (1931), TAMS (1947) and VIETTE (1960) have examined and figured male genitalia of some species; these also seem to be of very similar construction. KATO (1940) summarized the data of this family, listed all species known to that date, described two new genera and divided the family into two subfamilies: Epipyropinae and Heteropsychinae. But in his concept some relationships remained undisclosed, and a number of species with evidently different venation have been kept in the genus *Epipyrops* WESTWOOD. In addition, with respect to the Code, as TAMS (1947) has fully explained, the type-genus name should be *Fulgoraecia* NEWMAN, 1851 and not the frequently used *Epipyrops* WESTWOOD, 1876 which is a junior objective synonym; but subsequently the family name has been conserved.

We had to overcome a certain confusion in the systematics of the family when distinguishing the new species from others related and in establishing its generic position. Our study could only be based on the very scattered literary information with exception of the new species. Wing venation necessarily served as a basis for our study, since other important criteria such as external characters, male genitalia, distribution and hosts are little known.

Venation. Venation might not seem to be a really satisfactory generic criterion because it varies in both fore- and hindwings, as shown by JORDAN (1928) in the species *Epipomponia multipunctata* (DRUCE). But it is necessary to distinguish an infraspecific variability of venation (as pointed by JORDAN's example) from relatively constant venation of genera or species-groups represented by several species and originally described by different authors, e.g. *Heteropsyche* PERKINS, *Epiricania* KATO, *Epimesophantia* gen. n. or the three Malagasy species of '*Fulgoraecia*' (*malagassica*, *grandidieri*, *radama*).*

* In the case of *Fulgoraecia* NEWMAN (= *Epipyrops* WESTWOOD) and *Epipomponia* DYAR we recognize these genera represented by the type-species from those represented by others and in all probability not congeneric species by using '*Fulgoraecia*' or '*Epipomponia*', respectively. We do not propose generic status and name for them without material for examination and consider them as the species-groups.

From this point of view, the genus *Fulgoraecia* has remained a heterogenous taxon which will surely be revised in the future and some species will be transferred to other genera. By now the situation in the other genera or species-groups (*'Fulgoraecia'* — the three Malagasy species and *'F.' cucullata* from Haiti or *'Epipomponia'* — the two American species) seems to be more clear, even though synonymy of some species has occurred (e.g. in the genus *Heteropsyche*). When we consider in general view the family, the shape and size of wings besides venation, we can observe the following two groups of species (genera) which represent perhaps separate branches in evolution.

The largest group includes species with broad and relatively short forewings and hindwings which are also broad and only a little shorter. In the forewing all 10 veins arise from the discal cell and run to the margin with the exception of the genera *Heteropsyche* and *Epiricania*, in which R_5 is absent. To this group belong the genera *Fulgoraecia* including the *'Fulgoraecia' malagassica* species-group, *Epieurybrachys* KATO, *Epimesophantia* gen. n., *Epiricania*, *Heteropsyche*, *Epipomponia* DYAR, *Anopyrops* JORDAN and *Protacraga* HOPP. The genus *Protacraga* originally described in the related family Dalceridae (HOPP, 1924) and later transferred to the Epipyropidae (HOPP, 1928; SICK, 1940) has very similar venation to *Anopyrops* but somewhat different shape of wings. The group is distributed in the tropics and subtropics of the whole world.

The second group contains species with much narrower and longer forewings and with hindwings also relatively narrow and considerably shorter than forewings. From the discal cell of the forewing 8—10 veins arise to the margin. This group is represented by the genera *Agamopsyche* PERKINS and *Palaeopsyche* PERKINS from Australia and the two species of *'Epimesophantia'* from Central and South America. Thus, the distribution of this group is much more restricted. The genus *Palaeopsyche* may be a transition between the two groups.

Classification after KATO (1940), who proposed the division of the Epipyropidae into two subfamilies, based only on the presence or absence of vein 9 (= R_3) of the forewing*, seems to be somewhat simplified without any regard to other characters (e.g. hindwing venation etc.), and may be rather qualified just for an artificial arrangement without a reflection of the natural relationships within the family. The main characters of venation in the genera and species-groups of the family are summarized in Table 1.

The genus *Epimesophantia* gen. n. differs in fore- and hindwing venation from all other known genera. The forewing venation resembles the genera in which the vein R_5 is present and from the discal cell 10 veins run to the margin: *Fulgoraecia*, *Epieurybrachys*, the *'Fulgoraecia' malagassica* species-group, *Epipomponia*, *Protacraga*, *Anopyrops* and *Palaeopsyche*. But the hindwing venation is quite characteristic in resembling the only genus *Heteropsyche* in which — on the contrary — vein R_5 is missing in the forewing. The new genus is distinguishable from *Fulgoraecia* by the absence of R_1 in the hindwing, from which, moreover, a cross-vein arises and borders exteriorly the discal cell in *Fulgoraecia*, so that it is divided by a longitudinal internal vein. In contradistinction to this, *Epimesophantia* gen. n. has a simple discal

---

* We respect the later common usage — see e.g. COMMON (1970), explaining the same change in a number of the radial veins by the reduction of the vein R_5 being missing or coincident with M_1.

TABLE 1

Main characters of venation and distribution of the genera and species-groups of Epipyropidae

Genus or species-group	Forewing venation: Number of veins arising from discal cell	Forewing venation: Vein R_5	Hindwing venation: Number of veins arising from discal cell	Hindwing venation: Discal cell	Hindwing venation: Vein R_1	Number of anal and CuP veins	Distribution	Number of species known
Fulgoraecia[1] (= *Epipyrops*)	10	present	6	divided (by 1 longitudinal internal vein)	present	3	India, China, Sri Lanka, N. Guinea, Africa, North America	8
Protacraga	10	present	6	divided*	present	3	South America	1
Anopyrops	10	present	6	divided	present	3	South America	1
Epipomponia	10	present	7	divided (by 2 internal veins)	present	2	Japan, Taiwan	1
Epieurybrachys	10	present	6	divided	present	1	India	1
'*Fulgoraecia*'[2]	10	present	5	simple	present	3	Madagascar, Haiti	4
Epimesophantia	10	present	5	simple	absent		Iran, Spain	2
Epiricania	9	absent	6	divided	present	2	Japan, India	2
Palaeopsyche	10	present	4	simple	present	2	Australia	1
Heteropsyche	9	absent	5	simple	absent	3	Australia, N. Guinea	7
'*Epipomponia*'[3]	8—10	present or absent	6 (7)	divided (by 1 or 2 veins)	present	2 (3)	Central and South America	2
Agamopsyche	8	absent	5	simple	absent	1	Australia	1

1 — Morphological data of the type-species *F. bowringi*. 2 — Four species forming the '*Fulgoraecia*' *malagassica* species-group (*malagassica*, *grandidieri*, *radama*, *cucullata*). 3 — Two species forming the '*Epipomponia*' *multipunctata* species-group (*multipunctata*, *elongata*). * The term "divided" means the discal cell with only one longitudinal internal vein as explained in *Fulgoraecia*.

TABLE 2

Comparison of the male genitalic characters in some genera or species-groups of Epipyropidae

Character	*Fulgoraecia* (*atra*)	'*Fulgoraecia*'	*Epimesophantia*	*Heteropsyche*	'*Epipomponia*' (*multipunctata*)
Tegumen	laterally (on each side) with a deep sinus, which separates	laterally with semicircular lobes	laterally with large semicircular lobes	laterally with large semicircular lobes	laterally with not differentiated lobes but with a distinct nose
Clasper	short, bulbous with a short denticulate process on the inner side	short, stout, gradually produced into a conical process	short, stout, gradually produced into a conical, sharply pointed process	short, stout, gradually produced into a small, conical and pointed process	long, broad, base, distally produced into a long and slender, sharply pointed process

cell (without an internal vein) which otherwise appears only in the Australian genera *Heteropsyche*, *Palaeopsyche*, *Agamopsyche* and also in all four species of the '*Fulgoraecia*' *malagassica* species-group. But in the latter four species, as well as in the genus *Palaeopsyche*, vein R_1 in the hindwing is present, whereas in *Heteropsyche* and *Agamopsyche* it is absent. *Epimesophantia* gen. n. also differs from *Epieurybrachys* by the absence of R_1 (including the cross-vein) in the hindwing, in which the discal cell is divided by an internal vein, and by the presence of CuP and weak 3A veins, both being absent in *Epieurybrachys*. Thus, *Epimesophantia* gen. n. seems to be closely related to the '*Fulgoraecia*' *malagassica* species-group and some characters also indicate affinity to *Epieurybrachys*.

Genitalia. The male genitalia are poorly known throughout the family Epipyropidae, being examined and figured only in several species of *Heteropsyche*, *Fulgoraecia*, the '*Fulgoraecia*' *malagassica* species-group and in the American '*Epipomponia*' *multipunctata* (DRUCE) (JORDAN, 1928; HEINRICH, 1931; TAMS, 1947; VIETTE, 1960) and now in *Epimesophantia* gen. n. The comparison shows a great similarity in their basic construction even though some figures, especially those of JORDAN (1928), provide very restricted views only of the terminal parts of genitalia and therefore internal structures could not be compared. A characteristic feature there is the tegumen laterally projecting to the large semicircular lobes in *Heteropsyche* and *Epimesophantia* gen. n., which also occur in the '*Fulgoraecia*' *malagassica* species-group and are reduced to a pair of narrow projects in *Fulgoraecia atra* (PAGENSTECHER), or the lobes are not differentiated in '*Epipomponia*' *multipunctata* and *Fulgoraecia barberiana* (DYAR). The clasper of the valva is usually stout, short and more or less pointed (*Epimesophantia* gen. n., *Heteropsyche*, some species of *Fulgoraecia*, '*Fulgoraecia*' *grandidieri* (VIETTE) and '*F.*' *cucullata* (HEINRICH)) with the exception of the American '*Epipomponia*' *multipunctata* and *Fulgoraecia barberiana*, in which it is slender and long — see also Table 2.

Hosts. The homopteran hosts upon which the larvae of these moths are exclusively living as ectoparasites have been known only in some species of Epipyropidae (Table 3). More hosts of different families of Auchenor-

TABLE 3

Review of the homopteran hosts of Epipyropidae (arranged after different authors quoted in the literature): (1) COMMON, 1970; (2) FLETCHER, 1920; (3) FLETCHER, 1939; (4) JORDAN, 1928; (5) KATO, 1940; (6) KRISHNAMURTI, 1933; (7) OHGUSHI, 1953; (8) SCHEVEN, 1974; (9) TAMS, 1947; (10) WILSON & MCPHERSON, 1979

Genus or species-group of Epipyropidae		Homoptera, Auchenorrhyncha Host species, genus, etc.	Family
	Fulgoraecia		
(5)	(*bowringi*)	*Laternaria candelaria* (LINNAEUS, 1758)	Fulgoridae
(9)	(*cerolestes*)	*Metaphaena cruenta* (GERSTAECKER, 1895)	Fulgoridae
		Metaphaena militaris (GERSTAECKER, 1895)	
(8)	(*epityraea*)	*Ityraea patricia* MELICHAR, 1901	Flatidae
(5, 10)	(*barberiana*)	*Metcalfa pruinosa* (SAY, 1830)	Flatidae
		Hysteropterum auroreum (UHLER, 1876)	Issidae
		Thionia bullata (SAY, 1830)	
		Thionia elliptica (GERMAR, 1830)	
		Acanalonia conica (SAY, 1830)	Acanaloniidae
(5, 7)	*Epipomponia* (*nawai*)	*Tanna japonensis* (DISTANT, 1892)	Cicadidae
		Oncotympana maculaticollis (MOTSCHULSKY, 1866)	
		Meimuna opalifera (WALKER, 1850)	
		Macrosemia kareisana (MATSUMURA, 1907)	
		Graptopsaltria nigrofuscata (MOTSCHULSKY, 1866)	
(2, 6)	*Epieurybrachys*	*Eurybrachys tomentosa* (FABRICIUS, 1775)	Eurybrachyidae
		Eurybrachys spinosa (FABRICIUS, 1798)	
	Epimesophantia	*Mesophantia kanganica* sp. n.	Flatidae
	Epiricania		
(5)	(*hagomoro*)	*Ricania japonica* MELICHAR, 1898	Ricaniidae
		Euricania ocellus (WALKER, 1851)	
		Dictyophara patruelis (STAL, 1859)	Dictyopharidae
		Oliarus subnubilus (UHLER, 1896)	Cixiidae
(3)	(*melanoleuca*)	*Pyrilla* sp.	Lophopidae
(5)	*Palaeopsyche*	Cicadellidae	Cicadellidae
(1, 5)	*Heteropsyche*	*Platybrachys* spp.	Eurybrachyidae
		Scolypopa australis (STAL, 1859)	Ricaniidae
	'Epipomponia'		
(4)	(*multipunctata*)	*Laternaria lucifera* (GERMAR, 1821)*	Fulgoridae
(5)	*Agamopsyche*	Delphacidae	Delphacidae

* JORDAN (1928) gives this host species probably erroneously as *Laternaria ignifera* (GERMAR).

rhyncha, found e.g. in the Japanese *Epiricania hagomoro* KATO, do not show the too stenotypic host-selection. The ecological conditions of these moths have been rather determined by those of their host-species besides the other important factors, e.g. the special morphological structures on the thorax of the host, which enable grasping by the newly hatched moth-larva and later

its escape from the abdomen of the host, as described in detail in *Epipomponia nawai* (DYAR) by OHGUSHI (1953). The species of Fulgoridae, Cicadidae, Eurybrachyidae, Flatidae and Ricaniidae have been observed more frequently as the hosts.

Distribution. The family Epipyropidae is distributed in the tropics and subtropics all over the world, especially in the Old World, only six species belonging to the genera or species-groups *Protacraga*, *Anopyrops*, '*Epipomponia*', '*Fulgoraecia*' and, hitherto, also *Fulgoraecia* being known from America (Table 1). Most genera and species occur in the Oriental and Australian regions, where the family probably originated. Three species are known from Africa and three from Madagascar. In the Palaearctic region two species occur in Japan (*Epipomponia* and *Epiricania*) and two species in the western part, i.e. Spain, Israel and Iran (*Epimesophantia* gen. n.). The morphological differences discussed here correspond to a large extent with the distribution of the individual genera or species-groups, showing thus their probably natural ranking and relationships. A full cladistic analysis has not been feasible because present knowledge of the morphological structures is insufficient, being known only from the female in a number of species.* But some cases of taxonomic importance are pointed out as follows.

Epimesophantia schawerdae (ZERNY, 1929) **comb. n.**

Epipyrops schawerdae ZERNY, 1929. Verh. zool.-bot. Ges., Wien, 79 : (36)—(37), Figs. 3, 4.

This species is transferred to the genus *Epimesophantia* gen. n. on the basis of similar venation, as is evident from the original description (ZERNY, 1929). Although the female type is similar to *E. dlabolai* sp. n. in external characters and size we can easily distinguish both the species (females) by differences in the antennae — see the differential diagnosis of the new species above. We can suppose these two species to be more advanced and closely related one other, being separated geographically from other taxa inhabiting the tropics of Asia, Africa and Madagascar.

Epiricania melanoleuca (FLETCHER, 1939) **comb. n.**

Epipyrops melanoleuca FLETCHER, 1939. Bull. ent. Res., 30 : 293.

The venation of this species as follows from the original description (FLETCHER, 1939) agrees with that of the genus *Epiricania* KATO and distinctly differs from the venation of *Fulgoraecia* NEWMAN (= *Epipyrops* WESTWOOD) by the absence of vein R_5 in the forewing. Other characters also fall within the genus represented by the type-species *Epiricania hagomoro* KATO. Therefore *Epipyrops melanoleuca* FLETCHER is transferred to the genus *Epiricania* KATO.

'*Fulgoraecia*' *malagassica* species-group

According to the original descriptions the three Malagasy species *Epipyrops malagassica* JORDAN, 1928, *E. grandidieri* VIETTE, 1960, *E. radama* VIETTE, 1960 and *E. cucullata* HEINRICH, 1931 from Haiti are each closely related,

* It is remarkable that a great number of females were reared from larvae in *E. nawai* but no male; it is probably by parthenogenesis, as given by INOUE (1982).

having similar venation of the fore- and hindwings characteristic only for these geographically quite isolated species. Moreover, the basic characters of the male genitalia in the two species examined, *E. grandidieri* and *E. cucullata* (VIETTE, 1960; HEINRICH, 1931) are also very similar, which also confirms the relationship of these small and broad-winged species. All four species of this group resemble those of *Epimesophantia* gen. n., in which the hindwing venation is more reduced by the absence of R_1. They differ markedly from *Fulgoraecia*, represented by the type-species *F. bowringi* NEWMAN in venation of both fore- and hindwings: in the forewing the upper internal vein arises from about the middle of the anterior margin of the discal cell (or it is apparently outlined by weakened proximal part of this vein), in *Fulgoraecia* it arises from the base; R_1 of the hindwing is free in the whole course and is not joined with R_2 by a cross-vein (or the cross-vein is vestigial and distinct only at its basic point near R_2 but never reaches R_1) as in *Fulgoraecia*. The hindwing discal cell is simple, whereas in *Fulgoraecia* it is divided by an internal longitudinal vein. These differences evidently indicate that the *'Fulgoraecia' malagassica* species-group is not closely related to the true *Fulgoraecia* and may represent a generically distinguishable group, relatively advanced evolutionarily and probably derived from some ancestors with rather primitive, more complicated venation and inhabiting the Asiatic tropics.

'Epipomponia' multipunctata species-group

The two American species *Epipomponia multipunctata* (DRUCE) and *E. elongata* JORDAN with conspicuously narrower and longer forewings and also relatively narrow hindwings, which are considerably shorter than fore ones, represent a group perhaps distantly related to the Old World genus *Epipomponia* DYAR with the only Japanese type-species *E. nawai* (DYAR) as proposed by JORDAN (1928), but with some doubt by KATO (1940). The general appearance of the broad-winged species *E. nawai* (see e.g. ZERNY, 1929; YAMAMOTO, 1959) with much more primitive venation (full number of forewing veins, the hindwing discal cell divided by two internal longitudinal veins) rather indicates its relationship to more original genera *Fulgoraecia* and *Epieurybrachys*. The greater range of venation variability in the species *E. multipunctata* and the style of its colouring observed by JORDAN (1928) resulted in this species being placed together with *E. elongata* in the genus *Epipomponia* without respect to other characters, e.g. wing shape. But as follows from JORDAN's examination, the venation of *E. multipunctata* is only exceptionally similar to that of *E. nawai*. The reduction of certain veins is quite clear in the American *'Epipomponia'* species and the variation may be considered of rather infraspecific importance or it may indicate a general tendency towards reduction of some veins in the more advanced groups. From this point of view we can observe a certain relationship of this group with the Australian genus *Agamopsyche* PERKINS which has greatly reduced venation and probably represents the most advanced genus in the family. The differences on the generic level between *Epipomponia nawai* and the American *'Epipomponia'* species should also occur in genitalia, which are quite characteristic in *'E.' multipunctata* with non-differentiated lateral lobes of the tegumen and long, slender, sharply pointed process of the clasper (see Table 2). The very similar structure of male genitalia can be found in other

American species *Fulgoraecia barberiana* (DYAR), figured by HEINRICH (1931), which hardly belongs to the genus *Fulgoraecia*. But we cannot properly assess its true generic position without some knowledge of the venation.

World list and distribution of known species of Epipyropidae

Fulgoraecia NEWMAN, 1851	
(= *Epipyrops* WESTWOOD, 1876)	
(= *Oedonia* KIRBY, 1892)	
(= *Microlimax* HAMPSON, 1896)	
bowringi NEWMAN, 1851	China, India
anomala (WESTWOOD, 1876)	
fuliginosa (TAMS, 1922)	India
pallidipuncta (HAMPSON, 1896)	Sri Lanka
poliographa (HAMPSON, 1910)	Sri Lanka
fulvipunctata (DISTANT, 1913)	South Africa, Natal
cerolestes TAMS, 1947	Tanganyika
epityraea SCHEVEN, 1974	Tanzania
atra (PAGENSTECHER, 1900)	Bismarck Is..
barberiana (DYAR, 1902)	New Mexico, Texas,
? *exigua* (HY. EDWARDS, 1882)	Arizona, Illinois
Protacraga HOPP, 1924	
micans HOPP, 1924	Brasilia
Anopyrops JORDAN, 1928	
corticina JORDAN, 1928	French Guyana, Surinam
Epipomponia DYAR, 1906	
nawai (DYAR, 1904)	Japan, Taiwan
Epieurybrachys KATO, 1940	
eurybrachydis (FLETCHER, 1920)	India
'*Fulgoraecia*' *malagassica* species-group	
malagassica (JORDAN, 1928)	Madagascar
grandidieri (VIETTE, 1960)	Madagascar
radama (VIETTE, 1960)	Madagascar
cucullata (HEINRICH, 1931)	Haiti
Epimesophantia KRAMPL gen. n.	
dlabolai KRAMPL sp. n.	Iran
schawerdae (ZERNY, 1929) comb. n.	Spain, Israel
Epiricania KATO, 1939	
hagomoro KATO, 1939	Japan
melanoleuca (FLETCHER, 1939) comb. n.	India
Palaeopsyche PERKINS, 1905	
melanias PERKINS, 1905	Australia, Queensland
Heteropsyche PERKINS, 1905	
poecilochroma PERKINS, 1905	Australia, Queensland
melanochroma PERKINS, 1905	Australia, New South Wales
micromorpha PERKINS, 1905	Australia, New South Wales
dyscrita PERKINS, 1905	Australia, New South Wales
stenomorpha PERKINS, 1905	Australia, New South Wales
doddi (ROTHSCHILD, 1906)	Australia, Queensland
aenea HERING, 1932	New Guinea

Kramerius 5

Digital library

Conditions of use

The Czech Academy of Sciences Library provides access to digitalised documents only for non-commercial, academic and study purposes and only for the personal requirements of library users. Some of the documents in the Digital Library of the Czech Academy of Sciences are subject to copyright. By using the digital library and the generation of a copy of part of a digitalised document the user undertakes to observe these conditions, which must comprise part of each copy made. No further copying of any kind of materials from the digital library is possible without the written permission of the Czech Academy of Sciences Library.

Main title: **Acta entomologica bohemoslovaca**
Publisher: **Academia**
Published in: **1965-1992**
Periodical volume number: **80**
Periodical item's number: **6**
Periodical item date: **31.11.1983**
ISSN identifier: **0001-5601**
SICI identifier: **nezjištěn**
Pages: **465, 466, 467, 468, 469, 470, 471, 472**

'Epipomponia' multipunctata species-group	
multipunctata (DRUCE, 1887)	*Panama, Bolivia*
elongata JORDAN, 1928	(?) South America
Agamopsyche PERKINS, 1905	
threnodes PERKINS, 1905	Australia, Queensland

*

REVIEW OF THE HOMOPTERAN GENUS *MESOPHANTIA* (FLATIDAE)

The new taxon of the family Epipyropidae (Lepidoptera) was investigated as a parasite of the homopteran genus *Mesophantia* (Flatidae) which is reviewed in the following part of this paper.

Mesophantia MELICHAR, 1902

This monotypic genus was originally erected to acommodate the simultaneously described *M. pallens* MELICHAR, 1902 then known from a unique female collected at Shahrud, near Gorgan in N. Iran. The species description contains few criteria except the coloration and size, of use for recognition of this taxon, and a revised description is therefore included in this paper. During the Museum's three expeditions to Iran approximately 212 adults and 26 larvae belonging to 4 different species of *Mesophantia* were collected. The habitus and the surface of the body do not always provide good characters for separation, except in the case of one species which is relatively smaller and in another which has a tumidly prolonged apex of the head; the other two species can only be separated by examination of the genitalia. The geographical distribution of these species in Iran is shown in Fig. 30.

Key to the species of Iranian genus *Mesophantia* MELICHAR

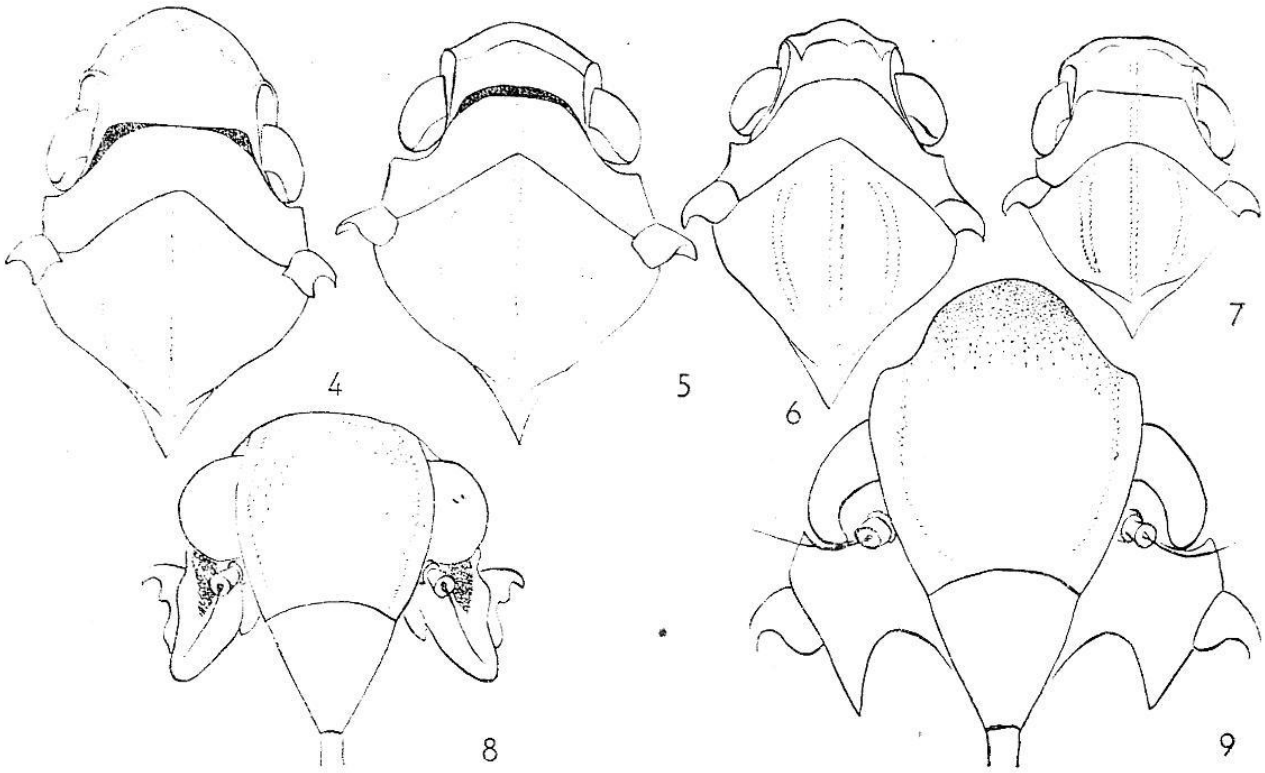
1 Smaller species, up to 8 mm (♂) 9.5 mm (♀) long. ♂ Aedeagus with a pair of basad tapering, simple, sharp, straight appendages (Figs. 22, 23). Vertex clearly twice broader than long (Fig. 8) ..... *M. kanganica* sp. n.
— Larger species, usually more than 10 mm long. ♂ Appendages on aedeagus longer or bifurcated 2
2 Head longer, nearly as long as distance between eyes (7 : 9); hind margin of vertex nearly straight (Fig. 9) ..... *M. tisina* sp. n.
— Head twice or more broader than long, fore margin of face slightly bent, hardly longer than broad 3
3 Head broader, its vertex 3 times broader than long (Fig. 5). Appendages on aedeagus simple (Figs. 16, 17) ..... *M. sabzevaranica* sp. n.
— Head narrower, its vertex slightly more than twice as broad as long (Fig. 6). Appendages on aedeagus bifurcated (Figs. 10, 11) ..... *M. pallens* MELICHAR

Mesophantia pallens MELICHAR, 1902

(Figs. 6, 10—15)

Total length ♂ 9—9.2 mm, ♀ 10.3 mm.

Large species with clearly broader tegmina and pale coloration of the body and elytra. Head in comparison to *M. sabzevaranica* narrower, and frons a little longer than its breadth between the eyes. Ground colour uniformly pale yellowish; scutellum pale castaneous. Face pale; first segment of antennae in comparison to *M. sabzevaranica* unicolorously pale. Whole surface



Figs. 4—7. Anterior part of the body in dorsal view. 4 — *Mesophantia tisina* sp. n., 5 — *M. sabzervaranica* sp. n., 6 — *M. pallens* MELICHAR, 7 — *M. kanganica* sp. n. Figs. 8—9. Face. 8 — *M. kanganica* sp. n., 9 — *M. tisina* sp. n.

deeply covered by wax, especially the elytra whitish without any coloration pattern.

Aedeagus of male with a pair of basad pointing lateral appendages bifurcated in different lengths. Style in side view apically in convex outline, forming nearly a right angle with rounded angle. Stylus in ventral view with a median prolongation in 2 sharpened points. Anal tube oblong, nearly parallel dorsally, in side view enlarged ventrally, in regular arched form, securing tectiform protection of genital block.

Distribution: N. Iran in eastern direction from Elbourz and N.E. Iran. Associated with bushes of Verbenaceae in valleys; alpine zone.

Literary data: Tehran (DLABOLA, 1981).

Material examined: N. E. Iran, Kuh-e Binalud, southern slope, 15 km N. E. Nishabur 13.—15. vi. 1977, 1600—2300 m, 34 specimens (Loc. no. 365); Assadli, 30 km S. Bojnurd, 17. to 18. vi. 1977, 1970 m, 1 specimen (Loc. no. 374); leg. Dlabola, in coll. National Museum, Praha. N. E. Iran, Shahrud bei Gorgan (labelled: holotypus, coll. Staudinger, det. Melichar) in coll. Naturhist. Riksmuseet, Stockholm.

Mesophantia sabzevaranica DLABOLA sp. n.

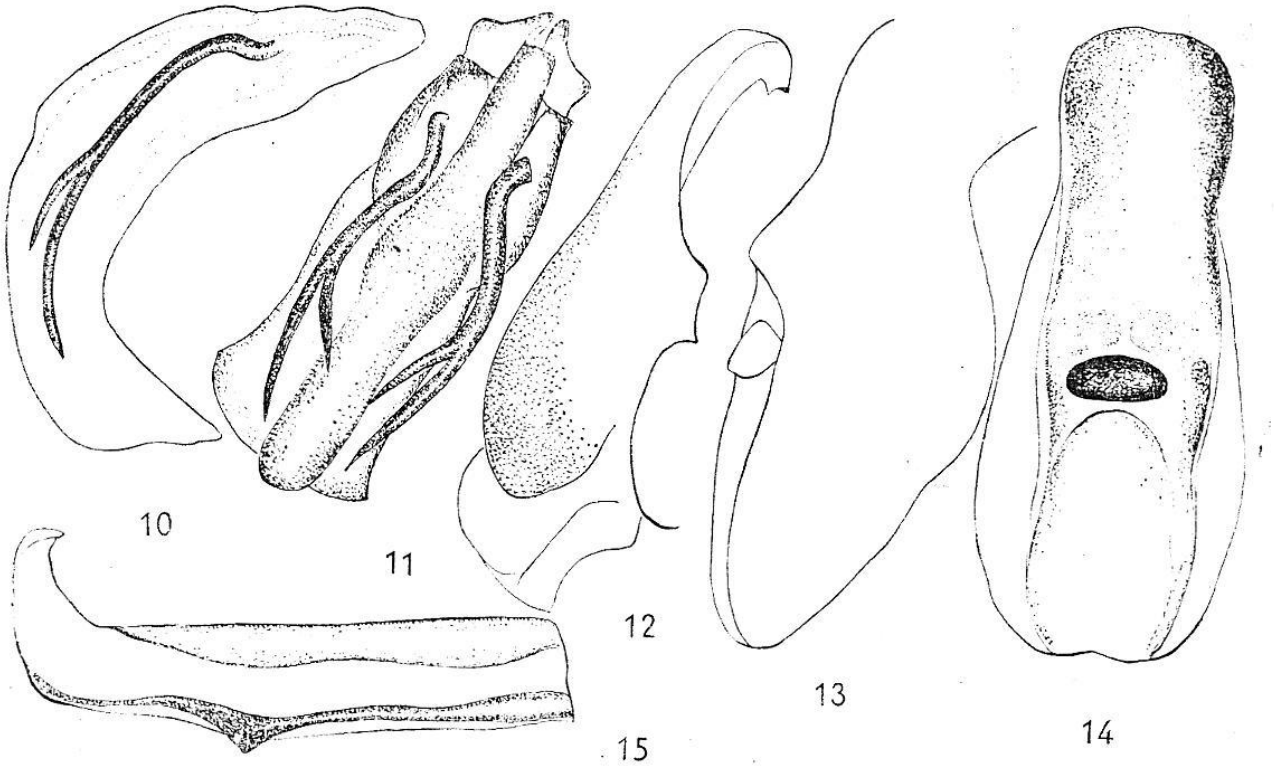
(Figs. 5, 16—21)

Total length ♂ 10.2 mm, ♀ 10.8—11.5 mm.

Largest member of the genus, with very dark coloration like *M. tisina* sp. n., but with brownish and not bluish tint, especially on the body, darkest on mesonotum. Keels on mesonotum, median keel on vertex and pronotum bordered brownish black, clearly marked. Elytra without colour pattern, uniformly opaque, their surface and abdomen densely covered with whitish

wax pulverisation. Antennae unicolorous brown, first segment paler, yellowish. Face laterally with black under the upper line of genae; frons with dark lateral bands, sublateral to lateral dark keels and dark upper margin.

Aedeagus of male as in *M. pallens*, with a pair of simple tapering appendages at base. Style apically bent dorsally, its apical outline slightly concave,

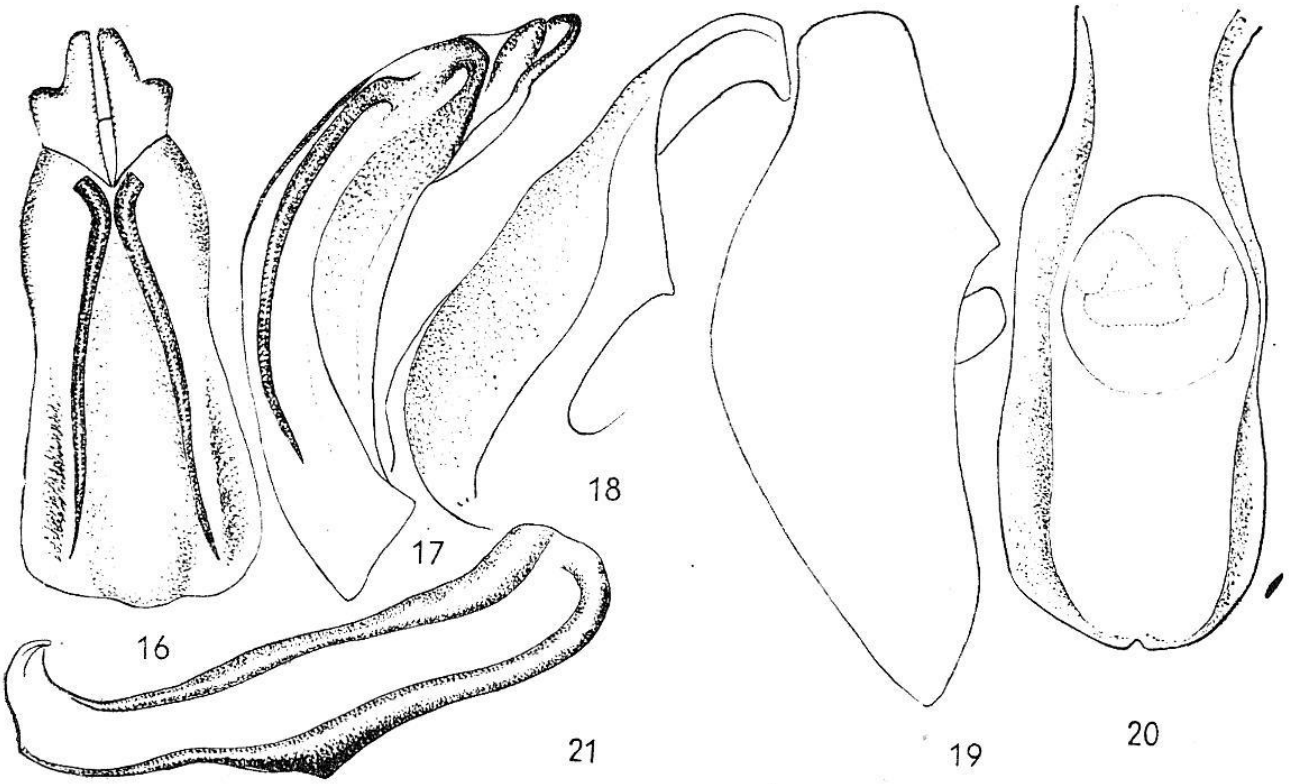


Figs. 10—15. *Mesophantia pallens* MELICHAR. 10 — Aedeagus in side view, 11 — aedeagus in dorsal view, 12 — style, 13 — anal tube in side view, 14 — anal tube in dorsal view, 15 — style in side view.

both styli observed in ventral view with a median prolongation connecting both in median line on one point. Anal tube more parallel in dorsal view than in *M. pallens*, but in side view the ventral line appears asymmetrically bent, maximum breadth in basal third, narrowing apically.

Distribution: the commonest and rather well distributed *Mesophantia* in central and southern Iran. Living on *Amygdalus*, *Quercus* and various bushes. Occurring mainly in mountain biotopes but not clearly restricted only to alpine zone.

Material examined: Holotype ♂ and 4 paratypes, labelled S. Iran, Kerman Province, 30 km N. Sabzevaran, 1650 m, 17.—19. v. 1977 (Loc. no. 336); Estahbanat, 8.—9. vii. 1970, 2 paratypes (Loc. no. 49); Jahrom (north), 9. vii. 1970, 1 paratype (Loc. no. 51); N. E. Iran: 21 km S. W. Saravan, 29. iii. 1973, 1 paratype (Loc. no. 140); S. Iran: Mohammadabad, 1600 m, 3.—5. v. 1973, 3 paratypes (Loc. no. 187); 33 km W. Sabzevaran, 1100 m, 6.—7. v. 1973, 3 paratypes (Loc. no. 189); E. Iran: Gav Koshi, 1650 m, 7.—8. v. 1973, 1 paratype (Loc. no. 190); S. Iran: Bezan, 15 km N.W. Furk, 1000—1400 m, 28.—29. v. 1973, 1 paratype (Loc. no. 218); Mian Jangal, 30. v. — 5. vi. 1973, 4 paratypes (Loc. no. 223); 15 km N.W. Mian Jangal, 5. vi. 1973, 2 paratypes (Loc. no. 224); 7 km N.W. Kuhenjan, 5. vi. 1973, 7 paratypes (Loc. no. 226); Maharlu, 5.—6. vi. 1973, 1 paratype (Loc. no. 227); 20 km E. Kazerun, 1300 m, 8.—10. vi. 1973, 5 paratypes (Loc. no. 229); 7 km N.W. Shul, 2100 m, 17. vi. 1973, 1 paratype (Loc. no. 247); 6 km S.S.E. Shul, 2190 m, 1 paratype (Loc. no. 248); 13 km N.W. Ghaderabad, 2120 m, 21. vi. 1973, 2 paratypes (Loc. no. 253); Kuh-e Genu in Hormozgan, 4. v. 1977, 2 paratypes (Loc. no.



Figs. 16—21. *Mesophantia sabzevaranica* sp. n. 16 — aedeagus in dorsal view, 17 — aedeagus in side view, 18 — style, 19 — anal tube in side view, 20 — anal tube, 21 — style in side view.

322); Chashmah-ye Sargaz, 165∂ m, 20.—21. v. 1977, 1 paratype (Loc. no. 339); Ferdows-e Esfendagh, Kerman Province, 21. v. 1977, 1 paratype (Loc. no. 340); Posht-e Kuh, 1700 m, 21.—22. v. 1977, 1 paratype (Loc. no. 343); N.E. Iran: Hessar (Zabarkhan) 50 km E.S.E. Nishabur in Khorassan, 12.—13. vi. 1977, 1400 m, 2 paratypes (Loc. no. 364); 20 km N.E. of Sabzevaran in Khorassan, 15. vi. 1977, 1 paratype (Loc. no. 367); leg. Dlabola. Holotypus and paratypes deposited in the National Museum, Praha.

Fars, Dena Mts., W. slope, 2210 m, 18.—20. viii. 1976, 1 paratype leg. Borumand; Kohkiluyeh, 12 km S.E. Sisakht, 1920 m, 15. viii. 1978, 2 paratypes leg. Pazuki and Borumand. Paratypes in the collection of the Plant Protection Institute, Tehran.

Mesophantia tisina Dlabola sp. n.

(Figs. 4, 9, 29)

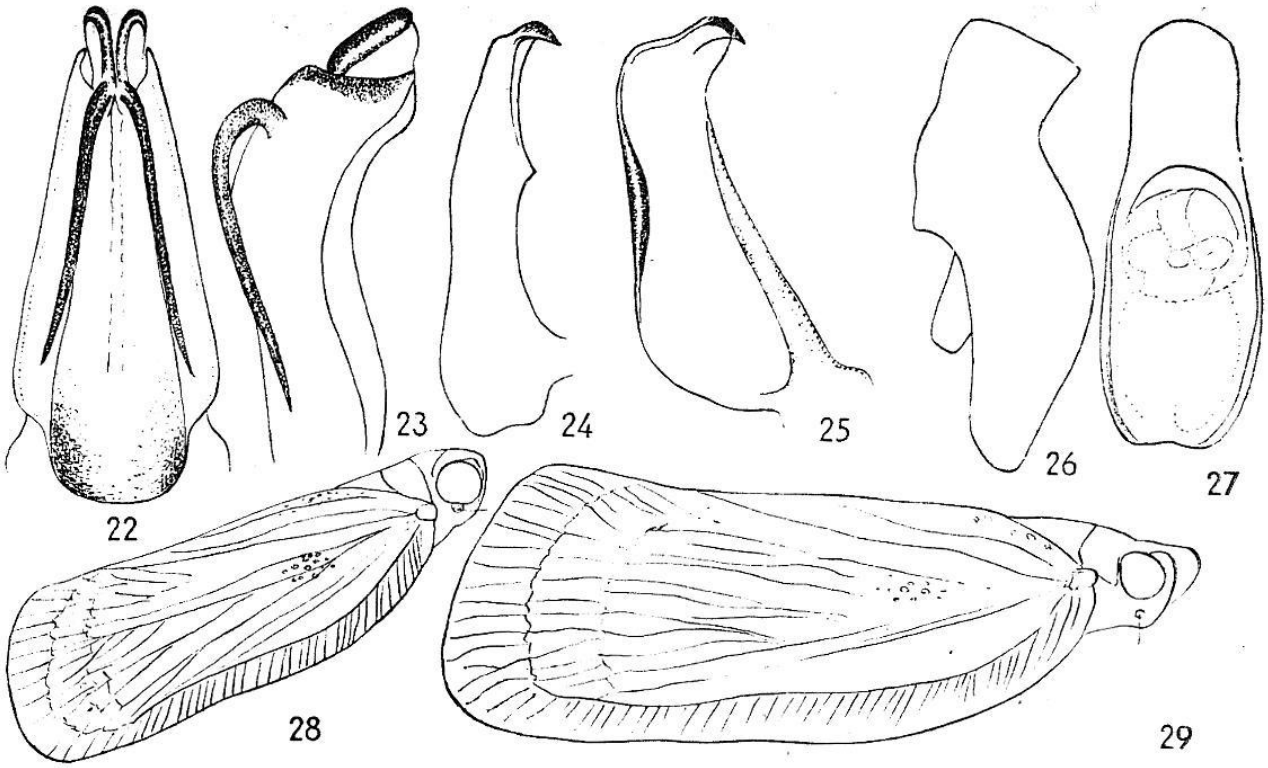
Total length ♀ 10—10.6 mm.

Very similar in size and coloration to *M. sabzevaranica*, but differs in having a tumidly prolonged fore margin of the head. Ground colour castaneous, deeply covered by wax pulvination of bluish white tint. First segment of antenna with blackish ring. Frons with a deep concavity ventrally, which is more pronounced than in other species of the genus.

♂ unknown.

This species is characterized by the prolonged head and dark coloration, which at once distinguish it from other representatives of the genus, where the head is broadly rounded, in frontal fore margin largely circular shaped, except the shortened sides near the eyes.

Examined material: S. E. Iran, Tis, 6.—7. iv. 1974, holotype ♀ (Loc. no. 150); E. Iran Deh Bakri, 1700—1750 m, 30. iv. — 3. v. 1973, paratype ♀ (Loc. no. 186); leg. Dlabola. Holotype and paratype deposited in the National Museum, Praha.



Figs. 22—27. *Mesophantia kanganica* sp. n. 22 — aedeagus in dorsal view, 23 — aedeagus in side view, 24 — style, 25 — style in side view, 26 — anal tube in side view, 27 — anal tube in dorsal view. Figs. 28—29. Total view. 28 — *Mesophantia kanganica* sp. n., 29 — *Mesophantia tisina* sp. n.

Mesophantia kanganica Dlabola sp. n.

(Figs. 7, 8, 22—28; Plate I, Fig. 5)

Total length ♂ 7.2—7.6 mm, ♀ 8.8—9.3 mm.

Habitually smaller species, narrow and in ground colour dark brownish black, anterior part of the body castaneous, with darker middle keel on the vertex and pronotum as well as all 3 longitudinal keels on the scutellum, which are broadly dark bordered. Surface of body as well as elytra protected by thick wax pulvination. Ground colour of elytra blackish opaque, apically semi-opaque; nervation slightly darker than membrane; granulation same as ground coloration. Pronotal prolongations on thorax with a deep sheet of whitish wax, frons with paler side keels and sublateral darker stripes, unlimited median line, upper margin on sides with darker spots near eyes, black stripe prolonged up to the eye. First segment of antenna with blackish-brown ring.

Aedeagus of male straighter than in other species of this genus, only slightly bent, apically narrowed from sides, with two ear-like lobes apically at the bases of which are inserted two simple appendages, which are vertical and pointed apically. Aedeagus in lateral view parallel sided, without any further structures and thus differing from other species of the genus. Style similar partially to *M. sabzevaranica*, but the anal tube is broadest in the middle, in dorsal view nearly parallel, apically concave, not much enlarged distally.

Distribution: Mostly in E. Iran, Baluchestan, S. Iran, sea shore in Persian Gulf. Host species for Epipyropidae.

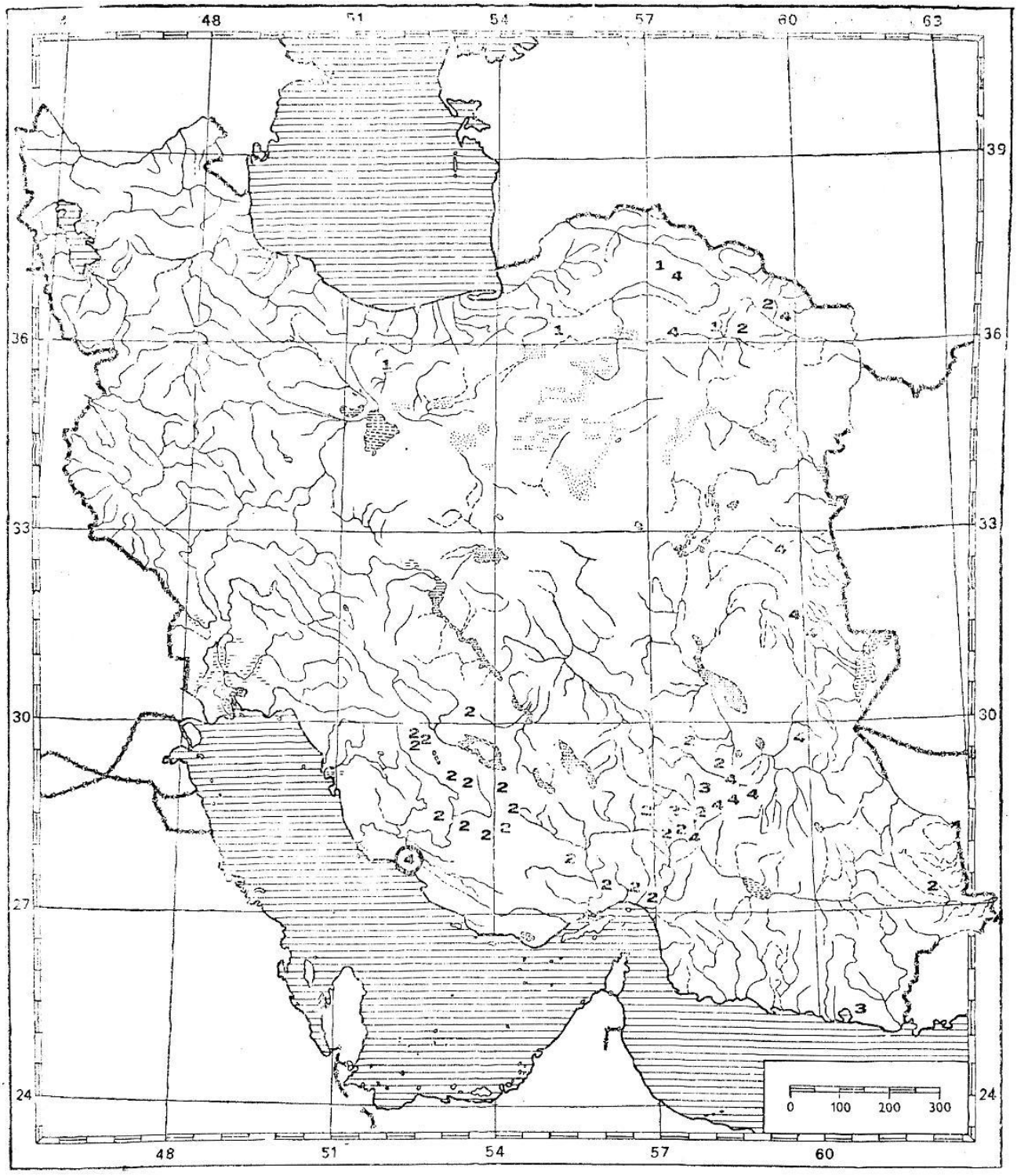


Fig. 30. Distribution of Iranian *Mesophantia* species. 1 — *M. pallens* MELICHAR, 2 — *M. sabzevaranica* sp. n., 3 — *M. tisina* sp. n., 4 — *M. kanganica* sp. n., 4 (in circle) — the same species attacked by *Epimesophantia dlabolai* sp. n.

Examined material: E. Iran, 30 km S.W. Nosratabad, 23. iv. 1973, 1 paratype (Loc. no. 175); Deh Bakri, 1700—1750 m, 30. iv. — 3. v. 1973, 3 paratypes (Loc. no. 186); 33 km W. Sabzevaran, 1100 m, 6.—7. v. 1973, 7 paratypes (Loc. no. 189); Mohammadabad, 1600 m, 3.—5. v. 1973, holotype ♂ and 159 paratypes (Loc. no. 187); Banue-Charehar, 1800—2000 m, 8. v. 1973, 1 paratype (Loc. no. 191). S. Iran: Kangan in Fars, 22. iv. 1977, 4 paratypes (Loc. no. 306); E. Iran: 17 km N. Nehbandan, 1250 m, S. of Shusf in Khorassan, 5.—6. vi. 1977, 3 paratypes (Loc. no. 358); 25 km N.N.W. Shusf in Sistan, 6. vi. 1977, 3 paratypes (Loc. no. 359); N.E. Iran:

Hessar (Zabarkhan) 50 km E.S.E. Nishabur in Khorassan, 12.—13. vi. 1977, 1400 m, 2 paratypes (Loc. no. 364); 20 km N.E. Sabzevar in Khorassan, 15. vi. 1977, 1 paratype (Loc. no. 367); Assadli, 30 km S. Bojnurd in Khorassan, 1970 m, 17.—18. vi. 1977, 3 paratypes (Loc. no. 374); leg. Dlabola. Holotype and paratypes deposited in the National Museum, Praha.

Acknowledgements

We are indebted to Dr. Ursula Göllner-Scheiding, Humboldt Museum, Berlin, Mr. Satoshi Hashimoto, College of Agriculture, University of Osaka and to Dr. M. D. Webb, British Museum (Natural History), London for their kind help in supplying us with necessary literature not accessible to us, and especially also to Dr. J. D. Bradley, Commonwealth Institute of Entomology, London for reviewing and commenting our manuscript. Particular thanks belong also to Dr. P. Lindskog from Naturhistoriska Riksmuseet, Stockholm, for loaning of the type female of *M. pallens* Mel.

LITERATURE

Bustillo G. M. R. & Rubio F. F. 1976: Mariposas de la Peninsula Iberica III. Heterocera I. 304 pp., Instituto Nacional para la Conversation de la Naturaleza (ICONA), Madrid.

Common I. F. B. 1970: Lepidoptera (Moths and butterflies). In: The insects of Australia, pp. 765 to 866, Melbourne University Press, Carlton, Victoria.

Dlabola J. 1981: Ergebnisse der tschechoslowakisch-iranischen entomologischen Expeditionen nach dem Iran (1970 und 1973) (Mit Angaben über einige Sammelresultate in Anatolien). Homoptera: Auchenorrhyncha (II. Teil). *Acta ent. Mus. Nat. Pragae*, **40** : 127—311.

Fletcher T. B. 1920: Indian Epipyropidae. Report Proc. 3rd Ent. Meeting, Pusa, 3 : 979—982, Superintendent Government Printing, Culcutta.

Fletcher T. B. 1939: A new Epipyrops from India (Lep., Epipyropidae). *Bull. ent. Res.*, **30** : 293—294.

Heinrich C. 1931: Notes on and descriptions of some American moths. *Proc. U.S. Nat. Mus., Washington, D.S.*, **79**, art. 13 (no. 2879) : 1—16.

Hering M. 1932: Epipyropinae. In Seitz A.: Die Gross-Schmetterlinge der Erde, 10 : 721—722, Alfred Kernen Verlag, Stuttgart.

Hopp W. 1924: Eine neue Dalceride (Lep., Heteroc.). *Dt. ent. Z. (Berlin)*, **1924** : 553—554.

Hopp W. 1928: Beitrag zur Kenntnis der Dalceriden. *Dt. ent. Z. Iris (Dresden)*, **42** : 283—287.

Inoue H. 1982: Epipyropidae. In Inoue H. et al.: Moths of Japan 1 : 296; 2 : 26, Pl. 34, 219, Kodansha, Tokyo.

Jordan K. 1928: On some Lepidoptera of special interest, with remarks on morphology and nomenclature. III. On Cossus (?)multipunctata Druce (1887) and some other Epipyropidae. *Novit. zool.*, **34** : 136—140.

Kato M. 1939: (Notes of Epiricania hagomoro). *Kontyû*, **13** : 225 (in Japanese).

Kato M. 1940: A Monograph of Epipyropidae (Lepidoptera). *Ent. World*, **8** (72) : 67—94.

Krishnamurti B. 1933: On the biology and morphology of Epipyrops eurybrachydis Fletcher (Lepidoptera). *J. Bombay Nat. Hist. Soc.*, **36** : 944—949.

Marshall A. T. 1970: External parasitism and blood feeding by the lepidopterous larva Epipyrops anomala Westwood. *Proc.R.ent.Soc. London* (A), **45** : 137—140.

Melichar L. 1902: Monographie der Acanaloniiden und Flatiden (Homoptera) (Fortsetzung). *Annln naturh. Hofmus., Wien*, **17** : 1—123.

Ohgushi R. 1953: Ecological notes on Epipomponia nawai (Dyar), a parasite of Cicada in Japan (Lepidoptera : Epipyropidae). *Trans. Shikoku Ent. Soc.*, **3** : 185—191.

Scheven J. 1974: Two new Lepidoptera from Tanzania, East Africa. *Annls Fas. Sci. Univ. fed. Cameroun*, **18** : 79—82.

Sick H. 1940: Epipyropidae. In Seitz A.: Die Gross-Schmetterlinge der Erde, 6 : 1313—1315, Alfred Kernen Verlag, Stuttgart.

Tams W. H. T. 1947: A new African species of the genus Fulgoraecia Newman (Lepidoptera, Epipyropidae). *Proc. R. ent. Soc. London* (B), **16** : 57—59.

Viette P. 1960: Les Epipyropides de Madagascar (Lepidoptères parasites). *Lambillionea*, **60** : 41—46.

Wilson S. W. & McPherson J. E. 1979: Notes on the occurrence of Epipyrops barberiana in Southern Illinois (Lepidoptera: Epipyropidae). *Great Lakes Ent.*, **12** : 189—190.

Yamamoto H. 1959: Epipyropidae. In Inoue H. et al.: Iconographia Insectorum Japonicorum, I. Lepidoptera: 227, Pl. 162, Hokuryu-kan Publishing Co., Ltd., Tokyo.

Zerny H. 1929: Auffindung einer Epipyropide in Europa. Epipyrops schawerdae nov. spec. ♀. *Verh. zool.-bot. Ges., Wien*, **79** : (36)—(37).

Новый вид и род семейства Epipyropidae из Ирана — эктопаразита нового вида Mesophantia, и ревизия рода хозяина (Lepidoptera, Epipyropidae; Homoptera, Flatidae)

Таксономия, Epimesophantia dlabolai Krampl gen. et sp. n., список видов мировой фауны, новые комбинации, морфология, сцепление крыльев, распространение, Mesophantia 3 spp. n.

Резюме. Описание *Epimesophantia dlabolai* gen. et sp. n. по 2 самцам и 2 самкам, выведенных из личинок, живущих как эктопаразит на цикадке *Mesophantia kanganica* Dlabola, sp. n. из Ирана, собранной кошением на *Seidlitzia rosmarinus*. Обсуждается систематическое положение *E. dlabolai* sp. n. в семействе Epipyropidae с таксономическими данными о близких родах, соответствующей группе видов и обзором видов мировой фауны. Новый вид близок к единственному европейскому виду *Epimesophantia schawerdae* (Zerny), comb. n., известному из Испании и Израила. Описано специальное сцепление крыльев у имаго: уздечка (frenulum) у особей обоего пола состоит из пучка щетинок и зацепка (retinaculum) из небольших шипиков, густо покрывающих удлиненную площадку на анальной части переднего крыла близко от основания. Дана ревизия рода *Mesophantia* Melichar (Flatidae), описание самца типового вида *M. pallens* Melichar и трех новых видов: *M. kanganica* Dlabola, *M. sabzevaranica* Dlabola и *M. tisina* Dlabola spp. n. Приведена таблица для определения всех указанных видов и обсуждается современное распространение рода.

Received November 6, 1982; accepted December 29, 1982

Authors' address: Dr. F. Krampl and Dr. J. Dlabola, entomologické oddělení Národního muzea, Kunratice 1, 148 00 Praha 4, Czechoslovakia.

REVIEW

Skuhravá M. & Skuhravý V.: Die Gall-Mücken (Cecidomyiidae, Diptera) des Schilfes (Phragmites communis Trin.). Studie ČSAV, No. 3, 150 Seiten, 82 Abb., 24 Tabellen, Academia, Praha 1981.

Die Publikation enthält Resultate der fünfjährigen Untersuchungen der an Schilf lebenden Gallmücken, die im Rahmen des Internationalen Biologischen Programms durchgeführt wurden. Vier Arten werden behandelt, drei als allgemein verbreitet, die vierte nur an einer Lokalität. Nach kurzer Einleitung und Übersicht der Untersuchungsmethoden werden bei den einzelnen Arten die Morphologie aller Entwicklungsstadien mit Daten über die Variabilität der morphologischen Merkmale, Bionomie, Parasiten und Verbreitung angegeben. Den synthetischen Teil der Arbeit bilden die Kapitel über taxonomisch-morphologische und ökologische Charakteristik der Schilfgallmücken, Beziehungen zwischen diesen Dipteren und der Schilfentwicklung, Faktoren, die die Populationsdynamik dieser Gallmücken beeinflussen und über ihre Verbreitung in Europa und in der ČSSR. Die Publikation wird durch eine deutsche, tschechische und englische Zusammenfassung und ein Schriftenverzeichnis beschlossen. Sie bringt nicht nur viele neuen Angaben über die Bionomie der einzelnen Arten, sondern auch Erstbeschreibungen von Entwicklungsstadien zusammen mit Erkenntnissen über die Variabilität der morphologischen Merkmale. Wertvoll sind Daten über die Populationsdynamik und geographische Verbreitung. Es wurde auch eine Reihe von nomenklatorischen Korrekturen gemacht. Die zahlreichen Abbildungen, Verbreitungskarten, Photoaufnahmen und Tabellen ergänzen vorzüglich den Text. Im ganzen kann die Publikation als Beispiel einer musterhaften Bearbeitung einer bestimmten Insektengruppe dienen.

V. Černý