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A STUDY OF CENTRAL EUROPEAN EULOPHIDAE, I: EULOPHINAE (HYMENOPTERA)

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Basing on Erdös' important and voluminous contributions to the knowledge of the Central European Eulophidae, I started, several years ago, to review the Czechoslovak species.

A serious drawback to this work, not only for me, but for all students in Europe, has been the descriptions of many 19th-century authors (especially Walker's descriptions, but also those of Nees, Förster, Ratzeburg, and some others) that were produced in immense numbers, mostly without any comparison with the related and previously described species and often arranged in genera quite differently understood now. Although a lot of these descriptions still remain unexplained (the bulk of the types being inaccessible for study to most specialists and diagnoses being insufficient and inadequate) important progress was made recently by M. de V. Graham (1959), as a result of a thorough study of the Walker, Nees and Thomson types. This work is not only sound in its conception, but also very valuable as to the stability of nomenclature in the group, bringing — as a result of the study of old types — in most cases the oldest available name for the species in question. Only an initiated specialist knows what a lot of work must have been done before Graham's keys could be published.

This is the first part of my study, and includes most European genera of Eulophinae without complete parapsidal furrows (= notaulices of some recent authors), viz. *Sympiesis* Först. (incl. *Teleogmus* Först. and *Moroceras* Erd.), *Encopa* Graham, *Hemiptarsenus* Westw., *Cleolophus* Merc., *Dahlbominus* Hincks, *Dicladocerus* Westw., *Necremnus* Thoms., *Microlycus* Thoms., *Eulophus* Oliv., *Colpoclypeus* Lucch. and *Danuviella* Erd. A revision of *Pnigalio* Schrk. and *Diglyphus* Walk. will be published later.

In several details I differ slightly from the other authors in my opinion on some taxonomic units, and am explaining it at the genera and species in question. There arises, however, also a question of major importance: the validity of the groups Elachertinæ and Eulophinæ as subfamilies. In both groups the same characters serve in separating some genera, e. g. the transverse costula on propodeum, number of free funicle segments in female antenna, grooved lines on scutellum, and this sometimes makes an impression that the single subfamiliar distinguishing character, viz. the deep parapsidal furrows in Elachertinæ and shallow or lacking ones in Eulo-

phinæ, need not have any more major taxonomic importance than the other characters. So, *Diglyphus* Walk. is very near to *Diaulinopsis* Crawf., *Pnigalio* Schrank to *Ratzeburgiola* Erd., etc. Of course, there may occur certain characters in one group (e.g. in Elachertinæ apart from Euplectrini) that are not known in the other. As to the deep parapsidal furrows, in Entedontinæ, e. g., they may occur or not even within the range of one genus (*Pediobius* Walk.). And in two species of *Diglyphus* Walk. (Eulophinæ) they are nearly complete, whereas in *Ratzeburgiola* Erd., on the other hand, they do not always reach the transscutal suture. For practical purpose it will be perhaps useful to maintain the present divisions, but we ought to revise them at each higher level of taxonomy of the group and of knowledge of the species, if we want to reach a natural and sound system in this group.

Apart from Graham's valuable work, which, due to his kindness, was partly available to me in manuscript form, I should like to acknowledge here also Mr. Graham's and Mr. Erdős' continuous kind advice and help in informing me about the types, to Dr. Erdös also for lending some of them, that altogether has enabled me to make the present attempt to revise the Czechoslovak species of Eulophidæ (further parts will follow). For lending me types or other material I am greatly indebted particularly to Dr. M. Fischer, Naturhistorisches Museum, Wien; Ing. S. v. Novitzky, Wien, Austria; Dr. L. Móczár, Természettudományi Múzeum, Budapest; to Dr. F. Bachmaier, Zoologische Staatssammlung, München, Western Germany; to Dr. G. Steinbach, Zoologisches Museum, Berlin; Prof. P. Brinck and Mr. P. I. Persson, Universitets Zoologiska Institutionen, Lund, Sweden; and others. Of course, this work could not be done without a large amount of material from Central Europe. Besides my own collection brought together during the last 15 years, I was helped by many entomologists or collectors, as may be seen from the citations. A very valuable, mostly reared material has been presented, e. g., by my friend Ing. M. Čapek, Banská Štiavnica, Slovakia. Some data were taken also from material submitted for identification by various institutions or persons, in Czechoslovakia as well as from abroad.

A table of the European genera of Eulophinæ

1 Antennal funicle in female 2-segmented, clava 3-segmented; in male funicle with 2 or 3, clava with 3 or 2 segments respectively, without branches 2

— Female funicle 3- or 4-segmented; male funicle 4- or 5-segmented, usually with branches 4

2 Scutellum without grooved lines, coarsely reticulate all over, transverse; male funicle 3-segmented; body squat, clypeus bilobed . . . . **Colpoclypeus** Lucchese

— Scutellum with two sublateral longitudinal grooved lines, finely sculptured, not strongly transverse; male funicle 2-segmented, clypeus entire 3

3 Gaster subsessile, petiole smooth, small, transverse . . . . . **Diglyphus** Walker

— Gaster distinctly petiolate, petiole rugose above, in its posterior, dilated-pentagonal part . . . . . **Danuviella** Erdös

4 Costal cell of forewing extremely narrow; antennae inserted near middle of face; scape well exceeding front ocellus or even the vertex (fig. 16); female funicle 4-segmented, in male with 3 long branches 5

— Costal cell usually broad; antennae inserted below middle of face; scape at most reaching the vertex 6

5 Pronotum medially more than 1.5 times as long as broad . . . **Cleolophus** Mercet

— Pronotum about as long as broad or transverse . . . . **Hemiptarsenus** Westwood

6 Anterior margin of clypeus bilobed, incised medially; female gaster not acuminate apically, last tergite much broader than long, female funicle 4-segmented; scutellum delicately alutaceous, flat, twice as long as distance between axillae; propodeum: carina and plicae distinct . . . . . **Encopa** Graham

— Anterior margin of clypeus entire; female gaster either acuminate apically, or funicle 3-segmented 7

7 First tarsal segment of (at least) mid legs shorter than the second, dorsally about as long as, or shorter than, spur of mid tibia; axillulæ (lateral impressed sides of scutellum) lacking or short, not connected with any submarginal apical furrow; gaster of female rounded apically, last tergite several times as broad as long; mandibles stunted, not meeting by their tips; female funicle 3-segmented; body broad, large; pupæ gregariously on leaves . . . . . **Eulophus** Olivier

— First tarsal segment longer than the second (or as long as, in hind legs sometimes), and longer than spur of mid tibia; axillulæ well developed and continuing at hind margin of scutellum in a submarginal furrow; mandibles normal; female funicle 3- or 4-segmented; pupæ not gregarious (except in *Sympiesis čapeki)* 8

8 Postmarginal vein at least twice as long as stigmal; female funicle 4-segmented, clava 2-segmented 9

— Postmarginal vein at most 1.7 times as long as stigmal, often shorter; female funicle 3-segmented, or if 4-segmented, then flagellum thick, fusiform *(Dahlbominus)* . 11

9 Scutellum with sublateral longitudinal grooved lines, polished outside of them, and on axillæ; propodeum with costula, carina and plicæ as in *Pnigalio;* the alutaceous sculpture on mesoscutum weak or wanting, piliferous punctures coarse, raised; bristles very long, numerous; parapsidal furrows incomplete or complete, in latter case nearly meeting on scuto-scutellar suture . . . . . cf. **Ratzeburgiola** Erdös

— Scutellum without grooved lines, never polished on sides (and on axillæ); mesoscutum with different sculpture, piliferous punctures small, not raised . . . 10

10 Mid lobe of mesoscutum at least in front half with numerous irregularly-placed conspicuous bristles; sculpture of mesoscutum and scutellum relatively coarse, but very fine on axillæ and sides of scutellum; propodeum usually long, mostly with well-developed carina, plicæ and costula, the latter sometimes lacking, very rarely also plicæ indistinct in small specimens; plicæ sometimes angulate; face and genæ mainly or partly smooth and shiny . . . . . **Pnigalio** Schrank

— Mid lobe of mesoscutum with 3 to 5 pairs of bristles in two longitudinal series or rarely with some additional weak hairs anteriorly; sculpture more uniform, that on axillæ and sides of scutellum (above the impression) not much different from that on scutellar disc; propodeum always without costula, plicæ strongly converging backwards and always effaced anteriorly, when developed; face and genæ mainly reticulate, duller . . . . . **Sympiesis** Förster

11 Scutellum (in female, at least) with a pair of sublateral longitudinal grooved lines (usually effaced posteriorly); male funicle with 2 branches . . . . . **Dicladocerus** Westwood

— Scutellum without any trace of such lines; male funicle with 3 short or long branches 12

12 Female flagellum strongly dilated, fusiform, funicle 4-segmented, clava 2-segmented; first funicle segment of male antenna slightly shorter than pedicellus, branches of medium length, scapus fusiform, long, reaching the vertex level; in female scapus, coxæ, and tibiæ, white, forewings broadly fuscous . . . . **Dahlbominus** Hincks

— Female flagellum not fusiform, funicle always 3-segmented and clava 3-segmented; first funicle segment of male antenna usually distinctly longer than pedicellus, funicle 3- or 4-segmented; branches long or short, in latter case scapus short, about equal the distance between paired ocelli 13

13 Body rather squat, 0.9 to 1.9 mm. long; antennæ short, scapus only about as long as distance between paired ocelli, which are small and approached to eye margin; third funicle segment in female subquadrate to transverse; male antenna with short and stout branches, funicle 3- or 4-segmented; scutellum distinctly transverse . . . . . **Microlycus** Thomson

— Body usually larger, sometimes rather slender; antenna not extremely short, scapus about twice as long as distance between paired ocelli, which are not very minute and not approached to the eye; antennæ not short, funicle segments in female sometimes very long, third always oblong; male funicle always 4-segmented, with long and slender branches; scutellum subquadrate or longer than broad . . . . . **Necremnus** Thomson

The above key is given to show the limits of the European Eulophine genera as understood at present, but I should like to remark that I am still not quite satisfied with the conception of several of them. In this conception the recent opinions of most modern authors are reflected, but it includes also some difficulties connected with the actual generic range.

For a long time, e.g. the genera *Sympiesis* and *Pnigalio* (this then called *Eulophus*) have been separated by the male characters, viz. branched or simple antennæ, and the 4-segmented or 5-segmented funicle, respectively. In order to make the females also determinable generically (generally taken as the leading sex in the taxonomy of Chalcidoidea), first attempts were made to replace the named male differences by the characters of propodeum. These are not subject to sexual dimorphism, but have a disadvantage in that they disappear in some small, stunted specimens. A further great step was made by Graham in finding new limits between *Sympiesis* and *Necremnus*, excluding the minute character of the reduced *(Necremnus)* or well developed *(Sympiesis* and *Pnigalio)*, outer spur of hind tibia, which had been found besides unreliable already by Gahan, 1941. Graham succeeded in finding new limits in the relative length of the postmarginal and the stigmal veins, in connection with the number of free funicle segments in female antenna. This seems very reasonable, as it covers, to some extent at least, the natural species groups. However, the former divisions also seem to have had their reason for existence, as some difficulties with the Central European material suggest.

The existence of intergrades or heterogenous species complexes makes the present range of some European Eulophine genera still somewhat uncertain and unfixed. A thorough knowledge of the characters of both sexes of all species involved, of their biology, and a comparison with the genera belonging to the other faunas as well, would be most helpful in the solution of these questions.

Genus **Sympiesis** Förster

Subgenus *Sympiesis* Förster, s. str.

Sympiesis Förster, 1856, *Hym. Studien*, 2: 74, 76. — Type: *Eulophus sericeicornis* Nees; orig. design.

Subgenus *Moroceras* Erdös, n. status.

Moroceras Erdös, 1954, *Ann. Hist.-nat. Mus. Natl. Hung.* (s. n.), 5: 323. — Type: *Moroceras bírói* Erdös; orig. design.

Subgenus *Cladosympiesis* Graham

Sympiesis sg. *Cladosympiesis* Graham, 1959, *Trans. Soc. Brit. Ent.*, 13: 182. — Type: *Eulophus gordius* Walker; orig. design.

Subgenus *Teleogmus* Förster, n. status.

Teleogmus Förster, 1856, *Hym. Studien*, 2: 72, 74. — Type: *Teleogmus orbitalis* Förster; by monotypy.

This genus was mentioned in the discussion above, and the generic table gives roughly its range as understood here. In contradistinction to the other authors I include in it also the former genus *Teleogmus* Först., which has no sharp limitation from *Sympiesis* in the present sense. The former name would have page priority, but as *Sympiesis* is better known, and the Rules allow it, it should be maintained. Provisionally, I preserve *Teleogmus* as a subgenus, with the species *xanthostoma* and *čapeki*. Likewise I prefer to consider *Moroceras* Erdös, 1954, known from the male only, as a mere subgenus of *Sympiesis*, at least until the other sex with perhaps additional differences is known. It is even quite possible that *Moroceras* Erd. will prove to be the same as *Cladosympiesis* Graham. Further subgenera are *Sympiesis* s. str. (only *sericeicornis*), and *Cladosympiesis* Graham, containing the remaining bulk of species. I do not dare, and do not consider it sound at present level of knowledge, to split the genus any more, though *Cladosympiesis* in its present use seems fairly heterogenous.

The subgenera of Sympiesis might be distinguished as follows:

1 Male funicle 5-segmented, usually without branches . . **Sympiesis** Först. s. str.

— Male funicle 4-segmented, usually with long branches 2

2 Male funicle segments 1—3 shortly produced in an acute angle above, otherwise without branches . . . . . **Moroceras** Erd.

— Male funicle segments 1—3 with long branches 3

3 Parapsidal furrows complete though weak and superficial posteriorly; propodeum shiny, nearly smooth, plicæ always wanting . . . . . **Teleogmus** Först.

— Parapsidal furrows indicated only anteriorly; sculpture of propodeum varying, plicæ sometimes distinct (at least posteriorly) . . . . . **Cladosympiesis** Graham

Key to the Central European species of Sympiesis, females

1 Parapsidal furrows complete though fine and superficial posteriorly (sg. *Teleogmus* Först.); propodeum delicately reticulated or nearly smooth, carina usually weak, plicæ absent; thorax always wholly metallic, legs except coxæ wholly pale . . 2

— Parapsidal furrows indicated in front only, or thorax sides partly yellow . . . 4

2 Scutellum alutaceous, i.e. with delicate and inverse reticulation, the very fine areoles of the network being formed by engraved curved lines; golden-coppery; antenæ fulvous beneath, fourth funicle segment quadrate (fig. 9) . . . . **čapeki**, n. sp.

— Scutellum distinctly reticulate, the areoles being separated by raised curved carinulæ 3

3 Metascutellum and propodeum strongly reticulated, dull; face metallic; femora often partly infuscated . . . . . cf. **viridula** (Thoms.)

— Metascutellum and propodeum at most delicately reticulated, shiny; femora always pale, face usually white-marked . . . . . **xanthostoma** (Nees)

4 Costal cell extremely narrow; scapus slightly exceeding median ocellus; mesoscutum except a spot anteriorly, pronotum, prepectus, and face, fulvous; propodeum nearly smooth, slightly equally vaulted, fovea apicalis indistinct . . . . . cf. **Hemiptarsenus zilahi-sebessi** Erd.

— Costal cell rather broad, normal; scapus not clearly exceeding front ocellus; mid lobe of mesoscutum usually wholly metallic (or, if rarely yellow, then axillæ and sides of scutellum also of this colour: *flavopicta*); fovea apicalis at either side of petiolar foramen of propodeum always distinct 5

5 Scutellum alutaceous (as in *čapeki*), its network being formed by grooved curved lines; plicæ usually more or less complete, subparallel 6

— Scutellum reticulated, areoles separated by raised network; plicæ lacking or developed 8

6 Anterior margin of clypeus incised medially (fig 15); funicle segments 2—4 quadrate or slightly transverse; legs except coxæ, pale; antenna fulvous, more or less infuscated dorsally; scutellum flat, posteriorly in same plane as metascutellum, distinctly longer than broad, slightly longer than twice the distance between axillæ; plicæ nearly complete; gaster shorter than thorax, rounded at tip, last tergite much broader than long, transversely band-like . . . cf. **Encopa brevicornis** (Erd.)

— Clypeal margin entire; all funicle segments longer than broad; femora and antennæ black; gaster as long as thorax, more or less acuminate at apex, last tergite triangular 7

7 Scutellar network coarse, not much finer than on mesoscutum, areoles mainly equilateral; propodeal plicæ mostly complete, subparallel; legs metallic, knees, front tibiæ above, and hind tibiæ in basal half, more or less fuscous or dirty yellow; funicle segments 2—4 slightly longer than broad; gaster more acuminate . . . . see *Pnigalio*, sp. A

— Scutellar network extremely dense, longitudinally drawn; propodeum without a trace of plicæ; tibiæ pale, sharply infuscated apically; funicle segments twice as long as broad or nearly so . . . . . **euspilapterygis** (Erd.)

8 Gaster 1 5 times as long as head plus thorax or longer, last tergite about 3—3.5 times as long as broad, parallel-sided, or slightly narrowing toward ends (fig. 6); legs pale yellow except mid and hind coxæ which are more or less metallic; propodeum finely alutaceous, median carina well developed, plicæ lacking; 3.9—5.8 mm. . . . **dolichogaster** Ashm.

— Gaster shorter, last tergite at most hardly longer than broad anteriorly, triangular; body length less than 3.8 mm. 9

9 Mid lobe of mesoscutum densely hairy, at least in anterior half; plicæ more or less developed, arched, subparallel: wings immaculate 10

— Mid lobe with 3—5 pairs of bristles in two longitudinal rows 11

10 Body blue-black including coxæ and femora; propodeum sometimes delicately reticulate and then with plicæ distinct posteriorly; female forewing usually with two transverse fuscous bands; gaster longer than head plus thorax . . cf. **acalle** (Walk.)

— Body mainly green with a tint to golden or blue, coxæ and femora partly fulvous; wings immaculate; propodeum smooth, plicæ usually complete . . . . cf. *Pnigalio*

11 Metascutellum and propodeum coarsely reticulate; body green, golden-green or blue-green; median carina and plicæ often vague 12

— Metascutellum and propodeum smooth, or, if delicately reticulate, then body colour mainly blue-black; median carina on propodeum always distinct 15

12 Scutellum rather coarsely strigose-reticulate, the areoles oblong; female gaster about as long as head plus thorax, at most 2.5 times as long as broad (fig. 10); median carina on propodeum mainly lacking; forewing usualy with a fuscous cloud at stigma . . . . . **sandanis** (Walk.)

— Scutellum reticulate, with more or less circular areoles, at least along median third; or median carina on propodeum more or less complete, or female gaster slender, distinctly longer than head plus thorax; forewing often immaculate 13

13 Lower face, sides of thorax including sides of scutellum, orange to yellow; reticulation on thorax rather shallow; propodeum always without plicæ, median carina lacking or vaguely indicated anteriorly; forewing rather densely hairy, with a fuscous streak at stigma; body slender, gaster slightly longer than head plus thorax . . . . . **flavopicta,** n. sp.

— Head and thorax immaculate; median carina on propodeum mostly developed . . 14

14 Forewing hyaline, less densely hairy; gaster about as long as head plus thorax, twice to 2.5 times as long as broad; sculpture of thorax including metascutellum and propodeum rough-reticulate, plicæ often obtusely step-like posteriorly . . . . . **viridula** (Thoms.)

— Forewing infumate, usually with a distinct streak at stigma, very densely hairy; gaster 3—3.5 times as long as broad (fig. 11), distinctly longer than head plus thorax; sculpture finer and denser, on scutellum often strigose-reticulate, areoles then oblong but finer than in *sandanis*; plicæ usually indistinct . . **gregori,** n. sp.

15 Legs pale apart from coxæ; propodeum always nearly smooth (rarely more or less reticulate in *gordius*) 16

— Femora always, often also tibiæ more or less, metallic or fuscous 17

16 Thorax subcylindrical, mesoscutum flat, propodeum subhorizontal, neck indistinct dorsally; basal and cubital vein mainly bare; gaster not longer than head plus thorax, not sharply acuminate apically; femora distinctly thickened; scape metallic, flagellum black, body green to blue-violaceous . . . . . **angustipennis** (Erd.)

— Thorax rather strongly narrowing forwards, arched longitudinally (fig. 12); mesoscutum anteriorly, and propodeum backward, distinctly sloping; propodeum (in profile) usually gibbous anteriorly, produced into a distinct short neck behind; basal and cubital hair rows developed; gaster slightly longer than head plus thorax, fairly acuminate; legs very slender; antennæ fuscous to dirty yellow, scapus often pale ventrally, or wholly (= f. *albiscapus* Erd.); body mainly golden-green, gaster often with a pale macula . . . . . **gordius** (Walk.)

17 Sculpture of thorax delicate, scutellum extremely finely longitudinally alutaceous, metascutellum and propodeum smooth, median carina weak; thorax rather strongly arched in profile (fig. 13), pronotum nearly straightly sloping along median line; gaster hardly longer than thorax, last tergite about twice as broad as long; femora metallic, mid and hind tibiæ with sharply delimited black distal part, pale basally . . . . . **euspilapterygis** (Erd.)

— Sculpture coarser; scutellum distinctly reticulate (network lines raised, not engraved); pronotum arched in profile, its dorsal part subhorizontal; last tergite longer . . 18

18 Tibiæ wholy whitish; last gastral tergite about 3 times as long as broad between pygostyles, nearly twice as long as broad (fig. 5); propodeum short, smooth, plicæ completely lacking; wings hyaline, prestigma shorter than postmarginal vein . . . . . **györfii** Erd.

— Tibiæ usually partly to wholly infuscated, otherwise fulvous; last tergite 1.5 times to twice as long as distance between pygostyles, about as long as broad; propodeum longer, reticulation often distinct, also plicæ usually developed posteriorly; forewing subhyaline or with two bands 19

19 Forewing immaculate, prestigma about as long as postmarginal vein or slightly longer; tibiæ usually dark, only rarely front and mid ones (rarely also hind ones)

partly to wholly fulvous from the base, and then head and thorax usually more or less green instead of blue-black; flagellum compressed-filiform . . . . . **sericeicornis** (Nees)

— Forewing with two fuscous bands; prestigma clearly shorter than postmarginal vein; tibiæ yellow with apices of mid and hind pairs usually, more or less broadly, black (mid tibiæ often wholly so); flagellum in larger females usually compressed-fusiform . . . . . **acalle** (Walk.)

The above key is made according the female characters, but always I also tried to mention those characters that could be helpful also in determining the males. Owing to the present still insufficient knowledge of those variable species, where, in addition, the males of a number of species are still undescribed, the accurate identification of all males often seems to be a task outside the present possibilities. I myself was not able to locate accurately all the males being available for study. Especially the unusually small specimens of every species are difficult to identify. Their main distinguishing characters become obsolete or disappear with the reduction of body size, as anyone can observe in long reared series.

Generally, the males resemble in colour and some morphological characters the females of the species in question, but there is often a wide variation, too. It is possible that the variation of some characters may prove in future to be still wider than expected. So far, I have not found that, e. g. the character of the sculpture of scutellum (alutaceous contra reticulate as defined above) would be subject to any great changes in *Sympiesis čapeki* and *euspilapterygis*, while it becomes obviously inverse (reticulate turns to alutaceous) in small males of *S. gordius*. A similar case occurs in the Pteromalid genus *Roptrocerus* Ratz. where it seems to be connected with the sexual dimorphism.

To differentiate the males known so far to me in the genus *Sympiesis* I offer the following table.

Males of Central European Sympiesis

1 Funiculus 5-segmented (figs. 1—4), usually without branches, two distal segments the longest, segment 3 twice as short as 4; clava solid (sg. *Sympiesis* s. str.); dark blue-green to black; funiculus beneath, knees, front tibiæ above, mid and hind tibiæ at base to varying extent, fulvous . . . . . **sericeicornis** (Nees)

— Funiculus 4-segmented, usually branched; clava biarticulate 2

2 Funicle segments 1—3 with short angular processes above instead of branches (sg. *Moroceras* Erd.) . . . . . **birói** (Erd.)

— Funiculus with 3 long branches 3

3 Mesoscutum and forewing all over densely hairy; body dark green, legs mostly black; propodeum smooth with median carina very distinct . . . . . cf. **Pnigalio hirtulus** (Erd.), **n. comb.**

— Mesoscutum at least in hind half, and forewing in basal fifth, more or less bare . 4

4 Parapsidal furrows complete though weak and superficial in hind half . . . 5

— Parapsidal furrows quite indistinct posteriorly 8

5 Scutellum and axillæ finely alutaceous, the network being formed by engraved lines; scutellum transverse . . . . . **čapeki**, n. sp.

— Scutellum reticulate, the network formed by raised lines 6

6 Metascutellum and propodeum smooth or nearly so; thorax sides wholly metallic; forewing subhyaline (sg. *Teleogmus* Först.) . . . . . **xanthostoma** (Nees)

— Metascutellum and propodeum distinctly reticulate 7

7 Lower face flavous (at least either one spot at mouth margin below insertion of each antenna); scutellum outside of bristles delicately strigose-reticulate; front with a cross-suture in front of median ocellus; a small fuscous streak at stigma of forewing in larger specimens . . . . . **flavopicta,** n. sp.

— Head and thorax immaculate; scutellum nearly uniformely reticulate down to axillulæ; frontal cross-suture indistinct; forewing wholly subhyaline . . . . . **viridula** (Thoms.)

8 Lower face (and a subbasal spot on gaster) flavous 9

— Face immaculate 10

9 Costal cell extremely narrow; scape slightly exceeding the vertex; marginal vein at most 3 times as long as stigmal; parapsidal furrows quite indistinct . . . . . cf. **Hemiptarsenus zilahi-sebessi** Erd.

— Costal cell normal, rather broad; scape hardly exceeding the vertex; marginal vein at least 4 times as long as stigmal; parapsidal furrows often more or less complete though very shallow . . . . . cf. **flavopicta,** n. sp.

10 Scutellum alutaceous, the network being formed by engraved lines; legs at least partly infuscated 11

— Scutellum reticulate, the network formed by raised lines 13

11 Femora and tibiæ, except hind femora usually, pale; propodeum in profile gibbous anteriorly, saddle-like posteriorly, neck then distinct; golden-green to coppery, scutellum sometimes violaceous . . . . . **gordius** (Walk.)

— Tibiæ (and femora) more or less infuscated; propodeum straight in profile, without neck 12

12 Areoles on scutellum broad; legs nearly wholly infuscated; mesoscutum anteriorly usually with some additional hairs; body green-black . . . . cf. *Pnigalio,* sp. A

— Areoles on scutellum very dense and small, oblong, longitudinally arranged; mid and hind tibiæ pale in basal half or more; mid lobe of mesoscutum only with 3 pairs of ordinary bristles; blue-black to violaceous . . . . . **euspilapterygis** (Erd.)

13 Metascutellum and propodeum coarsely, though often superficially reticulate; median carina weak or absent; propodeum flat or moderately roof-like; body mainly greenish 14

— Metascutellum and propodeum smooth, or body blue-black; median carina distinct 16

14 Scutellum longitudinally strigose-reticulate; mid and hind tibiæ sometimes infuscated apically 15

— Scutellum reticulate, areoles more or less circular; mid and hind tibiæ yellow . 7

15 Median carina on propodeum distinct in larger specimens; hind tibiæ more or less infuscated at apex (from the very similar male of *euspilapterygis* this may be separated by the coarse sculpture on scutellum and the greenish body) . . . . . **gregori,** n. sp.

— Median carina always lacking; hind tibiæ not infuscated; sculpture on thorax coarser . . . . . **sandanis** (Walk.)

16 Thorax subcylindrical, more than twice as long as broad (fig. 7) its dorsum nearly horizontal from hind margin of pronotum up to gaster, mesoscutum flat, metascutellum vaulted; basal and cubital veins of forewing mainly bare; antennæ black . . . . . **angustipennis** (Erd.)

— Thorax not quite twice as long as broad, narrowing to both ends, distinctly arched along median line (in profile), mesoscutum vaulted, metascutellum flat; basal and cubital veins hairy 17

17 Body blue-black, all femora and antennæ dark, tibiæ usually infuscated apically; propodeum with neck indistinct; sculpture of thorax rather coarse . **acalle** (Walk.)

— Body mainly green to golden or coppery; at least front and mid femora and all tibiæ, pale; antennæ usually tawny apically; neck distinct; sculpture of thorax delicate . . . . . **gordius** (Walk.)

Sympiesis (s. str.) **sericeicornis** (Nees)

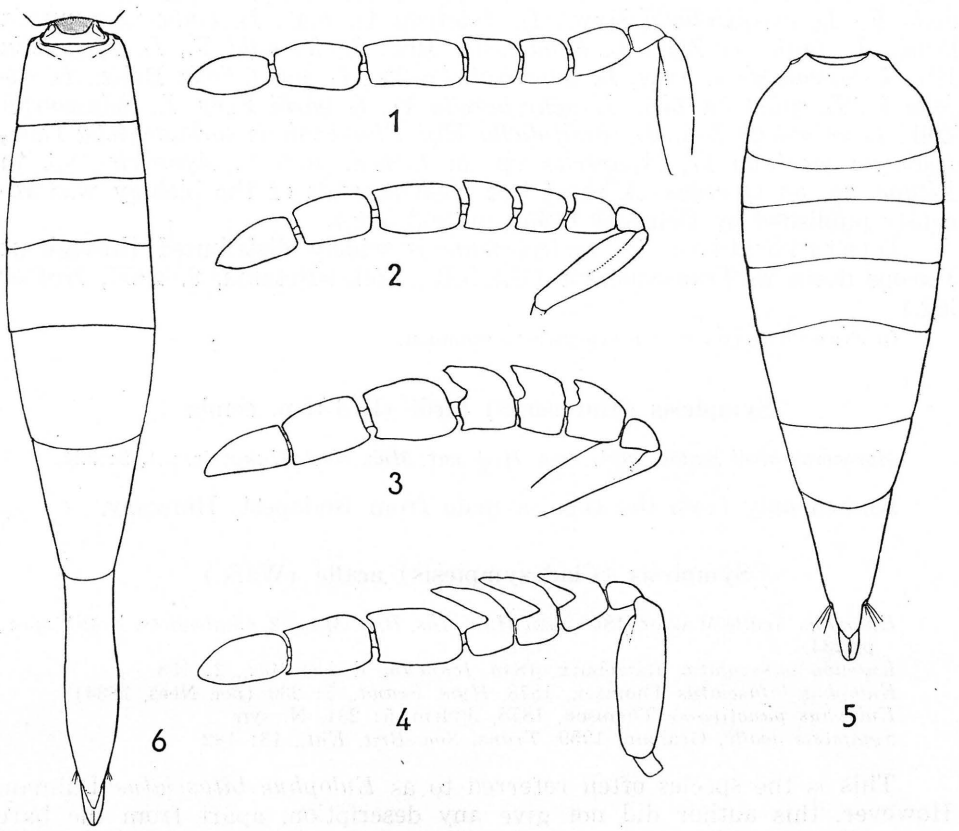
Eulophus Upupænellæ Bouché, 1834, *Naturgesch. d. Insecten*, p. 172. N. syn.
Eulophus sericeicornis Nees, 1834, *Hym. Ichneum. affin. Monogr.*, **2**: 168.
Entedon laticornis Ratzeburg, 1848, *Ichneum. d. Forstins.*, **2**: 162.
Sympiezus sericeicornis, Thomson, 1878, *Hym. Scand.*, **5**: 217.
Sympiezus punctipleura Thomson, 1878, *Hym. Scand.*, **5**: 218.
Sympiezis Feketei Györffy, 1939, *Folia ent. Hung.*, **4**: 100. N. syn.
Sympiesis Feketei, S. laticornis, S. punctipleura, S. sericeicornis, Györfi, 1941, *Erdészeti Kisérletek*, **43**: 127—131.
Sympiesis Feketei var. *fulvipes* Györfi, 1941, *ibidem*, **43**: 131.

This species is a little variable, especially in the colour of the tibiae and thorax, as well as in the sculpture of propodeum, and the deviations were considered specific by Györfi and some subsequent authors. They are all within the variation range of one species, similarly as *punctipleura* Thomson (the type of which is lost). Through the courtesy of Dr. Erdös I saw also one female determined by Györfi as *S. Feketei* Gfi., reared from *Lithocolletis platani* at Sopron, Hungary, 5. 4. 1941 (cf. his paper of 1941, p. 131). Since the types of *S. feketei* are said to be lost, I base my synonymy on this authorized specimen. I also received from Dr. Erdös, and saw in his collection during my visit to Tompa in 1954, several more specimens of *S. sericeicornis*, identified partly as such, partly as *laticornis*. Based on considerable material and several years of experience, I dare to say now that they all belong to the same species. The partly or completely fulvous tibiæ of females (occurring normally in males) cannot be considered a specific character.

A badly damaged type specimen of *E. upupænellæ* Bouché is preserved in the Deutsches Entomologisches Institut, Berlin-Friedrichshagen, where I was allowed to examine it due to the kindness of Prof. H. Sachtleben. The type female lacks abdomen and partly also legs, antennæ and wings of one side, but the rest sufficiently allows to recognize our *S. sericeicornis*. I supposed this synonymy already three years ago when I saw the specimen first time, but at that time I was not yet certain of the taxonomic value of the form with tibiæ more or less fulvous *E. upupænellæ* shows. The name *E. upupænellæ* Bouché was published in the same year as *sericeicornis* Nees (1834), and may be even several months older than the latter judging from its being mentioned already in the "Addenda" of Nees' book. At any event it may be desirable to retain *sericeicornis* as a well established and generally accepted name (also in applied entomology), which should be placed then on the Official List of Specific Names in Zoology.

It is the male of this species that is deserving of particular interest, especially in the form of its antenna. The funicle is clearly 5-segmented (see e. g. Ratzeburg, 1848, pl. III, fig. 24; Sundby, 1957, p. 33), with the have seen Dalman's specimens), and, in absence of the types, we consider

segments 1—3 short, while the segments 4 and 5 are usually each twice as long as broad. The funicle segments 1—3 are usually slightly transverse, or subquadrate, with upper distal corner (in profile) rectangular to sharp-angular, and then slightly produced and more or less sinuate beneath the angular processus (figs. 1—3). Quite exceptionally these processes may be prolonged as shown in my fig. 4. I have only one specimen with this form of antennae (from Vimperk in Southern Bohemia, reared in 1954 by F. Gregor from *Lithocolletis salictella* Zell.), and it is otherwise undistinguishable from the other males with short acute-angular processes, except for the scapus, which is still more dilated. Also the form of scape seems to be in correlation with the form of the basal funicle segments. If their processes are indistinct, the scapus is usually rather slender, but it is slightly to distinctly dilated when the less or more acute-angular processes occur.



Figs. 1.-4. *Sympiesis sericeicornis* (Nees), antenna of four different males showing the variability range. — Fig. 5. *Sympiesis györfii* Erd., female gaster (petiole omitted). — Fig. 6. *Sympiesis dolichogaster* Ahsm., female gaster.

This range of variability is really unusual in the group, but I cannot find any reliable reason that could suggest any taxonomic discrimination. Save for the antennae, nothing in the morphology or biology of the above aberrant male form furnishes any difference between it and the normal males of *S. sericeicornis*. On the contrary, the existence of such forms as showed by my fig. 3 suggests it to be a mere extreme individual deviation of one species. Also here further observations and richer material may throw more light on the matter.

Hosts. *S. sericeicornis* is a well known ectoparasite of many lepidopterous (and some hymenopterous, too: *Heterarthrus nemoratus* Fall., e. g.) larvæ mining the leaves of *Quercus, Fagus, Alnus, Populus, Salix, Acer, Ulmus, Platanus, Malus*, etc., particularly those belonging to the genera *Lithocolletis, Phyllocnistis, Lyonetia, Oecophyllembius*, etc., but it attacks sometimes also their parasites, e.g. *Apanteles* spp. The host records from Czechoslovakia include: *Lithocolletis* spp. on *Quercus*, farther *L. blancardella* F., *L. corylifoliella* Haw., *L. dubitella* H. Sch., *L. emberizæpennella* Bché., *L. faginella* Zell., *L. hauderiella* Rbl., *L. hortella* F., *L. mespilella* Hb., *L. oxyacanthæ* Frey, *L. populifoliella* Tr., *L. pyrifoliella* Bnks., *L. rajella* L., *L. salictella* Zell., *L. schreberella* F., *L. sorbi* Frey, *L. spinicolella* Zell., *L. spinolella* Zell., *L. ulmifoliella* Hb., *Phyllocnistis sorhageniella* Lüd., *Lyonetia clerkella* L., *Apanteles* sp. in *Lithoc. agilella*, *Apanteles* sp. in *Lithoc.* sp. on *Quercus*. A short but good account of the biology was recently published by Delucchi (1958, p. 262, etc.).

Distribution. *S. sericeicornis* is widely distributed throughout Europe down to Transcaucasia (U.S.S.R., Tbilisi-Betania, 6. 1957, Hoffer leg.).

In Czechoslovakia everywhere common.

Sympiesis (Moroceras) bírói (Erd.), n. comb.

Moroceras bírói Erdös, 1954, *Ann. Hist.-nat. Mus. Natl. Hung.* (s. n.), 5: 324.

Known only from the type, a male from Budapest, Hungary.

Sympiesis (Cladosympiesis) acalle (Walk.)

Eulophus Acalle Walker, 1848, *List Hym. Ins. Brit. Mus.*, 2, *Chalcidites, Addit. spec.*, p. 234.
Entedon nubeculatus Ratzeburg, 1848, *Ichneum. d. Forstins.*, 2: 158.
Eulophus bifasciatus Thomson, 1878, *Hym. Scand.*, 5: 230 (nec Nees, 1834).
Eulophus punctifrons Thomson, 1878, ibidem, 5: 231. N. syn.
Sympiesis acalle, Graham, 1959, *Trans. Soc. Brit. Ent.*, 13: 182.

This is the species often referred to as *Eulophus bifasciatus* Dalman. However, this author did not give any description, apart from the bare name "*Entedon bifasciatus* m." (in 1820, in the unpaged chapter entitled "Synopsis Specierum Sueciæ"). A description of a *Eulophus bifasciatus* was really published first by Nees, 1834, p. 156. Nees' species does not seem, however, to be the same as *bifasciatus* sensu Thomson (who may

it more reasonable to accept the Walker name *E. acalle,* used recently by Graham, who could examine the type. For the last reason *acalle* is to be preferred to *nubeculatus* Ratzeburg published in the same year.

Through the courtesy of Mr. P. I. Persson of Lund I have seen recently one syntype-female of *Eulophus punctifrons* Thomson, which completely fits the original description. Still, it differs slightly from all specimens of *acalle* from Central Europe, especially in the sculpture of mesonotum, which is generally finer, but all other characters occur in one or more specimens of my series, though rather singularly. The different characters occurring in the form *punctifrons* are as follows: Scapus all over dark; frons with several coarse punctures on the sides; scutellum with sculpture about twice as dense as in most females of *acalle,* slightly longer than broad (20: 18); propodeum distinctly reticulated down to the foramen, rather rugulose basally. Having seen that all these differences vary in *acalle,* I cannot find any reliable difference to keep *punctifrons* and *acalle* specifically apart and hence I consider *punctifrons* a synonym of the latter.

Sympiesis acalle is very similar, except for the bimaculate forewing and shorter prestigma, to *S. sericeicornis* and also to *S. györfii,* in particular by reason of the green-blue or blue-black body, with metallic femora, lanceolate gaster in females and by long antennae. Also the thorax is quite similarly shaped in the three species.

Hosts. It developes ectoparasitically on mining lepidopterous larvæ. *Entedon nubeculatus* Ratz. was reared from *"Tinea populella"* (= *Tachyptilia p.*) and from *"T. leucatella"* (= *Recurvaria l.*). As further hosts the following are recorded: *Lithocolletis populifoliella* Tr., *Blastobasis aurantiaca* Woll., *Gelechia mulinella* Zell. I have specimens bred from the leaves of apple-tree *(Malus),* from *Lithocolletis corylifoliella* Haw., and *L. pyrifoliella* Bnks., and from *Lithocolletis spinicolella* Zell. mining the leaves of *Prunus spinosa.* Another host record is the dipterous leaf-miner *Liriomyza variegata* Meig. on *Colutea* (Northern Italy). *S. acalle* was also reared from a pupa of an Ichneumonid parasite of *Cacœcia rosana* L.

Distribution. Widely in Northern and Central Europe down to Northern Italy. In Czechoslovakia far less common than *S. sericeicornis.*

Distribution in Czechoslovakia in detail. Bohemia: Kralupy near Chomutov, 28. 7. 1956; Janov near Děčín, 18. 8. 1955; Deblík-hill near Litoměřice, 26. 7. 1956; Ruzyně, 17. 9. 1952, 5. 5. 1954; Praha-Šárka, 4. 6. 1952 (all Bouček leg.); Šárka, ex *Lithoc. spinicolella,* 18. 6. 1953 (B. Starý); Praha, ex *Lithocolletis* sp., 3. 1946 (Patočka); Koda near Beroun, 28. 5. 1954 (Bouček); Holovousy, ex leaves of *Malus,* 1954 (Hostounský); Velký Vřešťov, 8. 1953, 9. 7. and 8. 1954; Hradec Králové-Věkoše, 30. 8. 1958; Piletice, 26. 7. 1953 (all Bouček leg.); Vrchoviny near Náchod, 12. 8. 1936 (Macek). — Moravia: Pouzdřany, 30. 8. 1936 (Gregor sen.). — Slovakia: Vieska nad Žitavou, 1. 7. 1952 (Bouček); Košice, 31. 5. 1952 (Kocourek).

Sympiesis (Clados.) györfii Erd.

Sympiesis györfii Erdös, 1954, *Ann. Hist.-nat. Mus. Natl. Hung.* (s. n.), 5: 324.

Described from one female taken at Tompa, Southern Hungary. The female from Czechoslovakia is 2.6 mm. in length and the original description fits it very well, except for the scape, which is whitish ventrally.

Host: unknown.

Distribution: Czechoslovakia, Austria, Hungary.

In Czechoslovakia: Slovakia: Štúrovo (formerly Parkán), 27. 7. 1954 (Bouček). — Austria: Wien-Sittendorf, 4. 8. 1935 (J. Macek).

Sympiesis (Clados.?) dolichogaster Ashm.

Sympiesis dolichogaster Ashmead, 1888, *Bull. Kansas Agr. Expt. Sta.*, 3, Appendix, p. VII.
Sympiesis Nowickii Szelényi, 1941, *Fragm. Faun. Hung.*, 4: 27. N. syn.
Sympiesis Nowickii, Györfi, 1941, *Erdészeti Kisérletek*, 43: 127, 132.

I have seen two females of this species from North America, one from Wisconsin, the other from San Francisco. They do not differ from the Central European specimens known as *S. nowickii* Szel., which is then a synonym of *S. dolichogaster* Ashm. This synonymy was confirmed recently by Dr. B. D. Burks (Washington), who was kind enough to compare one female from Europe with the type of *S. dolichogaster* Ashm.

Hosts. The known hosts in Europe are *Tischeria complanella* Hb. mining the leaves of *Quercus*, and *Lithocolletis populifoliella* Tr. on *Populus*. Another host is *Gracillaria fidella* Rtti. mining *Colutea* leaves. It parasitizes most probably also further lepidopterous leaf-miners on *Fagus Salix, Carpinus, Tilia*, perhaps also on other trees.

Distribution: Czechoslovakia, Austria, Hungary, Western Ukraine (USSR), Italy, Rhodes, North America.

In Czechslovakia it was found only in Moravia: Olomouc, 29. 10. 1953 (Palásek), and in Slovakia: Bojnice, 10. 10. 1956 (Brtek). The collections of the National Museum in Prague have specimens from Podolia, Western Ukraine, collected by Hanuš. Also specimens from Austria were seen lately: Wien - Mauer, 30. 6. 1952 and 14. 7. 1958 (Fulmek), from the Island of Rhodes, 15. 8. 1932 (Novitzky), and from Italy: Merano, 10. 9. 1936, ex *Gracilaria fidella* on Colutea (Hartig).

Sympiesis (Clados.) sandanis (Walk.)

Eulophus Sandanis Walker, 1839, *Monogr. Chalciditum*, 1: 130.
Eulophus damicornis Förster, 1841, *Beitr. Monogr. Pteromal.*, p. 43. N. syn.
?Entedon atmopterus Ratzeburg, 1852, *Ichneum. d. Forstins.*, 3: 205.
Eulophus atmopterus, Thomson, 1878, *Hym. Scand.*, 5: 233.
Sympiesis sandanis, Graham, 1959, *Trans. Soc. Brit. Ent.*, 13: 183.

In the Förster material kindly lent me by Dr. M. Fischer from the Vienna Museum there are several specimens bearing the name *E. damicornis* Först. in Ruschka's handwriting. One of them, glued to a card-point and bearing the labels "28. 6. '40", i.e. obviously the date of collecting, "Or. Ex." (both in Förster's handwriting), "Aach. Först." and the name written by Ruschka, is believed to be the original specimen. It is a male of *S. sandanis* which fits well the original description of *Eulophus damicornis* Förster, the lectotype of which this specimen has been designated at present.

This species is more akin to the following three (*gregori, flavopicta, viridula*) than to the foregoing, and all four together seem to form a small group of their own (group bb/ in Thomson, 1878, p. 233).

Hosts. Although *S. sandanis* is very common in Central Europe, its biology is still rather obscure, as this species was often confounded with the following one. If the above synonymy as far as *E. atmopterus* Ratz. is concerned is correct, the species should live parasitically in some Tenthredinid galls on the leaves of *Salix*. I have, however, one dwarf female (but obviously belonging here) from *Lithocolletis anderidæ* Fletsch. on *Betula nana*, reared from the material collected by Mr. Bachmaier in Bavaria. On the other hand, among large numbers of Eulophids reared from the leaf-miners in Czechoslovakia, not one specimen of *S. sandanis* was found.

Distribution: Widely in Europe, especially in northern and central part.

In Czechoslovakia next to *S. sericeicornis* the commonest species.

Sympiesis (Clados.) gregori, sp. nova

The differences between the females of this species and of *S. viridula* (Thoms.) are given in the key above. They may be completed as follows: Forewing more slender, 92:34 (*viridula* 97:41); dense pubescence on disc with interspaces between hairs nearly twice as narrow as breadth of marginal vein (about as broad as marginal vein in *viridula*); stigmal vein slender, at most 5 times shorter than width of forewing (7 times so in *viridula*). Pronotum shorter, more converging forwards, without distinct subparallel sides in dorsal view (*viridula*: longer, subparallel parts longer than half the distance between axillæ). Mesoscutum: parapsidal furrows only vaguely indicated anteriorly (often complete though superficial in *viridula*). Propodeal spiracles smaller. Body slenderer, relation between width of mesoscutum and body length as 62:13 (59:14 in *viridula*). Length, 2.2—3.5 mm.

S. gregori seems to be, however, more akin to *S. sandanis*, particularly by its sculpture of scutellum and the maculate wings. From that species it differs in female sex mainly by its longer abdomen (as given above, fig. 11), its finer sculpture, in most cases well developed median carina on propodeum and by its more slender body, which is much more slender than in both *sandanis* and *viridula*. Antennæ are also more slender; length of flagellum (pedicellus including) in relation to the width of head as 54:34, whereas 45:34 so in *sandanis*. In colour of gaster *S. gregori* closely resembles *viridula* in having sublateral rows of varying fulvous spots that do not tend to connect anteriorly, as they do in *sandanis*, but head and thorax are quite alike. All femora are usually infuscated above, and hind tibiæ so in distal third.

Males closely resemble, in the colouring of the body and the longitudinally strigulose scutellum, those of *sandanis*. Apart from the finer sculpture they usually differ in having hind tibiæ more distinctly infuscated at apex, and a median carina on propodeum is also more or less distinct. Otherwise they could be confounded with *sandanis*. Length of reared males, 1—2 mm. (I do not dare identify further males as *gregori*, for the present).

Hosts: *S. gregori* is a parasite of microlepidopterous leaf-miners. Reared from *Lithocolletis helianthemella* H. Sch. on *Helianthemum nummularium* and from a leaf-miner on *Teucrium* (? *Aspilapteryx limosella* Zell.).

Distribution: France, Czechoslovakia, Austria; not uncommon on xerothermic localities.

Described from 27 females and 5 males from the following localities. Bohemia: Janov at Děčín, 17. 8. 1955 (Bouček); Raná-hill, Středohoří, 29. 8. 1956 (Bouček); Velké Žernoseky, 7. 1953, ex *?Aspilapteryx limosella* on *Teucrium* (Gregor); Pohořany near Litoměřice, 11. 5. 1954 (Bouček); Koněprusy, 16. 5. 1958 (Bouček); Koda near Beroun, 28. 5. 1954 (Bouček), female-holotype, Cat. № 3385; 11.—19. (allotype, male, Cat. № 3386) 8. 1951 and 7. 1953, both from *Lithocolletis helianthemella* (Boh. Starý); Karlštejn, 25. 7. 1953 (Petr Starý); Radotín, 9. 9. 1955 (Dlabola); Praha-Hlubočepy, 16. 5. 1953 (Bouček); Praha-Sv. Matěj, 1. 10. 1946 (Bouček); Velký Vřešťov, 7. 7. 1954 (Bouček); Týniště nad Orlicí, 1. 10. 1944 (Bouček); Lomnice nad Lužnicí, 6. 10. 1955 (Syřínek). — Moravia: Mohelno, 6. 7. 1957 (Bouček). — Slovakia: Gabčíkovo (formerly Bés), 1. 5. 1952 (Bouček). I have seen also one female from Austria: Kalksburg near Wien, 24. 9. 1947 (Fulmek), and another from Southern France: St. Rambert, Ain (G. Audras).

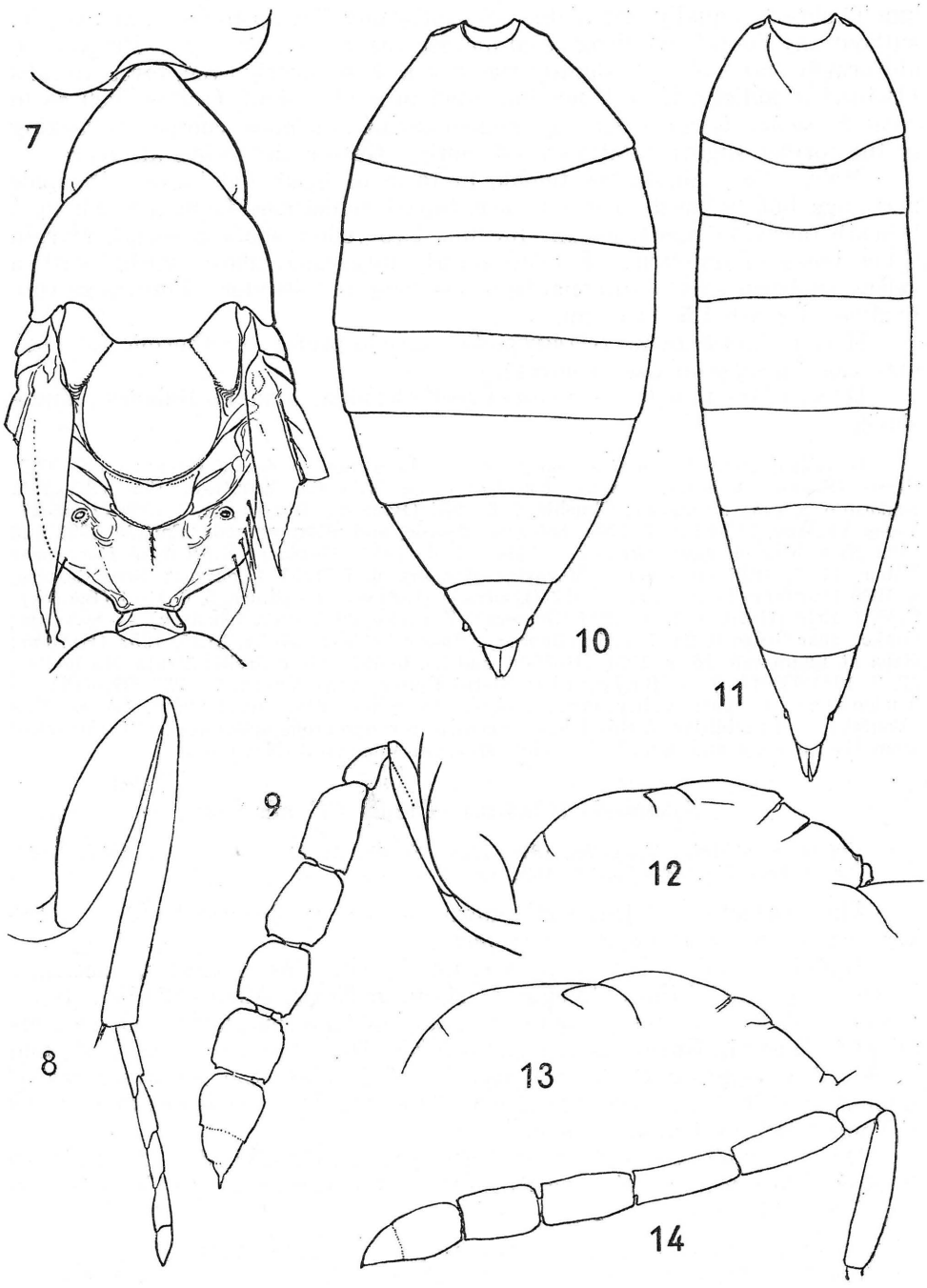
Named in honour of my friend, Dr. František Gregor (jun.), lepidopterist and dipterist, son of the late ichneumonidologist Prof. Fr. Gregor sen.

Sympiesis (Clados.) flavopicta, sp. nova

This species is very characteristic by reason of the orange-yellow markings on lower face and sides of thorax. In females with yellow colour more spread (from southern Europe, e.g. Bulgaria), this occupies nearly whole head and thorax, except for stemmaticum, a broad cross-band on back of head from eye to eye, mid lobe of mesoscutum, front part of axillæ, disc of scutellum, metanotum, and propodeum; gaster is wholly yellow ventrally, with two rows of large yellow spots dorsally. In the more metallic female specimens only lower face, especially below each antennal insertion, a narrow cross-line just anterior to the median ocellus, prepectus, anterior half of mesopleuræ, lowest corner of axillæ, sides of scutellum, usually connected by a narrow stripe along hind margin, are orange-yellow. Gaster is then wholly metallic dorsally. Legs are wholly testaceus to flavous, or femora infuscated above in darker specimens. Length of female, 2.3—3.3 mm.

In structure of the body *S. flavopicta* closely resembles *S. gregori*, especially in the slender gaster (which is, however, only 1.1 to 1.4 times as long as head plus thorax), the densely pubescent wings with a fuscous streak at stigma, slender antennæ (fig. 14), etc. By the sculpture of scutellum and the usually complete parapsidal furrows of mesoscutum, *S. flavopicta* is most similar to *S. viridula*, but with the same size of the body it is much more finely and more superficially sculptured. Lower face nearly smooth, with only a trace of reticulation. Also thoracic dorsum is more shiny. Scutoscutellar suture very fine, scutellum sligthly transverse, 14:15 (in *viridula* slightly longer than broad, 16:15); metascutellum (= dorsel-

Figs. 7.-8. *Sympiesis angustipennis* (Erd.); 7, thorax; 8, hind leg. — Fig. 9. *Sympiesis čapeki*, n. sp., female antenna. — Fig. 10. *Sympiesis sandanis* (Walk.), female gaster. — Fig. 11. *Sympiesis gregori*, n. sp., female gaster. — Fig. 12. *Sympiesis gordius* (Walk.), thoracic dorsum in profile. — Fig. 13. *Sympiesis euspilapterygis* (Erd.), dtto. — Fig. 14. *Sympiesis flavopicta*, n. sp., female antenna.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lum Thomson) equally reticulated and uniformly flat up to scutellar margin, without any depression along basal margin (as in *viridula*, e.g.). Propodeum uniformely reticulated or slightly rugulose at base, nearly even, fovea apicalis (Delucchi) indistinct, neck not indicated in median half (rather well so in *viridula*, *sandanis* and *gregori*); median carina and plicæ completely lacking or the former slightly indicated anteriorly. Gaster alutaceous all over.

Male. Very similar to female in form of head and thorax, the pale markings but reduced to lower face (apart sometimes from a small spot beneath forewing base), usually forming two yellow spots at mouth margin below bases of antennæ. Femora mostly infuscated above, gaster with a yellow subbasal spot. Antennal branches long and slender. Forewings subhyaline. Length 1.5—2.1 mm.

Hosts not known. *S. flavopicta* seems to prefer xerothermic (steppe) localities (at least in Czechoslovakia).

Distribution: Germany, Czechoslovakia, Austria, Bulgaria, Yugoslavia.

Described from 18 females and 13 males. Localities in detail. Germany: Thüringen (Schmiedeknecht). — Czechoslovakia. Bohemia: Karlštejn, 1955 (Štusák); Radotín 6. 8. 1954 (Dlabola); Chuchle, 7. 6. 1954 (Bouček); Ruzyně, 22. 7. 1953 (Bouček); Velký Vřešťov, 7. and 9. 7. 1954, holotype, female, and allotype, male, Cat. № 3387 and 3388 Natl. Mus. Prague (Bouček); Tábor, 7. 7. 1952 (Hoffer); Ratibořské Hory near Tábor, 14. 7. 1945 (Hoffer). - Moravia: Mohelno, 6. 7. 1957 (Bouček); Brno-Ráječek, 8. 1939 (Hoffer); Lednice, 3. 7. 1952 (Bouček); Hlohovec at Lednice, 8. 6. 1948 (Bouček); Čejč, 7. 1940 (Hoffer), 4. 10. 1943 (Šustera); Žeravice, 29. 7. 1942 (Šustera). — Slovakia: Čenkov near Štúrovo, 28. 7. 1955 (Bouček); Slovenské Nové Mesto, 31. 5. 1952 (Hoffer); Baba at Ladmovce, 16. 9. 1951 (Hoffer) and 23. 6. 1952 (Kocourek); Svätá Mária-Rad, 13. 9. 1951 (Hoffer). — Bulgaria: Zlatni Pjasecy near Varna, 7. 1957 (Bouček). — Yugoslavia: Tara valley near Žabljak, Durmitor Mts., Montenegro, 26. 6. 1958 (Bouček). — In addition to this I have recently seen numerous specimens of *S. flavopicta* from Germany and Austria (coll. Museum Wien, coll. Novitzky).

Sympiesis (Clados.) viridula (Thoms.)

Eulophus viridulus Thomson, 1878, *Hym. Scand.*, 5: 233; — —, Goidanich, 1931, *Boll. Lab. Ent. Bologna*, 4: 159; etc.

The characters of this well-known species are discussed above in the key and sub *S. gregori* and *S. flavopicta*.

Hosts. Biology is well known; for the citations of papers concerning it see e.g. p. 428 of the Catalogue of Hym. of North America, 1951. *Sympiesis viridula* is an ectoparasite of small lepidopterous larvæ, not of leafminers. Hosts in Europe: *Pyrausta nubilalis* Hb., *Sesamia cretica* Led., and *Tachyptilia populella* Clerck.; I also reared it from the inflorescences of *Lappa* (ex ?*Phalonia posterana* Zell.). The records of *Eulophus longicornis* (Thoms.) as a host need revision.

Distribution: throughout Europe; introduced and established also in North America (in biological control of the European corn borer). In Czechoslovakia local.

Distribution in Czechoslovakia in detail. Bohemia: Fláje in Krušné hory (= Erzgebirge), 31. 5. 1957 (Bouček); Pohořany near Litoměřice, 11. 5. 1954 (Bouček); Praha-Ruzyně, 1955, ex inflorescences of *Lappa* (ex *?Phalonia posterana)* (Bouček);

Břehyně near Doksy, 9. 8. 1957 (Bouček); Hradec Králové-Věkoše, 6. 7. 1951, 6. 7. 1954 (Bouček)); Piletice, 19. 7. 1955 (Bouček). — Moravia: Tišnov, ex *Pyrausta nubilalis*, 10. 4. 1956 (Pešl). — Slovakia: Jelšava, ex *Tachyptilia populella*, 6. 1958 (Čapek). — Yugoslavia: Hercegovina, Klepci near Čapljina at the Neretva river, ex *Sesamia cretica*, 1. 8. 1957 (Hadžistevič).

Sympiesis (Clados.) euspilapterygis (Erd.), n. comb.

Eulophus euspilapterygis Erdös, 1958, *Acta Zool. Acad. Sci. Hung.*, 3: 209.

The dwarf males of this species can be confounded with those of *S. gregori*, but larger males differ in the much weaker sculpture of thorax, particularly of scutellum, metascutellum and propodeum. Females are greatly different.

Hosts: *Lithocolletis quinqueguttella* Stt. on *Salix* and on *Erysimum*; *Euspilapteryx phasianipennella* Hb. on *Polygonum*.

Distribution: Czechoslovakia, Austria, Hungary.

Localities in Czechoslovakia in detail. Bohemia: Markvarec near Louny, 2. 6. 1957 (Bouček); Jestřebí near Doksy, ex *Lithoc. quinqueguttella* on *Erysimum*, Spring 1957 (Gregor); Velký Vřešťov, 8. 1953 and 7. 6. 1955 (Bouček). — Austria: Sittendorf near Vienna, 10. 5. 1936 (Macek).

Sympiesis (Clados.) gordius (Walk.)

Eulophus Gordius Walker, 1839, *Monogr. Chalciditum*, 1: 129.
Eulophus Alaparus Walker, 1839, *ibidem*, 1: 163. N. syn.
Eulophus cervicornis Förster, 1841, *Beitr. Monogr. Pteromal.*, p. 43. N. syn.
Entedon padellæ Ratzeburg, 1844, *Ichneum. d. Forstins.*, 1: 166.
Eulophus lævissimus Ratzeburg, 1848, *ibidem*, 2: 157.
Eulophus stramineipes Thomson, 1878, *Hym. Scand.*, 5: 232.
Eulophus albiscapus Erdös, 1954, *Ann. Hist.-nat. Mus. Natl. Hung.* (s. n.), 5: 327, 332, N. syn.
Eulophus padellæ, Delucchi, 1958, *Entomophaga*, 3: 259.

I saw a syntype of *E. alaparus* Walker in the Berlin Zoological Museum. It is undoubtedly identical with *E. gordius* Walk. Also *Eulophus cervicornis* Först., one of the syntypes of which (deposited in the Vienna Natural History Museum) has been designated as lectotype by me, belongs to this species.

Recently *Eul. gordius* was redescribed by Delucchi (1958, p. 259). Notwithstanding I should like to add some notes on its variability range that includes also all characters considered specific by Erdős for his *Eulophus albiscapus* in 1954. Graham also mentions (1959, p. 183) that the legs are "flavous (except sometimes coxæ more or less)". This colour may turn to whitish. The same occurs in some smaller specimens with the scape, which is very rarely fuscous throughout, very often pale ventrally and infuscated above, and, in extreme cases, whitish throughout. This change in colour of scape is only generally connected with that of the mid and hind coxæ, and occurs especially in smaller females. Most specimens have basal half (at least) of mid and hind coxæ metallic, in larger specimens also front coxæ may be infuscated basally, in smaller ones, on the contrary, the metallic colour is often reduced. So among 40 females in 3 specimens only hind coxæ are metallic basally less than to ¼, in 1 specimen with a faint superficial

spot only (all these specimens with scape more or less fuscous above), 1 specimen has coxæ pale throughout but the scape fuscous dorsally, and 6 further females have also the scape pale to whitish throughout (here one syntype of *E. albiscapus* Erd. included). Therefore I consider *E. albiscapus* Erd. a mere colour variety of *S. gordius*.

Dwarf males of the variable *Sympiesis gordius* often have hind femora infuscated, and resemble closely those of *S. euspilapterygis*, which also have a very delicate sculpture. The form of propodeum may be unreliable in such specimens as the neck is then not always distinct. However, in contradistinction to *euspilapterygis*, the males of *S. gordius* have front and mid tibiæ usually wholly yellow, and the areoles on scutellum not so narrow and minute.

The sculpture of propodeum in *S. gordius* is also rather variable. In larger specimens a delicate reticulation may often be seen, in singular cases also plicæ are indicated. The neck may be vague, but is well developed in the mentioned syntype (design. "cotype"), female of *Eulophus albiscapus* Erdős I received through the courtesy of its author (the female collected by Dr. Erdős in Buda Hills, 2. 7. 1949, on *Fagus silvatica*; gaster damager by psocids).

Hosts. *S. gordius* is a frequent ectoparasite of many *Lithocolletis* spp. (and some further genera of Microlepidoptera as well) mining the leaves of *Quercus, Alnus, Salix, Populus, Platanus, Fagus, Acer, Malus*, etc. According to Delucchi, 1958, in some cases it may become a secondary parasite when its host (*Lithoc. messaniella* Zell.) has already been attacked by an endoparasite (*Enaysma splendens* Del.). I checked reared specimens of *S. gordius* from the following microlepidopterous leaf-miners: *Coriscium brogniardellum* F., *Lithocolletis* spp. on *Alnus, Populus, Salix caprea, Quercus, Lithocolletis cerasicolella* H. Sch., *L. cerrutiella* Hart., *L. corylifoliella* Haw., *L. hortella* F., *L. oxyacanthæ* Frey, *L. platani* Reinh., *L. populifoliella* Tr., *L. pyrifoliella* Bnks., *L. quercifoliella* Zell., *L. rajella* L., *L. scitulella* Zell., *L. spinolella* Zell., *L. strigulatella* Zell., and from *Lyonetia clerkella* L.

Distribution. Widely spread in Central and Northern Europe; in Southern Europe perhaps only in the mountains. I have also seen a specimen from Afghanistan.

In Czechoslowakia common everywhere in the deciduous forests, but apparently lacking in xerothermic localities.

Sympiesis (Clados.) angustipennis (Erd.), n. comb.

Eulophus angustipennis Erdös, 1954, *Ann. Hist.-nat. Mus. Natl. Hung.* (s. n.), 5: 327, 332.

This species is very characteristic by the reason of the form of thorax (fig. 7), especially of mesonotum and propodeum, also by the nearly glabrous basal and cubital veins of forewing, relatively thick femora (fig. 8), and the more or less uniformly bright green to violaceous body including scapes and gaster. The males usually have mid and hind femora and apical quarter of hind tibiæ, metallic.

I am most grateful to Dr. Erdős for his presenting to me a female cotype that enabled me to recognize this species.

Hosts: not known, but may be sought among grass-stem dwellers.

Distribution: Czechoslovakia, Hungary.

Localities in Czechoslovakia. Bohemia: Raná hill, Středohoří, 29. 8. and 9. 9. 1956 (Bouček); hills between Hořenec and Kozly, Středohoří, 6. 9. 1956 (Dlabola). — Slovakia: Devínská Kobyla near Bratislava, 20. 6. 1951 (Hoffer); Čenkov near Štúrovo, 28. 7. 1955 (Bouček); Nová Vieska near Štúrovo, 30. 7. 1955 (Bouček).

Sympiesis (Teleogmus) xanthostoma (Nees), n. comb.

Eulophus xanthostomus Nees, 1834, *Hym. Ichneum. affin. Monogr.*, 2: 169.
Eulophus Leodamas Walker, 1839, *Monogr. Chalciditum*, 1: 130.
Teleogmus orbitalis Förster, 1856, *Hym. Studien*, 2: 74.
Teleogmus xanthostomus, Thomson, 1878, *Hym. Scand.*, 5: 213; — —, Graham, 1959, *Trans. Soc. Brit. Ent.*, 13: 182.
Sympiesis Szelényi Györfi, 1941, *Erdészeti Kisérletek*, 43: 127, 133. N. syn.

The description of *Sympiesis szelényi* does not mention the whitish lower face and orbitæ, but according to Dr. Erdős (i.l.), who inquired of Prof. Györfi, the type probably had this colouring (it was lost). I have one female of this species identified by Dr. Erdős as "*S. szelényi* Gfi.". Hence I accept this synonymy, though the description and the host record would suggest rather an identity of *S. szelényi* with *S. gordius* (Walk.).

Sympiesis xanthostoma shows a rather striking dichroism. The females of the typical form have lower face, orbitæ, front coxæ, and often mid ones, too, whitish, whereas in the other form whole head and all coxæ are metallic. As far as the evidence suggests at present, the darker form seems to emerge regularly from the overwintering pupæ in Spring. Only one record is from August, but the specimen in question is likely to come from a moist and severe milieu, so that an unusually late emergence is probable. On the other hand, the white-faced specimens appear later in the season, apparently from the first generation of the tortricids that must have been attacked only a few weeks before, i.e., the same Spring or Summer. This suggests an analogy with certain *Eulophus* species, in which the hibernating "winterform" differs from the non-hibernating "summerform".

Hosts: Tortricids on the leaves of deciduous trees. Our host records include *Tortrix viridana* L., *Cacœcia xylosteana* L. and *C. sorbiana* Hb. *Sympiesis szelényi* was reared from *Lithocolletis platani* Reinh.

Distribution: Europe from Sweden and Britain to Yugoslavia.

Checked findings from Czechoslovakia. Bohemia: Javorná south from Karlovy Vary, 21. 8. 1934 (Šustera); Radečín near Lovosice, ex *T. viridana*, 14. 6. 1935 (Kolubajiv); Vinné near Litoměřice, ex. *T. viridana*, 14. 6. 1956 (Bouček); Praha-Šárka, 23. 6. 1946 (Bouček), ex *tortricids* on *Quercus*, 19. 6. 1958 (Kolubajiv); Zbraslavské Báně near Praha, ex *T. viridana*, 13. 6. 1944 (Kolubajiv); Týniště nad Orlicí, Eastern Bohemia, 28. 5. 1944 (Bouček). — Moravia: Libhošť near Nový Jičín, ex *T. viridana*, 22. 6. 1953 (Gregor); Otrokovice near Zlín, ex *T. viridana*, 15. 6. 1953 (Gregor). — Slovakia: Banská Štiavnica, ex *C. sorbiana*, 26. 6. 1955 (Čapek); Mt. Sitno, 1010 m., ex *C. xylosteana*, 24. 6. 1954 (Čapek).

Sympiesis (Teleogmus) čapeki, sp. nova

By its short body, complete parapsidal furrows, delicately sculptured metascutellum and propodeum, short stigmal vein, and pale legs (apart from base of coxæ, more or less), this species is more akin to *S. xanthostoma* (Nees) than to the other species of *Sympiesis*. From *S. xanthostoma S. čapeki* clearly differs by its short antennæ (fig. 9) fulvous beneath, the characteristic fine sculpture of scutellum and axillæ, and shorter gaster in female, as emphasized in the key above. Thoracic dorsum is nearly golden-red, similarly as in *Eulophus smerinthicida* described below, with a similar sculpture of scutellum. Head is exactly as broad as mesoscutum (face not shrunken in the type, but often so in other specimens), transverse in anterior view (30:22), lower margin of antennal toruli hardly higher than lower ocular line; height of eye, 15, distance between lower extremities of eyes, 17; head in dorsal view as 30:12. Thorax not slender, 50:30 in the type, in some other specimens relatively plumper (more depressed as a secondary postmortem phenomenon in some dry examples); parapsidal furrows clearly cut though shallow, sculpture of mesoscutum much finer than in *S. xanthostoma*; scutellum flat or feebly convex, slightly to distinctly transverse (16.5:15 in the type, 13:11 in another specimen), very densely alutaceous, areoles very minute, but network rather deeply engraved. Propodeum delicately reticulate-rugulose or nearly smooth, median carina irregular, weak, partly lacking or sometimes replaced by a longitudinal groove; plicæ completely lacking. Gaster slightly shorter than thorax, rather broad, nearly smooth, wholly metallic, its pubescence sparse, thin. Length 1.9 to 2.7 mm.

Male very similar to female except for antennæ and gaster. Antennæ mainly dark testaceous, branches long, rather slender. Gaster immaculate, metallic. Length of body, 1.6 mm. (allotype).

Host: *Tethea or* F.—*Sympiesis čapeki* is a gregarious parasite of the named host. Its pupæ appear on leaves of *Populus* quite similarly to the *Eulophus* species, they are but much smaller. This feature is quite exceptional in *Sympiesis*, but no reliable morphological characters have been found to allow any generic segregation of this interesting species.

Distribution: Czechoslovakia.

Described from one female (holotype, Cat. № 3392, N. Mus. Praha), taken in Bohemia, near Řevničov, 14. 8. 1955 (Bouček), and a series of 15 females (paratypes) and one male (allotype) reared 29. 6. 1959 by M. Čapek from a caterpillar of *Tethea or* collected on a poplar leaf in Gabčíkovo, Slovakia, 1. 6. 1959.

Named in honour of my friend, Ing. M. Čapek, braconidologist and forest entomologist in Banská Štiavnica, Slovakia, who has contributed very much to our knowledge of host relations of the parasitic Hymenoptera.

Genus **Pnigalio** Schrank

A revision of the Central European species will be published later.

Genus **Encopa** Graham, n. status

Sympiesis sg. *Encopa* Graham, 1959, *Trans. Soc. Brit. Ent.*, **13**: 182. — Type: *Eulophus brevicornis* Erdös; orig. design.

This genus was described recently by Dr. Graham as a subgenus (1959, p. 182) for one single species, *Eulophus brevicornis* Erdős. Since it may be characterized fairly well by features not being subject to sexual dimorphism, and does not suggest any near relation to the other species groups of *Sympiesis*, I deem it preferable to take it as an independent genus.

Encopa brevicornis (Erd.)

Eulophus brevicornis Erdös, 1954, *Ann. Hist.-nat. Mus. Natl. Hung. (s. n.)*, 5: 326, 331.
Sympiesis (Encopa) brevicornis, Graham, 1959, *Trans. Soc. Brit. Ent.*, **13**: 182.

I saw the type of *E. brevicornis* that was kindly lent me by Dr. Erdős. Another female (defective: without head) of this species is in Thomson's collection in Lund, Sweden, under *Eulophus tridentatus* Thomson. Although it also comes from Tvedöra, as stated by Thomson for *tridentatus*, it does not fit the description. The true type of the latter species is, as Dr. Graham has kindly informed me, now in Dr. Möller's collection in the Göteborg Museum. *E. tridentatus* belongs to *Pnigalio*.

Owing to the superficial similarity to some *Sympiesis* I included *E. brevicornis* also in the key to the species of that genus above. Male not yet known.

Host: *Gracilaria stigmatella* F.; a gregarious parasite.

Distribution: Britain, Sweden, Czechoslovakia, Hungary.

Czechoslovakia: Bohemia: Břve near Praha, 6. 6. 1952, on pond vegetation (Bouček). — Slovakia: Gabčíkovo, ex *Gracilaria stigmatella* on a poplar leaf, 2 females emerged from 5 pupæ round the killed host larva, 9. 1957 (Čapek).

Genus **Hemiptarsenus** Westw.

Hemiptarsenus Westwood, 1833, *Mag. Nat. Hist.*, 6: 122. — Type: *Hemiptarsenus fulvicollis* Westwood; design. by Westwood, 1840.

Key to the European species of Hemiptarsenus, females

1 Propodeum elevated down the median 2/4 (intraplical part) and very coarsely punctured, about as long as scutellum, plicæ and median carina usually distinct; petiole with rugæ on hind transverse or subquadrate part, with a more or less sharp dent on either side; thorax wholly metallic; flagellum filiform, wholly fuscous . . . . . **unguicellus** (Zett.)

— Propodeum distinctly sloping, nearly flat, everywhere finely and equally reticulate or smooth, always without plicæ, rather short; gastral petiole short or long, without rugæ and dents 2

2 Antennal flagellum wholly blackish, filiform; scape only slightly exceeding front ocellus; mesoscutum, pronotum, prepectus, lower face, vertex, legs, and gaster (except narrow margins and a varying median stripe), fulvous; mesoscutum and pronotum with a metallic spot; abdominal petiole very short, hidden; scutellum delicately reticulate, not strigose . . . . . **zilahi-sebessi** Erd.

— Clava more or less whitish; flagellum often dilated apically; thorax without cross-fascia on mesoscutum or petiole long; scutellum always sharply strigulose; front coxæ usually white 3

3 Head and thorax mainly yellow; abdominal petiole nearly twice as long as broad, cylindrical and smooth; forewing with two fuscous cross-bands, first at base of marginal vein, second at stigma; base of funicle testaceous and twice as narrow as the fuscous apex . . . . . **wailesellæ** Nowicki

— Head metallic, thorax mostly so, or with orange lateral parts, but mid lobe of mesoscutum nearly always metallic; petiole often short 4

4 Gaster all over rather densely hairy and distinctly alutaceous; antenna fusiform-dilated apically, funicle 1 at least twice as narrow as 3; mesoscutum longitudinally strigulose, nearly matt; head very finely granulated, matt; abdominal petiole cylindrical, at least as long as broad; body violet-black with scutellum matt, greenish; wings often reduced, forewing with a broad fuscous fascia at marginal vein and two narrow ones at stigma and outer margin; clava, front coxæ and distal half of hind coxæ, white . . . . . **waterhousei** Westw.

— Gaster sparsely hairy, gastral tergites 2—5 mainly with one cross-row of hairs only, surface nearly smooth; head weakly sculptured, mesoscutum reticulate, abdominal petiole shorter, subconical; flagellum subfiliform 5

5 Clava infuscated basally; scutellum as long as broad; orange colour on thorax often lacking; brachypterous or macropterous, forewing often with disc slightly clouded . . . . . **fulvicollis** Westw.

— Clava wholly white; scutellum slightly longer than broad; thorax sides usually orange-yellow, side lobes of mesoscutum and anterior part of scutellum included; macropterous, forewing sometimes with a slight fuscous cross-band at base of marginal vein, and a large longitudinal, often double, cloud outward of stigma . . . . . **dropion** (Walk.)

Key to the males of Hemiptarsenus

1 Propodeum coarsely reticulate, more or less elevated along median third, plicæ and carina often distinct; sculpture on scutellum in larger specimens coarsely longitudinally reticulate, in smaller specimens delicately so; abdominal petiole often longer than broad; colour of legs varying, coxæ mainly fuscous . . **unguicellus** (Zett.)

— Propodeum more or less smooth, short, flat, plicæ always absent 2

2 Scutellum delicately alutaceous, not strigulose; lower face, pronotal sides, a subbasal spot on gaster, fulvous to varying extent; propodeum rather sloping . . . . . **zilahi-sebessi** Erd.

— Scutellum more or less delicately, longitudinally strigulose; head and thorax metallic (except perhaps in *wailesellæ* the male of which is unknown as yet); propodeum subhorizontal 3

3 Mesoscutum longitudinally strigulose; pronotum large . . **waterhousei** Westw.

— Mesoscutum finely reticulate, rarely sligthly strigulose in front of scutellum . . 4

4 Scutellum longer than broad . . . . . **dropion** (Walk.)

— Scutellum about as long as broad . . . . . **fulvicollis** Westw.

Hemiptarsenus unguicellus (Zett.)

?Elachestus fusciventris Nees, 1834; *Hym. Ichneum. affin. Monogr.*, 2: 145.
Entedon unguicellus Zetterstedt, 1838, *Insecta Lapponica*, 1: 427.
?Eulophus Gonippus Walker, 1839, *Monogr. Chalciditum*, 1: 132.
?Eulophus Hedila Walker, 1839, *ibidem*, 1: 143.
?Elachestus pellucens Förster, 1841, *Beitr. Monogr. Pteromal.*, p. 39.
Eulophus alcicornis Förster, 1841, *ibidem*, p. 43.
?Eulophus Antilope Förster, 1841, *ibidem*, p. 43.
?Eulophus sexradiatus Förster, 1841, *ibidem*, p. 44.
Eulophus opicornis Förster, 1841, *ibidem*, p. 44. N. syn.
?Eulophus harmocerus Förster, 1841, *ibidem*, p. 44.
Hemiptarsenus unguicellus, Thomson, 1878, *Hym. Scand.*, 5: 211; — —, Mercet, 1924, *Boll. Soc. Esp. Hist. Nat.*, 24: 460; etc.
Hemiptarsenus palustris Erdös, 1954, *Ann. Hist.-nat. Mus. Natl. Hung.* (s. n.), 5: 334. N. syn.

One syntype of *Eulophus hedila* Walk. from Mayr's collection in Vienna, which agrees with the description, is *H. unguicellus*.

In Förster's collection there is one male of *H. unguicellus* that perfectly fits the original description of *Eulophus alcicornis* Först. The specimen is glued to a card-point on a pin, which bears a small label "Or. Ex." in Förster's handwriting, and besides the printed label "Collect. G. Mayr" two more labels "Eul. Hegemon Walker" and "Eul. calcicornis det. Förster" (!) written by Ruschka, who may have misspelled *alcicornis*. I do not hesitate to designate the specimen as lectotype of *alcicornis*, which already was synonymized with *H. unguicellus* by Thomson. It is a male of the dark-coloured form.

Förster described two species under *Eulophus opicornis*, and the syntypes of both of them are in Vienna. *E. opicornis* Först., 1841, is *H. unguicellus*, whereas *E. opicornis*, 1861, is *H. dropion*. As lectotype of the former one male pinned (with two, originally three more specimens) on a square low block of pith was designated, and marked with red colour and an arrow on the pith plate.

The other names mentioned here as probable synonyms were synonymized by Thomson, but the type material could not be re-examined.

H. unguicellus is a species very variable both in colour and in many structural characters. The scape may exceed the vertex level slightly to quite fairly; funicle segments may be subequal in length or the first up to 1.6 times as long as the fourth; scutellum is green, concolorous with the thorax, or blackviolaceous, with reticulation subequal to that of mesoscutum or much finer, usually more or less distinctly longitudinally strigose; propodeum with carina and plicæ well developed to vague; abdominal petiole with body transverse, black, with sharp dents instead of front corners, to pale, subquadrate or even oblong, subpentagonal, without any distinct corners anteriorly; gaster metallic or with sides testaceous, or sometimes, wholly of this colour; also legs are very variable in colouring, in extreme cases pale, or with coxæ and femora metallic and tibiæ infuscated apically. Generally, in some specimens, males or females, antennæ, legs, propodeum and abdominal petiole are longer, while in others again the named parts are relatively short. This may be due to the ecological conditions of the parasite during its development on different hosts. Specimens from moister or colder milieu are generally shorter, darker-coloured. However, I do not think even the extreme deviations would require naming, since every intergrade occurs. *H. palustris* Erdős is one of these forms, with abdominal petiole short and dark, legs testaceous except coxæ. I saw the type, kindly lent me by Dr. Erdős. Such a form was also mentioned by Mercet in 1924 (p. 461).

Eventually this species could be segregated in an independent subgenus.

H o s t s. Biology of this common species is still rather obscure, the only reliable host records being that of *Phytobia iridis* Hd. and the present one from Czechoslovakia: *Phytomyza nigra* Meig. (leaf-mining Agromyzids, Diptera). As further hosts Microlepidoptera *Pyrausta nubilalis* Hb. and *Xanthœcia flavago* Schiff., and the beetle *Blastophagus piniperda* L. are cited; at least the last record may have been based upon misidentification.

Distribution: All over Europe. I have seen also one specimen from North America(!), Ottawa, Canada, 3. 9. 1956. Obenberger leg.

In Czechoslovakia very common everywhere.

Hemiptarsenus zilahi-sebessi Erd.

Hemiptarsenus Zilahi-Sebessi Erdös, 1951, *Acta Biol. Acad. Sci. Hung.*, 2: 190.

This species may be confounded with some *Sympiesis* spp. owing to the relatively shorter scape, which in the female sometimes only slightly exceeds the median ocellus. The insertion of antennæ is lower on face than in other species of *Hemiptarsenus*, but the costal cell is very narrow as in all genuine species of that genus. This may sometimes cause difficulties in generic identification. Therefore, I have included *H. zilahi-sebessi* also in the key to the *Sympiesis* species. The males were also included there.

Within the genus *Hemiptarsenus* this species is more akin to the following three species than to *H. unguicellus*, although it has a unicolorous antenna in female. Its body colouring reminds some *Cirrospilus*, e.g. *lyncus* Walk.

Host still unknown.

Distribution: Poland, Hungary, Bulgaria, Asia Minor.

Checked specimens: Poland: Warszawa, 13. 7. 1938 (Novicky). — Bulgaria: Zlatni Pjasecy near Varna, 7. 1957 (Bouček). — Turkey: Mogan gölü, 9. 7. 1947; Kozan in Toros, 8.—9. 8. 1947 (both Exp. Natl. Mus. Prague).

Hemiptarsenus fulvicollis Westw.

Hemiptarsenus fulvicollis Westwood, 1833, *Mag. Nat. Hist.*, 6: 123.
Eulophus Anementus Walker, 1839, *Monogr. Chalciditum*, 1: 191.
Hemiptarsenus albicoxa Thomson, 1878, *Hym. Scand.*, 5: 210.
Hemiptarsenus anementus, Mercet, 1924, *Boll. Soc. Esp. Hist. Nat.*, 24: 460, 461; — —, Erdös, 1951, *Acta Biol. Acad. Sci. Hung.*, 2: 190.
Hemiptarsenus anementus f. *brevipennis* Erdös, 1951, *Acta Biol. Acad. Sci. Hung.*, 2: 193. e

Specimens with wings more or less reduced normally occur in *H. fulvicollis*, and do not form any delimitable taxon.

Host not certain as all host records published under *H. fulvicollis* may affect rather the following species.

Distribution: Europe from Britain and Spain to Sweden and Russia.

In Czechoslovakia not very common. Bohemia: Kamenná near Sokolovo, 15.—22. 7. 1951; Janov near Děčín, 18. 8. 1955; Praha, 1945; Veltrusy near Praha, 10. 9. 1955; Jevany-Habr, 14. 6. 1953; Hradec Králové, 5. 1944 and 6. 7. 1954; Velký Vřešťov, 8. 1954 (all Bouček leg.). — Slovakia: Vieska nad Žitavou, 1. 7. 1952 (Bouček); Košice, 31. 5. 1952 (Kocourek).

Hemiptarsenus dropion (Walk.)

Eulophus Dropion Walker, 1839, *Monogr. Chalciditum*, 1: 158.
?Eulophus fulvicollis Walker, 1839, *ibidem*, 1: 190.
Eulophus opicornis Förster, 1861, *Progr. Realschule Aachen*, p. XXXVII. N. syn. (nec *E. opicornis* Förster, 1841).
Hemiptarsenus fulvicollis, Thomson, 1878, *Hym. Scand.*, 5: 209; — —, Mercet, 1924, *Boll. Soc. Esp. Hist. Nat.*, 24: 460; — —, Erdös, 1951, *Acta Biol. Acad. Sci. Hung.*, 2: 190.

As lectotype of *Eulophus opicornis* Förster, 1861, I designate one male from Förster's collection in the Vienna Museum, labelled "Roseggthal" and "Eulophus opicornis m. ♂ N. 51" in Förster's handwriting. Roseggthal is the locality mentioned by Förster, 1861, p. XXXI. Although the males of *H. dropion* and *H. fulvicollis* are usually difficult to separate, I believe to have recognized correctly the lectotype of this *opicornis* as *H. dropion* (Walk.).

Hosts: *Lithocolletis helianthemella* H. Sch. on *Helianthemum*; *L. anderidæ* Fletsch. mining the leaves of *Betula nana*; *L. sorbi* Frey; lepidopterous leaf-miner of *Populus nigra*; tenthredinid *Heterarthrus nemoratus* Fall. mining the leaves of *Betula*.

Distributed all over Europe.

In Czechoslovakia not common. Bohemia: Janov near Děčín, 18. 8. 1955 (Bouček); Radotín, 9. 9. 1955 (Bouček); Řevnice, 17. 10. 1954 (L. Masner); Velká Chuchle, 1954, ex. *Lith. heilanthemella* (Gregor); Ruzyně, 22. 7. 1953 and 4. 1954, from leaves of *Populus nigra;* Suchdol near Praha, 5. 1954, from dry grasses; Hradec Králové, 14. 9. 1952; Piletice, 4. 1954, from dry grasses; Velký Vřešťov, 7. 7. 1954 (all Bouček leg.); Malá Skála near Turnov (Obenberger). — Moravia: Pouzdřany, 5. 9. 1945 (Hoffer). — Slovakia: Vieska nad Žitavou, 1. 7. 1952 (Bouček); Svätá Mária-Rad, 13. 9. 1951 (Hoffer).

Hemiptarsenus waterhousei Westw.

Hemiptarsenus Waterhousii Westwood, 1833, *Mag. Nat. Hist.*, 6: 123.
Hemiptarsenus arenarius Erdös, 1951, *Acta Biol. Acad. Sci. Hung.*, 2: 189, 192. N. syn.
Hemiptarsenus waterhousei, Graham, 1959, *Trans. Soc. Brit. Ent.*, 13: 185.

I hope to have recognized the male of this species (previously unknown), although the specimen in question is in want of the characteristic gastral pubescence of the female. In shape of thorax, however, this male much ressembles the female, only the strigose sculpture is weaker and mesoscutum and scutellum shinier. Antennæ are very long, branches very slender, first funicle segment hardly longer than pedicellus. Metascutellum rather raised, 3 times shorter than propodeum. Gaster with a large subbasal pale spot; petiole like in *dropion*, but dark. Length, 1.5 mm.

Hosts unknown; the species seems to prefer xerothermic substrates.

Distribution: Britain, Czechoslovakia, Hungary.

Localities in Czechoslovakia. Bohemia: Choteč near Praha, 28. 4. 1955 (Bouček). — Moravia: Větěřov, 3. 7. 1942 (Hoffer); Brno-Hády, 14. 7. 1941 (Hoffer). — Slovakia: Baba at Ladmovce, 23. 6. 1952, one male (Kocourek).

Hemiptarsenus wailesellae Nowicki

Hemiptarsenus wailesellæ Nowicki, 1929, *Polskie Pismo ent.*, 8: 204.

In certain respect this species intergrades between the preceding species and *Cleolophus autonomus*.

Hosts: leaf-mining Microlepidoptera *Cemiostoma wailesellum* Stt. on *Genista tinctoria*, and *Stigmella helianthemella* H. Sch. on *Helianthemum nummularium*.

Distribution: Germany, Czechoslovakia, ?southern Europe.

In Czechoslovakia: Bohemia: Velké Žernoseky-Strážiště, 6. 1956, reared from dry grasses (Bouček). — Slovakia: Zádiel, from *Nepticula helianthemella*, 10.1953 (Gregor).

Genus **Cleolophus** Mercet

Cleolophus Mercet, 1924, *Bol. Soc. Esp. Hist. Nat.*, 24: 461. — Type: *Cleolophus autonomus* Mercet; orig. design.

I think the single species of this genus should be considered rather a member of *Hemiptarsenus* differing from the other species of that genus only in the lengthened pronotum. *Cleolophus* Mercet could be preserved then as a subgenus of *Hemiptarsenus* Westw.

Cleolophus autonomus Mercet

Cleolophus autonomus Mercet, 1924, *Bol. Soc. Esp. Hist. Nat.*, 24: 462; — —, Erdös, 1954, *Ann. Hist.-nat. Mus. Natl. Hung.* (s. n.), 5: 335.

Body of female mainly yellow, often with violaceous or green reflections. Scutellum delicately longitudinally strigulose, matt. Wing narrow, sometimes reduced, forewing with two fuscous cross-bands. Antenna rather short, funicle segments 2—4 subquadrate, apex of clava whitish. Abdominal petiole about twice as long as broad. Male: body green, with subbasal fascia on gaster, pale; wings subhyaline; antenna with 3 slender branches.

Host unknown but probably an insect mining in some xerophilous or psammophilous plant; according to Erdős' observations from Hungary perhaps in *Agropyrum intermedium*.

Distribution: Czechoslovakia, Austria, Hungary, France, Spain.

Localities in Czechoslovakia. Moravia: Žeravice, 29. 8. 1942 (Hoffer); Mistřín, 3. 7. and 11. 8. 1942 (Hoffer); Dolní Bojanovice, 7. 1942 (Hoffer); Mohelno, 6. 7. 1947 (Bouček). — Slovakia: Čenkov near Štúrovo, 28. 7. 1955 (Bouček) and 8. 8. 1958 (Dlabola). — In Austria: Hundsheim near Deutsch Altenburg, 3.—4. 8. 1946 (Novitzky), in South France: Le Rouret, Alpes maritimes, 19. 7. 1935 (Novitzky).

Genus **Dahlbominus** Hincks

Microplectron Dahlbom, 1857, *Öfvers. Sven. Vetensk. Akad. Förh.*, 14: 293 (no species). Type: *Entedon fuscipennis* Zetterstedt; included by Thomson, 1878; by monotypy. *Dahlbominus* Hincks, 1945, *Entomologist*, 78: 90. — N. name.

A well known genus. For reference see e.g. the papers quoted in the Catalogue of the North Amer. Hymenoptera, 1951, p. 431. Only one species:

Dahlbominus fuscipennis (Zett.)

Eulophus fuliginosus Nees, 1834, *Hym. Ichneum. affin. Monogr.*, 2: 155.
Entedon fuscipennis Zetterstedt, 1838, *Insecta Lapponica*, p. 429.
Eulophus lophyrorum Hartig, 1838, *Jahresber. Fortschr. d. Forstwiss. forstl. Natkde.*, 1 (H. 2): 274.

I fully agree with Dr. Graham's view that the name *fuscipennis* is to be retained, although it is a primary synonym of *fuliginosus* Nees. The former name is well established and generally accepted, especially in forest entomology. *D. fuscipennis* (Zett.) should be placed on the Official List of Specific Names in Zoology.

The female flagellum is strongly dilated except in some extreme dwarf specimens, in which also wings may be slightly reduced. Funicle is 4-segmented, but the fourth segment is usually closely attached to the clava in dry female specimens.

Hosts: *Diprion simile* Htg., *D. pini* L., *Gilpinia polytoma* Htg., *G. frutetorum* F., *Neodiprion sertifer* Geoffr.

Distribution: Europe from Sweden to Hungary; introduced into North America.

In Czechoslovakia local. Bohemia: Děčínský Sněžník, 27. 7. 1956 (Bouček); Kralupy, 7. 1918 (J. Sekera); Praha-Ruzyně, 5. 1954 (Bouček); Neveselka pod Boubínem, Šumava, 23. 9. 1945 (Hoffer); Stříbrné Hutě near Tábor, 10. 7. 1945 (Bouček); Starkoč near Náchod, 7. 1955 (Macek). - Slovakia: Jakubov near Malacky, ex *Diprion pini*, 5. 1952 (K. Novák). — For further records from this country see e.g. K. Novák, 1957, *Acta Soc. ent. Čechosl.*, 54: 356—362, and Finlayson L. R. and T., 1958, *Canad. Ent.*, 90: 584—589.

Genus Dicladocerus Westwood

Dicladocerus Westwood, 1832, *Philos. Mag.* (3), 1: 128. — Type: *Dicladocerus westwoodii* Westwood; by monotypy.
?Solenotus Förster, 1856, *Hym. Studien*, 2: 74. — Type: *Solenotus viridis* Förster; by monotypy.
Diglyphis Thomson, 1878, *Hym. Scand.*, 5: 235. — Type: *Diglyphis æneiscapus* Thomson; design. by Gahan et Fagan, 1923.

Key to the Central European species of Dicladocerus

1 (2) Male: funicle branches slender, more than twice as long as scapus; third funicle segment nearly 4 times as long as broad; tibiæ pale yellow, or infuscated apically to wholly fuscous; scutellar grooves distinct at least in anterior half; propodeal spiracles very close to metanotal margin, large; body 1.9—3.3 mm. . . . . **westwoodi** Westw.

2 (1) Male: funicle branches short, subequal, hardly longer than scape (fig. 17); third funicle segment at most twice as long as broad; tibiæ infuscated; scutellar lines vague; propodeal spiracles small, removed at least by their diameter from the metanotal margin; female unknown; body 1.4 mm. . . . . **breviramulus**, n. sp.

Dicladocerus westwoodi Westw.

Dicladocerus Westwoodii Westwood, 1832, *Philos. Mag.*, (3) 1: 128.
Eulophus Battis Walker, 1839, *Monogr. Chalciditum*, 1: 162. N. syn.
Eulophus Euryalus Haliday, 1843, *Trans. Ent. Soc. Lond.*, 3: 301. N. syn.
?Solenotus viridis Förster, 1856, *Hym. Studien*, 2: 76 (nec Thomson, 1878).
Diglyphis rugifrons Thomson, 1878, *Hym. Scand.*, 5: 236. N. syn.
Diglyphis æneiscapus Thomson, 1878, *ibidem*, 5: 236. N. syn.

I am not quite sure whether I have succeeded in understanding well the variability of this species. Similarly to Graham I have found various differences both in structure and colouring in the material examined, but as always intergrades appear, I have come at least to the conclusion that all these forms belong to one variable species. Early spring imagines emerged from the overwintering material are usually dark-coloured, with tibiæ wholly fuscous or at least apically infuscated, while the summer specimens are more bright-coloured, in females with tibiæ often wholly pale yellow. A similar alteration of colour is shown on scapus. Also the structural characters vary considerably, apparently to some extent in correlation to the body size. Propodeal plicæ are distinct, high, or may efface nearly completely in smaller specimens. In profile of thorax various phases of curvation may be seen, sometimes is scutellum, metanotum and propodeum nearly in one slightly sloping plane. However, no reliable character could be found to segregate any further taxa, except the form described below as *D. breviramulus*, n. sp. At first I thought the form *æneiscapus* Thoms. could represent a good species, but according to my experience of this Spring (1959) when I found the dark form end of March and at the beginning of June (in localities with a more severe climate) on larches where one month later the pale-legged form of *westwoodi* may be found, I came to the conclusion that in this species perhaps an analogous seasonal dichroism occurs (and dimorphism partly, too) as in *Eulophus larvarum, E. smerinthicida,* and *Sympiesis (Teleogmus) xanthostoma.*

I have seen neither the type of *Dicl. westwoodi* nor that of *Eulophus euryalus* Hal., but the descriptions suggest they both indicate our species. Of *E. battis* Walk. I have seen one syntype deposited in the Berlin Zoological Museum and two syntypes from the Vienna Museum, and of *D. rugifrons* Thoms. the lectotype kindly lent me by Prof. P. Brinck from the Lund University Zoological Institute. Most probably also *Solenotus viridis* Först. (not Thomson) belongs here but the search after any authorized specimens has not been sucessful so far. What is in Mayr's collection in Vienna under this name is *Diglyphus isæa* (Walk.); the specimen comes obviously from Thomson's collection. *Diglyphis æneiscapus* Thoms. is a name available for the imagines of the hibernating generation, and might be preserved as f. *æneiscapus* (Thoms.) of the species *D. westwoodi* Westw.

Hosts: *Coleophora laricella* Hb.; a tiny moth dwelling in dog-rose hips (?*Laspeyresia roseticolana* Zell. or *Carposina scirrhosella* H. Sch.). For further data see e.g. Thorpe, 1933, *Bull. Ent. Res.*, 24: 277—280.

Distribution: Northern and Central Europe down to South France; North America.

Distribution in Czechoslovakia: Bohemia: Nové Hamry near Nejdek, 6. 6. 1957 (Bouček); Janov near Děčín, 18. 8. 1955 (Bouček); Pohořany near Litoměřice, ex *C. laricella*, 6. 1954 (Bouček); Pecínov near Lány, ex dog-rose hips, 2. 1947 (Bouček); Praha-Chuchle, 21. 5. 1934 (Šustera); Praha-Krč, 30. 4. 1959 (Bouček); Hostomice pod Brdy, 7. 6. 1959 (Bouček); Velký Vřešťov near Hradec Králové, 8. 1953 (Bouček); Dobrošov near Náchod, 7. 1955 (Macek). - Moravia: Karlova Studánka, 19. 7. 1956 (Bouček). All spring specimens belong to the dark-legged form. — One female of this species was found also in the material of Chalcid flies collected (at the 10th International Entomological Congress) in Canada, Montreal, 8. 1956, by Prof. J. Obenberger. Another female comes from France, Agay (Dep. Var), 5. 1927 (Obenberger), and also material from Hungary has been seen.

Dicladocerus breviramulus, sp. nova

By its colouring the male of *D. breviramulus* could belong to the overwintering generation of *D. westwoodi* and, if the structural differences in antennæ (fig. 17) were not so great I certainly should consider the specimen a dwarf anomalous male of the latter species. However, the differences are quite striking, and there seems to be no reason to take them as due to some monstrosity. Sculpture on head is very delicate; grooved lines on scutellum wanting (!); propodeum finely reticulate, plicæ indistinct. Gaster with a pale subbasal spot. Length, 1.4 mm.

Host unknown.

Distribution: Czechoslovakia.

Described from one male collected in Czechoslovakia, Moravia: Mohelno, 28. 5. 1956 (Bouček), Cat. № 3460.

Genus **Necremnus** Thomson

Necremnus Thomson, 1878, *Hym. Scand.*, 5: 208, 234. — Type: *Eulophus leucarthros* Nees; design. by Ashmead, 1904.

The range of this genus is quite similarly understood here as in Graham's paper, only the species *N. propodealis* described herewith exceeds somewhat the previous generic frame, broadened already by Gahan, 1941. Namely, this author proved that the number of apical spurs on hind tibiæ having been considered a good generic character by previous authors is not reliable, as in reality in all species two spurs occur, but the outer may be more or less reduced. All European species except *N. propodealis* n. sp. have the propodeum much alike, nearly even, with a more or less distinct median carina, and a shallow or moderately deep fovea apicalis on either side at petiolar foramen. In *N. propodealis*, the sculpture of propodeum is much coarser, the median third delimited by the step-like diverging plicæ is distinctly elevated; also the longer pronotum gives the species a strange appearance.

Key to the European Necremnus

1 Propodeum very coarsely punctate, with plicæ step-like elevated; scutellum convex; pronotum rather long, distinctly narrower than mesoscutum, its sides subparallel (fig. 18); head relatively thick; scapus and legs (except coxæ) pale yellow . . . . . **propodealis**, n. sp.

— Propodeum smooth or nearly, rather even, plicæ lacking or indicated as weak lines posteriorly; pronotum shorter, head usually thinner anteroposteriorly; femora metallic or infuscated 2

2 Tibiæ pale yellow, femora more or less infuscated; body rather squat (fig. 19), 1.6 mm. in length; female gaster oval, broad, shorter than thorax; head thick anteroposteriorly (10: 23); wings slightly reduced, immaculate . **capitatus**, n. sp.

— Tibiæ more or less infuscate; or body large, elongate, and forewings then maculate (*artynes*) 3

3 Postmarginal vein about 1.5 times as long as stigmal; first funicle segment in female always much longer than pedicellus 4

— Postmarginal vein not or hardly longer than stigmal 8

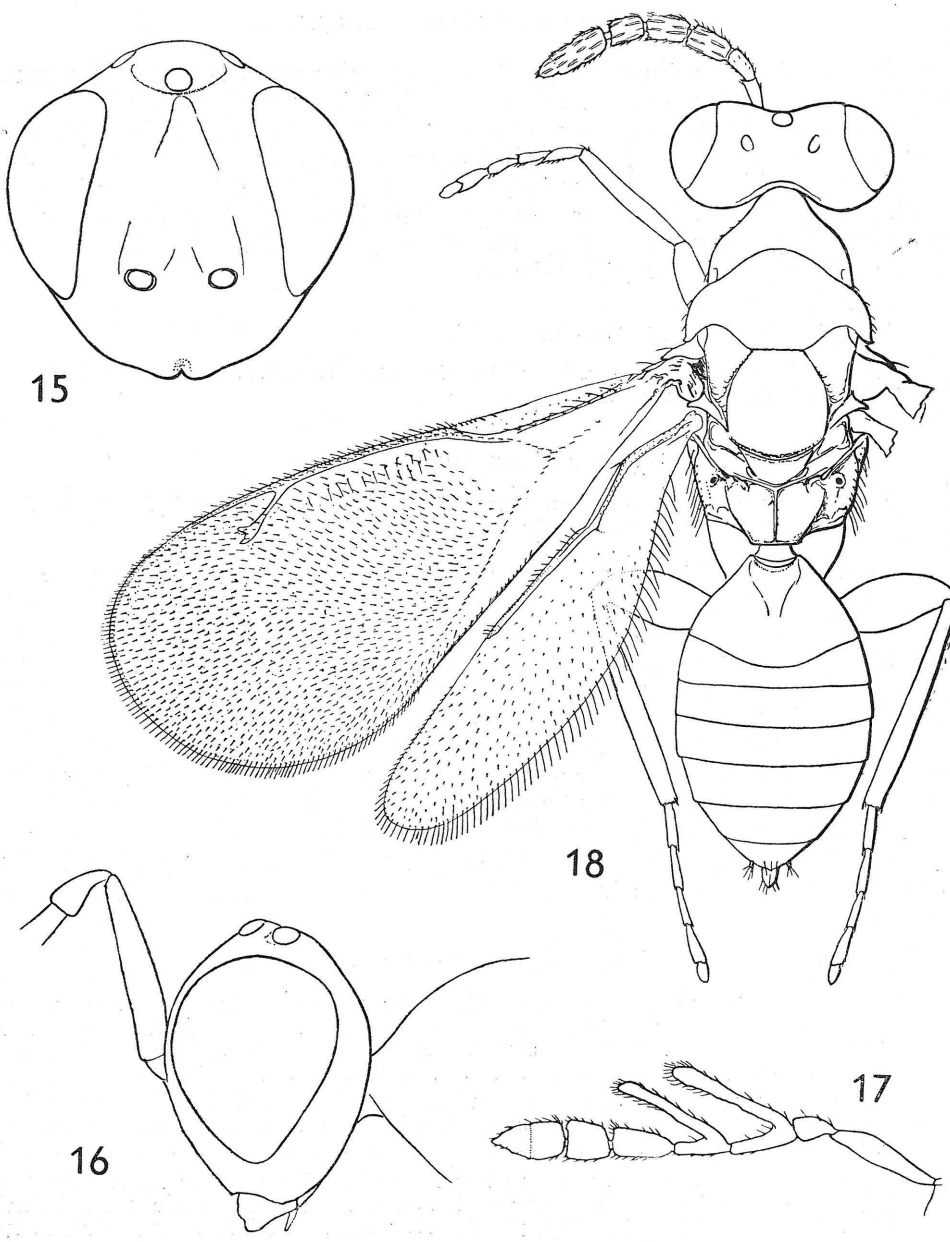


Fig. 15. *Encopa brevicornis* (Erd.), head of female in anterior view. — Fig. 16. *Hemiptarsenus unguicellus* (Zett.), head of female in profile. — Fig. 17. *Dicladocerus breviramulus*, n. sp., male antenna. — Fig. 18. *Necremnus propodealis*, n. sp., female.

4 Mid and hind tibiæ pale apically, infuscate basally; also apex of clava in female pale; forewing (especially in female) with two fuscous blotches, the first broad, below basal half of marginal vein, the other streak at stigma; female gaster broadly lanceolate, as long as head plus thorax; first funicle segment about 2.5 times as long as pedicellus; scutellum strigose-reticulate; male antenna with rather stiff bristles . . . . . **hungaricus** (Erdös)

— Mid and hind tibiæ either wholly fuscous or pale colouring extended from base to the more or less fuscous apex 5

5 Forewing usually maculate; antennæ in female longer, first funicle segment at least twice as long as pedicellus; 2 to 4 basal segments of hind tarsi pale 6

— Forewing immaculate; antennae in female shorter, first funicle segment at most 1 8 times as long as pedicellus; usually only first segment of hind tarsi pale; mid and hind tibiæ fuscous except knees 7

6 Female gaster about 3 times as long as broad (fig. 21), much longer than head and thorax combined; tibiæ often extensively pale yellow from base (to wholly so); forewing bimaculate . . . . . **artynes** (Walker)

— Female gaster about twice as long as broad (fig. 20) hardly longer than head plus thorax; tibiæ usually wholly metallic or fuscous (except pale knees and pale basal third of hind tibiæ in some South European specimens); forewing bimaculate or with one fuscous blotch at stigma, rarely subhyaline . . . . **metalarus** (Walker)

7 Body dark green; male antenna with branches stouter, covered by stiff adpressed bristles . . . . . **leucarthros** (Nees)

— Body bronze or greenish-bronze; branches of male thin, with long hairs (according to Graham) . . . . . **tidius** (Walker)

8 Flagellum plus pedicellus in female about 1.4 times the breadth of the head; first funicle segment much longer than pedicellus, third 1.5—1.8 times as long as broad . . . . . **croton** (Walker)

— Flagellum plus pedicellus not or barely greater than breadth of head; first funicle segment not or hardly longer than pedicellus, third, not or only slightly longer than broad 9

9 Forewing in female hyaline or faintly uniformly infumate; flagellar segments in male shorter, the fourth funicle and the clava at most about 2.5 times as long as broad; body mainly violet- or bronzy-black . . . . . **folia** (Walker)

— Forewing in female nearly always with 2 fuscous blotches, sometimes joined, rarely absent; flagellar segments in male longer, the fourth funicle and the clava at least 3 times as long as broad; body greenish . . . . . **cosconius** (Walker)

Necremnus propodealis, sp. nova

Body green, hind coxæ included, occiput dark violaceous; antennal flagellum fuscous; scapus and legs with (more or less) apices of front and mid coxæ, flavous; claws fuscous; wings hyaline, veins pale fuscous. Head distinctly broader than thorax (25:21), rather thick anteroposteriorly, 11.5:25 in dorsal view. Upper face not depressed (strongly so in *hungaricus*, e. g.), antennæ inserted slightly above the lower ocular line. Eyes strongly vaulted, very shortly oval. For antenna see fig. 18. Thorax (fig. 18) rather slender , twice as long as broad anterior to tegulæ; mesonotal and scutellar bristles as well as those on head, fuscous; mid lobe of mesoscutum with some 4 pairs of bristles; scutellum slightly longer than broad, convex, rather coarsely reticulated, its areoles isodiametric and as large as on the mesoscutum; metascutellum smooth or nearly, twice as short as propodeum, which is similarly reticulated as scutellum, but about twice finer, not shal-

lower; its median carina strong, complete; plicæ coarse, nearly complete, ending inwards from spiracles; the latter short-oval, removed by one diameter from metanotal margin and from the end of plica; lateral callus with one row of whitish hairs. Forewing with cubital and basal hair-rows complete, cubitus slightly sinuate upwards at end of the relatively large speculum; costal cell hairy on lower surface (one row only in basal half), with several hairs on upper surface apically; marginal, postmarginal and stigmal veins as 21: 10: 7. Gaster of female ovate, distinctly shorter than thorax, about 1.6 times as long as broad (36: 22); petiole transverse, subconical, smooth; first tergite smooth, with several hairs on either side, its hind margin somewhat angularly produced in the middle, here occupying about ⅓ of length of gaster; last gastral tergite triangular, about twice as broad as long. Length 1.9—2 mm. Male unknown.

Host unknown.

Distribution: Czechoslovakia.

Described from 3 females. Bohemia: Velký Vřešťov, 8. 1953 and 8. 1954 (holotype, Cat. № 3389, Natl. Mus. Praha). - Slovakia: Hedfárok near Štúrovo, 27. 7. 1955 (all Bouček leg.).

Necremnus artynes (Walker)

Eulophus Artynes Walker, 1839, *Monogr. Chalciditum*, **1**: 163.
Eulophus subcontiguus Thomson, 1878, *Hym. Scand.*, **5**: 231. N. syn.
Necremnus artynes Graham, 1959, *Trans. Soc. Brit. Ent.*, **13**: 184.

I have recently seen one syntype female of *E. artynes* deposited in the Berlin Zoological Museum. It has mid and hind tibiæ fuscous in apical third. A similarly coloured female is in the Vienna Museum. Among Czechoslovak specimens (only females) the tibiæ are similarly coloured in one female, in two others they are predominantly pale yellow with the mere apex vaguely infuscated, and in the other two females (taken at Čelákovice and Radotín in Central Bohemia) the tibiæ are wholly fuscous except the abruptly pale knees, as in leucarthros. For no other difference is discernible, I deem it preferable not to name this deviation, which seems to be within the variation range of the species. This variability of the colouring of the tibiæ reminds one much of *Sympiesis sericeicornis* (Nees).

Through the courtesy of Mr. P. I. Persson of Lund I was enabled to examine the lectotype of *Eulophus subcontiguus* Thomson. Though abdomen and antennæ beyond pedicellus are lacking in the specimen, it is doubtless the same as the syntype of *A. artynes* Walk. mentioned above.

Necremnus comptus Gahan, 1941, from North America, may be well the same species, too.

Host unknown.

Distribution: Britain, Sweden, Czechoslovakia, Austria.

Rather rare in Czechoslovakia. Bohemia: Karlštejn, 1954 (Štusák); Radotín, 13. 8. 1955 (Dlabola); Čelákovice, 9. 8. 1942 (Kocourek). - Moravia: Brno-Hády, 28. 5. 1936 (Gregor); Pouzdřany-Uherčice, 21. 7. 1938 (Gregor). — I have also seen one female collected in Austria: Mönichkirchen near Vienna, 29. 6. 1936 (J. Macek).

Necremnus hungaricus (Erdös)

Eulophus hungaricus Erdös, 1951, *Acta Biol. Acad. Sci. Hung.*, 2: 183; — —, Erdös, 1954, *Ann. Hist.-nat. Mus. Natl. Hung* (s. n.) 5: 326.

This species was described by Erdös from two females. I did not see the type but the description fits completely my specimens, except the infumation of forewings, which is much weaker than in Erdös' figure (8d, p. 184, 1951). The male is very similar to female except for antennæ, gaster and the immaculate wings. Antennal branches are not very slender, covered with rather stiff but not short, obliquely distant bristles. Gaster with a subbasal pale fascia. Tibiæ nearly wholly yellow, hind ones infuscated in basal quarter. Forewing with cubital and basal hair-rows complete as in female. Length of male (allotype), 1.3 mm.; female: 2.2—2.5 mm.

Morphologically *N. hungaricus* is very near to *N. metalarus*.

Host unknown (perhaps a xerophilous *Coleophora* sp.).

Distribution: Czechoslovakia, Hungary.

In Czechoslovakia rare in the southernmost part. Slovakia: Čenkov near Štúrovo, 28. 7. 1955, one male (Bouček); Košice, 8. 1952 (Kocourek); Slovenské Nové Mesto - Piliš Hill, 11. 7. 1951 (Hoffer).

Necremnus metalarus (Walk.)

Eulophus Metalarus Walker, 1839, *Monogr. Chalciditum*, 1: 187; — —, Thorpe, 1933, *Bull. Ent. Res.*, 24: 280—282; — —, Erdös, 1954, *Ann. Hist.-nat. Mus. Natl. Hung.* (s. n.)5: 326.
Necremnus metalarus, Graham, 1959, *Trans. Soc. Brit. Ent.*, 13: 184.

For data on morphology and biology see e. g. Thorpe, 1933. The species is rather easy to recognize. Forewing has usually two fuscous blotches or only that at stigmal vein is developed. In several Yugoslavian specimens, however, this is very weak: only a trace at stigma is discernible; and hind tibiæ are sharply pale yellow in basal third in this material, whereas they are nearly wholly dark in all other specimens I have seen from Germany and Czechoslovakia.

Hosts: *Coleophora onosmella* Brahm., *C. laricella* Hb., *Coleophora* sp. Primary ectoparasite of larvæ.

Distribution: Britain, Germany, Czechoslovakia, Hungary, Yugoslavia.

In Czechoslovakia rare. Bohemia: Raná Hill, Středohoří, 9. 8. 1956 (Bouček); Praha-Hlubočepy, 8. 4. 1926 (Novicky). — I have seen specimens bred from *Coleoptera onosmella* from Germany and Dalmatia.

Necremnus leucarthros (Nees)

Eulophus leucarthros Nees, 1834, *Hym. Ichneum. affin. Monogr.*, 2: 172.
Eulophus Hippias Walker, 1839, *Monogr. Chalciditum*, 1: 185.
Eulophus Amempsimus Walker, 1839, *ibidem*, 1: 186.
Eulophus Cornu-copiæ Förster, 1841, *Beitr. Monogr. Pteromal.*, p. 44. N. syn.
Necremnus leucarthros, Thomson, 1878, *Hym. Scand.*, 5: 234; — —, Gahan, 1941, *Journ. Washington Acad. Sci.*, 31: 201; — —, Graham, 1959, *Trans. Soc. Brit. Ent.*, 13: 184.

The synonymy of *E. hippias* with *N. leucarthros* was confirmed by Gahan, 1941, who also synonymized *E. amempsimus*. I have recently seen several syntypes of *Eulophus cornucopiæ* Förster (from the Museums in Wien and in München) and they are the same as *N. leucarthros*.

Necremnus leucarthros is the best known species of the genus, and also the most common and most widely distributed one.

Hosts: COL.: *Phytonomus arator* L., *Ph. variabilis* Hrbst., *Sirocalus posthumus* Germ., *Mantura obtusata* Gyll., *Lema cyanella* L., *Quedius brevis* Er.; LEP.: *Yponomeuta padellus* L., *Cacœcia murinana* Hb.; DIP.: Dipteron sp. — Parasite of the pupæ. The last three host records seem questionable (? misidentification of the parasite).

Distribution: throughout Europe, down to Transcaucasia.

In Czechoslovakia everywhere common. I have also seen specimens from Transcaucasia, Yugoslavia, Hungary, Austria, Germany and Denmark (the last ones received through the courtesy of Dr. L. Fulmek, Vienna, Austria, reared by Mr. Sönderup from *Phytonomus arator*, collected at Lemrig, Denmark, 26.—27. 7. 1949).

Necremnus tidius (Walker)

Eulophus Tidius Walker, 1839, *Monogr. Chalciditum*, 1: 146.
?Necremnus duplicatus Gahan, 1941, *Journ. Washington Acad. Sci.*, 31: 201.
Necremnus tidius, Graham, 1959, *Trans. Soc. Brit. Ent.*, 13: 184.

I have seen neither reared specimens nor any males of this species, which is very similar to *N. leucarthros* except for the brassy to bronze thorax. Areolæ of the scutellar network are more isodiametric than in *leucarthros*.

Necremnus duplicatus Gahan, 1941, reared from *Ceutorrhynchus assimilis* in the U.S.A. may be very near to if not identical with *N. tidius*, at least the specimens bred from "Cruciferæ pods" in Holland (mentioned by Gahan, l. c.).

Host: *(?)Ceutorrhynchus assimilis* Payk. in pods of Cruciferæ.

Distribution: Britain, Holland, Czechoslovakia; ? North America.

Several females from Czechoslovakia are attributed to this species. Bohemia: Louny, pond at Červený vrch, 7. 6. 1953; Praha-Ruzyně, 7. 1953. - Moravia: Lednice, 3. 7. 1953. - Slovakia: Královský Chlmec, 5. 7. 1953 (all Bouček leg.).

Necremnus folia (Walker)

Eulophus Folia Walker, 1839, *Monogr. Chalciditum*, 1: 147.
?Eulophus Catreus Walker, 1839, *ibidem*, 1: 148.
Necremnus punctifrons Thomson, 1878, *Hym. Scand.*, 5: 235.
Necremnus folia Graham, 1959, *Trans. Soc. Brit. Ent.*, 13: 184.

Through the courtesy of Dr. M. Fischer from the Vienna Museum I was enabled to see one female labelled *Eulophus catreus*, which must have been sent by Walker to G. Mayr. It is the same as *folia*, but as the species was described from a male, it cannot be any syntype. The description would admit the synonymy.

N. folia is the commonest species next to *N. leucarthros*, and by its size and colour similar to it. However, postmarginal vein is relatively shorter,

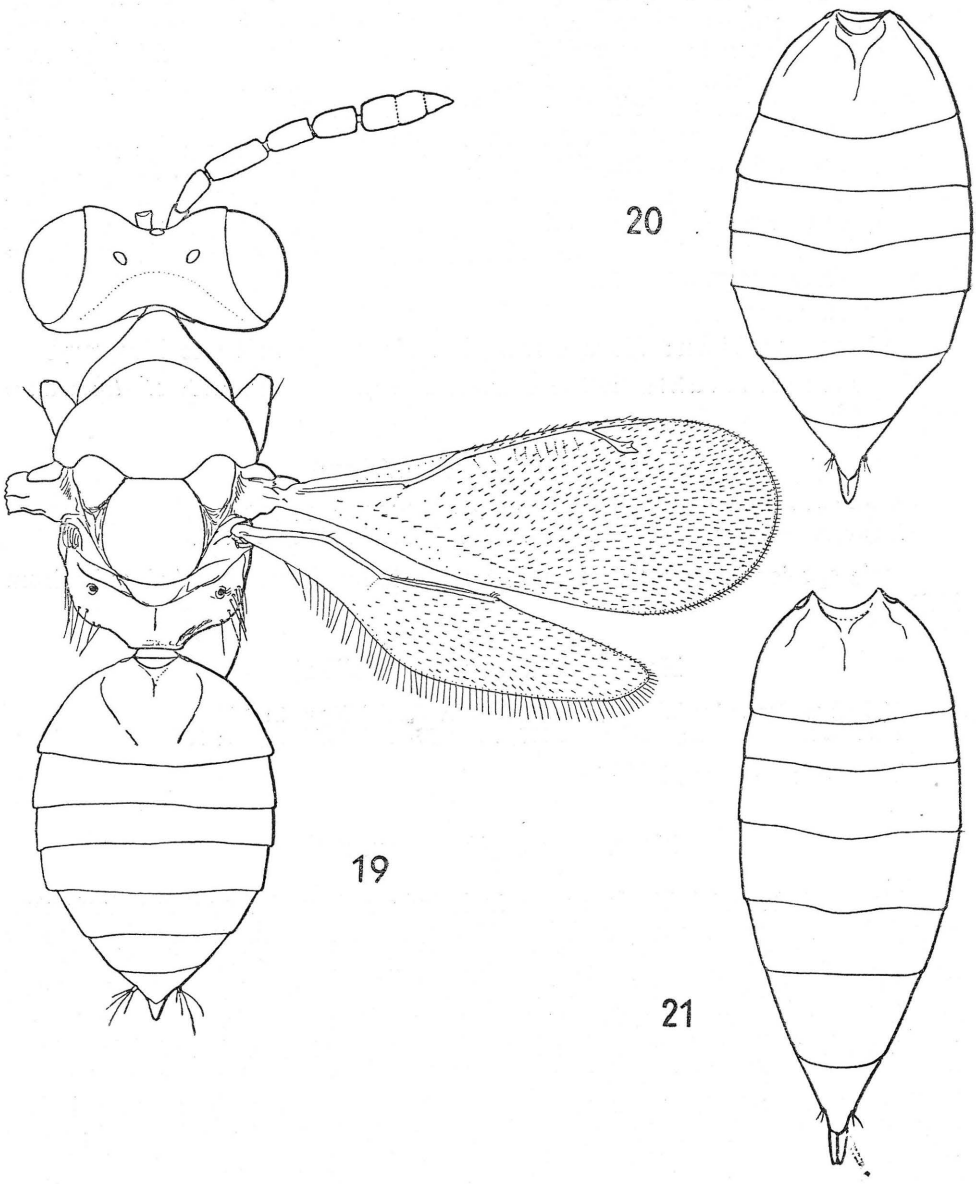


Fig. 19. *Necremnus capitatus*, n. sp., female. — Fig. 20. *Necremnus metalarus* (Walk.), female gaster. — Fig. 21. *Necremnus artynes* (Walk.), female gaster.

at most 1.1 times as long as stigmal, female gaster shorter and whole body looks plumper; male antenna is covered by long hairs. In larger specimens of *folia* propodeum is always distinctly reticulated in median third (nearly smooth in specimens of *N. leucarthros* of same size). Flagellar longitudinal sensillæ large, usually pale in dry specimens. The normal size of body varies in females from 1.5 to 2 mm. I have also one female of 2.8 mm. in length (Hodrúša near B. Štiavnica, Slovakia), which seems to be *N. folia,* except that the reticulation on propodeum is very fine. Also scutellum and metascutellum are very delicately but expressively reticulated (areoles very minute). Upper face with large hair-bearing dots similar to small such dots in normal females of *N. folia.*

Host unknown.

Distribution: Europe from Britain and Sweden to Hungary.

In Czechoslovakia rather common everywhere, often with *N. leucarthros* on windows.

Necremnus croton (Walker)

Eulophus Croton Walker, 1839, *Monogr. Chalciditum,* 1: 182.
Necremnus croton, Graham, 1959, *Trans. Soc. Brit. Ent.,* 13: 184.

This species is unknown to me. So far it has been reported only from Britain.

Necremnus cosconius (Walker)

Eulophus Cosconius Walker, 1839, *Monogr. Chalciditum,* 1: 145.
Necremnus cosconius, Graham, 1959, *Trans. Soc. Brit. Ent.,* 13: 184.

Known only from Britain.

Necremnus capitatus, sp. nova

Female. Greenish-black, coxae included; antennal flagellum dark fuscous; tip of clava, scapus, and legs, testaceous; femora unsharply fuscous in basal $^2/_3$. Wings subhyaline, faintly uniformly infumate, veins testaceous. Body (fig. 19) similar to that of *Dahlbominus fuscipennis,* but head thicker and broader, antennæ slenderer, thorax more narrowed to the ends, gaster shorter. Head distinctly broader than thorax (23:18), rather thick anteroposteriorly (11:23 in dorsal view), with large compound eyes; ocelli small, POL:OOL as 2.1:1; uper face moderately convex, very shortly hairy, without impressed punctures; eyes short-oval, delicately pubescent; genæ strongly converging to the mouth. Antennæ inserted just beneath the lower ocular line, rather slender; scapus not dilated, nearly as long as shortest distance between eyes (11:12); flagellum plus pedicellus about 1.1 times as long as breadth of head; pedicellus about twice as long as broad (in profile), first funicle segment 3 times as long as broad, second and third each twice as long as broad, third slightly broader than second; clava slightly broader than third funicle, nearly as long as funicle segments 2 plus 3.

Thorax about 1.6 times as long as broad (29 : 18); pronotum short above, conical; mesoscutum and scutellum nearly uniformly reticulated, areoles on scutellum more oblong, hairs dark; scutellum distinctly convex, about as long as broad; metascutellum and propodeum rather declivous, distinctly reticulate, the latter with median carina well developed in anterior $^2/_3$; spiracles round, small; pubescence on lateral callus pale. Wings somewhat reduced in the type, their pubescence very short. Marginal, postmarginal and stigmal veins of forewing as 13 : 4 : 3.5; speculum developed, closed below, basal cell open below basally. Legs not much slender. Gaster about as long as and broader than the thorax, oval, flat above, here and there delicately alutaceous, areoles of network large; sides and apex sparsely pubescent. Petiole small, smooth, retracted; first tergite covering about $^2/_5$ of gaster, its hind margin nearly straight, its surface bare except several hairs on sides. Length, 1.6 mm. Male unknown.

Host unknown.

Distribution: Czechoslovakia.

Described from one female taken by me in Eastern Bohemia, Týniště nad Orlicí, 23. 7. 1955 (holotype, Cat. № 3390).

Genus **Microlycus** Thomson

Subgenus *Microlycus* Thomson s. str.

Microlycus Thomson, 1878, *Hym. Scand.*, 5: 223. — Type: *Microlycus heterocerus* Thomson; by monotypy.

Subgenus *Microlycodes*, n. sg. — Type: *Microlycus (Microlycodes) erdoesi*, n. sp.

Subgenus *Necremnulus*, n. sg. — Type: *Microlycus (Necremnulus) bírói* Erdös.

This genus contains species of small size, squat body, and short antennæ, the latter with short stout branches in males. They are not much different from the *Necremnus* species, but notwithstanding they seem to form a natural group of their own, deserving the generic rank.

Within the genus some species are more akin to each other. In one species with strikingly flattened body *(erdœsi)*, the male antenna has only 3 free funicle segments, whereas in all other species (male not known in *M. heterocerus*) it is 4-segmented. I separate it then in the new subgenus *Microlycodes*, and it may be given a generic rank after the male of *M. heterocerus* is known and recognized as sufficiently different. The latter species remains alone in the subgenus *Microlycus* s. str. It is considerably different in shape of female antenna and by its longer hairs on thorax from the other three European species, which are then segregated in a new subgenus, viz. *Necremnulus*.

The bionomics of the species involved is rather obscure, hosts unknown. All of them except the rare *M. heterocerus* are met with on xerothermic localities.

Key to the European Microlycus

1 Body strongly depressed (fig. 25); mesoscutum, scutellum and propodeum nearly in same plane; male funicle 3-segmented, with very short branches (fig. 26; subg. *Microlycodes* n.); forewing slightly infumate, immaculate, basal cell more or less

pubescent, speculum nearly absent; postmarginal vein about 1.5 times as long as stigmal; scutellum strongly transverse; body including femora dark green, tibiæ more or less infuscated . . . . . **erdoesi**, n. sp.

— Thorax not strongly depressed; male funicle (as far as known) 4-segmented; basal cell of forewing more or less bare, as well as upper surface below cubital hair-row; postmarginal vein shorter 2

2 Clava in female (fig. 22) much broader and longer than funicle; first segment of the latter white (sometimes also second), segments 2 and 3 strongly transverse; scapus pale on both tips; hairs on mesoscutum long, dark; male unknown (subg. *Microlycus* s. str.) . . . . . **heterocerus** Thomson

— Clava in female antenna hardly broader and always shorter than the funicle, distal segments of which are subquadrate; pubescence on mesoscutum very short (subg. *Necremnulus* n.) 3

3 Head pale below antennæ, in female also thorax and gaster whitish-marked, male gaster with pale subbasal spot; femora and tibiæ pale yellow, hind femora in male sharply infuscated in the middle; thorax with bronzy tint . . **györfii** (Erdös)

— Body metallic except sometimes delicate pale lines on face; femora metallic . . 4

4 Female: scapus pale yellow to white; distal funicle segments close to each other; head and thorax very densely punctulated, less shiny, with a bronze tint; forewing usually distinctly infumate in a broad band which is more intensively fuscous broadly below base of marginal vein and in a streak at stigma; front coxæ white, tibiæ more or less testaceous; a narrow median line on face connected with a frontal cross-line and a narrow orbital stripe above, usually pale; male determinable especially by more densely pubescent forewing with distinct infumation, sculpture and bronzy tint on mesoscutum, and usually distinct yellow lines on upper-face . . . . . **virens** Erdös

— Female scapus more or less infuscate, third funicle segment separated from clava by a distinct gap; sculpture on head and thorax less dense, these parts more shiny, bronzy-black, without brassy tint; forewing more sparsely hairy, less infumate, hairs on disc in male usualy as long as interspaces between them, marginal fringe longer than in preceding species, bristles on marginal vein distinctly longer than its breadth . . . . . **bírói** Erdös

Microlycus (s. str.) **heterocerus** Thomson

Microlycus heterocerus Thomson, 1878, *Hym. Scand.*, 5: 224 (only ♀); ——, Erdös, 1951, *Acta Biol. Acad. Sci. Hung.*, 2: 186 (only ♀).

Thomson's description was based on both female and male specimens, but the male does not belong to the same species. The conception of this species was taken then according to the female lectotype selected by Dr. A. Jansson. Apart from the red lectotype card the pin bears also the original small label "Ö" (= Öland). The female specimen reported by Erdös, 1951, from Hungary, and another female from Bohemia (mentioned below) are clearly identical with the lectotype. The male syntype of *Microlycus heterocerus* (also labelled "Ö") is a male of *Microlycus (Microlycodes) erdœsi* described elsewhere in this paper, and the conspecific female is clearly different from that of *M. heterocerus*. The differences are particularly in the shape of thorax and the relative length of postmarginal vein, as stressed in the key.

As to the variability of *M. heterocerus*, the male of which remains unknown, little is to say. The type from Sweden and the Czech specimen have only the first funicle segment white, in the Hungarian specimen (lent

me through the courtesy of my friend Dr. L. Móczár of the Budapest Museum) also the second funicle segment is white (but fig. 9e in Erdös, 1951, p. 187, is not accurate; the funicle is always 3-segmented; see my fig. 22). Disc of forewing broadly infumate below stigmal vein. Length, 1.0 mm.

Host unknown.

Distribution: Sweden, Czechoslovakia, Hungary.

The Czech specimen was taken at Vrchoviny near Náchod, north-eastern Bohemia, 7. 8. 1936 (J. Macek).

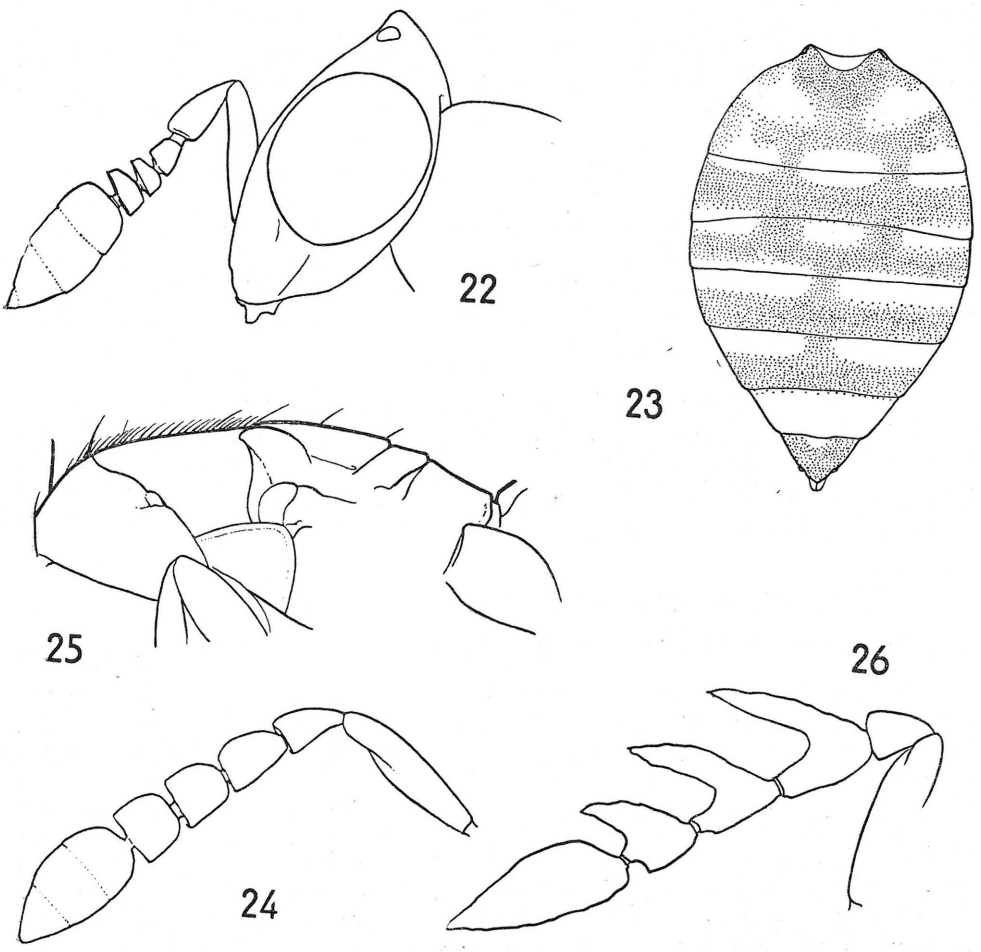


Fig. 22. *Microlycus* (s. str.) *heterocerus* Thoms., head and antenna of female. — Fig. 23. *Microlycus* (*Necremnulus*, n. sg.) *györfii* (Erd.), female gaster, markings indicated. — Figs. 24.-26. *Microlycus* (*Microlycodes*, n. sg.) *erdoesi*, n. sp.; thorax in profile, female antenna and male antenna.

Microlycus (Necremnulus) birói Erdös

Microlycus birói Erdös, 1951, *Acta Biol. Acad. Sci. Hung.*, 2: 186.

I designate *M. birói* Erd. as the type species of the new subgenus *Necremnulus*, the characters of which are discussed elsewhere. Erdös' description and the above key sufficiently allow to recognize this species, I hope.

Host unknown.

Distribution: Czechoslovakia, Austria, Hungary.

In Czechoslovakia local but not uncommon on xerothermic localities. Bohemia: Praha-Sv. Prokop, 7. 1955 (Dlabola); Veselí nad Lužnicí, 11. 7. 1945 (Bouček). - Moravia: Mohelno, 6. 7. 1957 (Bouček); Pavlovské kopce (Pavlov Hills), Turold, 19. 7. 1946, and Klausen, 27. 7. 1946 (Hoffer). - Slovakia: Slovenské Nové Mesto, Piliš Hill, 13. 7. 1950 (Hoffer); Streda nad Bodrogom, 28. 6. 1952 (Kocourek); Somotor, 1. 7. 1952 (Kocourek). — I have seen also specimens from Austria: Hundsheim near Deutsch Altenburg, 3.—4. 8. 1946 (Novicky).

Microlycus (Necremnulus) virens Erdös

Microlycus virens Erdös, 1951, *Acta Biol. Acad. Sci. Hung.*, 2: 186, 188.

The main characters are mentioned in the key. *M. virens* is very near to *M. birói* and the males must be carefully examined not to be confounded with that species. In females the pale scapus and a distinct bronze tint on thorax make the identification much easier.

Host unknown.

Distribution: Czechoslovakia, Hungary, France.

In Czechoslovakia only on xerothermic localities of Southern Moravia and Slovakia. Moravia: Brno-Hády, 29. 5. 1947 (Bouček). - Slovakia: Štúrovo-Kováčov, 16. 7. 1942 and 7. 5. 1949 (Hoffer); Velký Kevežd, 5. 7. 1950 (Hoffer). — Through the kindness of Mr. Novicky I have seen also specimens taken by him in South France, Le Rouret (Alpes maritimes), 19. 7. 1935.

Microlycus (Necremnulus) györfii (Erdös), n. comb.

Necremnus györfii Erdös, 1954, *Ann. Hist.-nat. Mus. Natl. Hung.* (s. n.), 5: 334.

Only males of this species were known so far. Female is easy to recognize owing to pale markings on head, thorax and gaster. Head and thorax bronzy-green, dull, the reticulation extremely dense and not shallow; pubescence pale, short. In darker specimens the following parts are pale yellow: mouth region up to insertion of antennæ, shooting a narrow strip behind genal suture on hind orbita; a spot on lower inner orbita; scapus beneath; legs except usually a dark spot on hind femur; six cross-bands on gaster (fig. 23), these interrupted medially (first, fourth and fifth band), or submedially (i. e. twice: second and third band), third band the narrowest; pronotum with whitish band interrupted at meson. In specimens with richer pale markings these take up nearly whole face except a spot below either eye and a stripe behind each scapus, then ventral and lateral parts of thorax more or less, including lower half of pronotal panels, side lobes of mesoscutum, lower parts of axillæ, and sides of scutellum. Pronotal transverse spots

broader, anterolateral quarters of gaster wholly pale. Length 1.2—1.7 mm. Thorax sculpture in male more superficial.

Host unknown.

Distribution: Czechoslovakia, Austria, Hungary, Bulgaria.

In Czechoslovakia rare. Moravia: Mohelno, 6. 7. 1957, one female (allotype) and two males (Bouček). — Through the courtesy of Ing. S. Novitzky I was enabled to examine the females of this species taken by him in Austria near Weiden, 10. 7. 1943; Wimpassing-Harnet (?) in the Leitha Mountains, 20. 8. 1951; and Deutsch Altenburg, 3. 8. 1946; and in Bulgaria near Varna, 14. 5. 1938.

Microlycus (Microlycodes) erdœsi, sp. nova

Microlycus heterocerus Thomson, 1878, *Hym. Scand.*, 5: 224 (only ♂); — *Microlycus heterocerus*, Erdös, 1951, *Acta Biol. Acad. Sci. Hung.*, 2: 186 (only ♂). Not *M. heterocerus* Thomson of the lectotype (♀).

This species has been partly confused with *Microlycus heterocerus* Thoms. the male having been regarded erroneously as belonging to that species.

Female: Body bronzy-black, coxæ and femora included; antennal flagellum fuscous; scapus, tibiæ and tarsi dirty-testaceous, scapus above and hind tibiæ in the middle more or less infuscated; wings faintly uniformly infumate, sometimes with a vague spot on stigma; veins fuscous.

Head hardly broader than thorax (20.5: 19), rather thin anteroposteriorly (measures not reliable in dry specimens owing to the collapsing face). POL: OOL at least as 3: 1, ocelli small; eyes oval (about 9: 6), not strongly vaulted, very delicately pubescent. Antennæ (fig. 24) inserted distinctly below lower ocular line; scapus rather short, shorter than height of eye (7: 9); pedicellus about 1.5 times as long as broad and equal in length to the first funicle segment; second funicle (in profile) hardly longer than broad, third funicle slightly transverse and a shade broader than the second; clava usually compressed in dry specimens, in profile then broader than funicle, ovate-acuminate, slightly longer than two preceding funicle segments together; funicle plus pedicellus hardly as long as breadth of head. Thorax very flat, broad, 28: 20, its dorsum from pronotum down to petiolus nearly in same plane (fig. 25). Short pubescence on mesoscutum and elsewhere short, dark, hairs on propodeal callus white. Mesoscutum more than twice as broad as long; scutellum rather strongly transverse, about 1.5 times as broad as long, its anterior margin (between axillæ) distinctly arched forwards. Propodeum: carina indistinct, median third granulate-reticulate, lateral quarters nearly smooth. Wings normally developed, forewing densely pubescent, often only with a narrow strip just below cubital hair-row bare; basal cell small, at least with scattered hairs; postmarginal vein about 1.5 times as long as stigmal, which is one quarter of marginal. Legs rather strong. Gaster barely longer than head plus thorax, long-oval, its maximum breadth on front quarter, not acuminate apically, its last tergite about 3 to 4 times as broad as long. Petiole hidden, first tergite smooth, occupying hardly ¼ of gaster, its hind margin straight; following tergites nearly smooth, delicately alutaceous where sparsely hairy (sides and apical half

of gaster). Length 1.5—1.9 mm. Male was described by Thomson and by Erdös, the latter author also figured its antenna. It differs from female mainly by the antennæ (fig. 26), gaster (shorter than thorax), usually less depressed scutellum, and by subhyaline wings.

Host unknown.

Distribution: Sweden, Czechoslovakia, Austria, Hungary.

In Czechoslovakia not common, prefers xerothermic localities. Bohemia: valley between Noutonice and Kováry, 6. 6. 1953; Praha-Ruzyně, 11. 7. 1952 (holotype, Cat. № 3393); Praha-Chuchle, 11. 7. 1955, one male designated as allotype, Cat. № 3394 (all Bouček leg.). - Moravia: Mohelno, 6. 7. 1957 (Bouček). - Slovakia: Somotor, 6. 7. 1952 (Kocourek); Streda nad Bodrogom, 28. 6. 1952 (Kocourek). — I have seen also one female taken by Mr. Novitzky in Austria, Hundsheim, 1940. Also one male syntype of *Microlycus heterocerus* Thoms. was designated as paratype of *M. erdoesi*. It is labelled "Ö", i.e. Öland in Sweden.

Genus **Eulophus** Olivier

Subgenus *Eulophus* Oliv.

Eulophus Olivier, 1791, *Encyclopédie Méthodique*, 6: 454. — Type: *Ichneumon ramicornis Fabricius;* by monotypy.

Comedo Schrank, 1802, *Fauna Boica*, 2 (pt. 2): 315. — Type: *Ichneumon larvarum* Linnaeus; by monotypy.

Cratotechus Thomson, 1878, *Hym. Scand.*, 5: 208, 219. — Type: *Ichneumon larvarum* Linnaeus; design. by Ashmead, 1904.

Cratotrechus Dalla Torre, 1898, *Cat. Hym.*, 5: 55. — Emend.

Subgenus *Onychocomedo* Graham.

Comedo sg. *Onychocomedo* Graham, 1959, *Trans. Soc. Brit. Ent.*, 13: 183. — Type: *Eulophus thespius* Walker; orig. design.

Considerable troubles have been connected with the name of this genus, called usually *Cratotechus* or *Comedo*. With the consistent use of the generic names according to the first designation of the type species, it definitively is called *Eulophus*, and I later explain my opinion on what is to be understand by the name of *Ichneumon ramicornis* Fabr.

Until recently the generic name *Eulophus* was credited to Geoffroy, who published it accompanied by a description and figures in 1762 (*Histoire Abregée des Insectes*, 2: 312). However, according to the International Rules of Zoological Nomenclature his name is not available for nomenclature purposes because of the scientific names not being consistently binominal in Geoffroy's paper, and, consequently, his name has no place in nomenclature (Opinion 228, Internatl. Comm. Zool. Nomencl., 1954). The oldest available name is then *Eulophus* Olivier, 1791.

The range of this genus is perhaps better given by the biology of the species than by the morphological characters. These are somewhat difficult to express, although nearly every student soon recognizes any representative of this genus at first glance.

So far as our knowledge goes all species of the genus are gregarious parasites of lepidopterous larvæ, and pupate freely on leaves round the killed host. The pupae seem to be rather different, blackish or pale e. g., but this character has not proved to be specific. Gradwell (1958, p. 234; see below sub *E. larvarum* and *E. smerinthicida*) was the first to suggest that the colour and thickness of pupal skin depends on whether the pupa in question

is overwintering or not. Apart from this, some of them do show morphological differences and for some time I believed I had found in them additional characters useful in separating several species. However, as a larger material proves, these pupal characters are fairly variable to say nothing of the split pupal skin after emergence of the imagines when at least the frontal part is normally lacking. Perhaps only *E. abdominalis* may be recognized reliably in the pupal stage because of the gibbous scutellum.

Key to the European species of Eulophus

1 Head rather thick in side view (fig. 27), with scapes slightly exceeding the vertex and as long as distance between eyes; plicæ of propodeum strong posteriorly; last tarsal segment subequal in length to segments 2 plus 3; body dark bronzy, legs testaceous; coxæ and more or less also femora, metallic; flagellum fuscous; male funicle 4-segmented, simple (fig. 29), last tergite with a bunch of black spines (fig. 28) on either side and one row of them dorsally (sg. *Onycocomedo* Graham) . . . . . **thespius** Walker.

— Head not thick, scapus does not reach clearly the vertex top and is distinctly shorter than distance between eyes; the other characters also more or less different; male antenna always with 3 branches and last tergite without spines 2

2 Forewing densely pubescent, speculum reduced, basal and cubital veins more or less hairy; body bronze-black, dull, coxæ and femora included, also tibiæ usually infuscated; flagellum of female blackish, dilated, distal corners of funicle segments sharpangular (fig. 34); third segment barely longer than broad; last segment of hind tarsi (which are usually slender) as long as second . . . **pennicornis** Nees.

— Forewing not densely pubescent, speculum broader, basal and cubital veins glabrous; body green, greenish, bluish or violaceous, more shiny; tibiæ always pale; female flagellum slender, usually more or less testaceous 3

3 Scutellum gibbous (fig. 32); propodeal neck distinct though short; flagellum infuscated, third funicle segment in female about 1.5 times as long as broad; body bluish, scapes and legs (except hind coxæ) pale, hind femora usually infuscated above . . . . . **abdominalis** Nees.

— Scutellum more or less feebly convex (fig. 31); propodeal neck indistinct; female flagellum more or less testaceous 4

4 Sculpture of thorax delicate, scutellum and axillæ finely alutaceous, i.e. the network is formed by engraved lines; legs except mid and hind coxæ pale; fourth segment of hind tarsi nearly as long as segments 2 plus 3; thorax more or less golden; gaster round with a pale subbasal spot or without it; propodeum without plicæ . . . . . **smerinthicida**, n. sp.

— Scutellum always reticulate, the network being formed by raised lines; not all characters as above 5

5 Marginal vein fully 4 times as long as stigmal (fig. 35), which is barely shorter than the postmarginal vein; plicæ more or less distinct posteriorly; all coxæ usually metallic (front ones sometimes laterally or very rarely: wholly, pale), femora pale; third funicle segment in female subquadrate; gaster wholly metallic . . . . . **æneicoxa** (Thoms.)

— Marginal vein at most 3 times as long as stigmal, which is distinctly shorter than the postmarginal vein 6

6 Coxæ and femora mainly metallic; forewing with a slight square fuscous cloud in the middle; head and thorax green, female gaster with a pale subbasal spot; antennæ in both sexes slightly shorter than in *larvarum* . . . . **slovacus**, n. sp.

— Femora always pale, hind ones usually slightly infuscated above 7

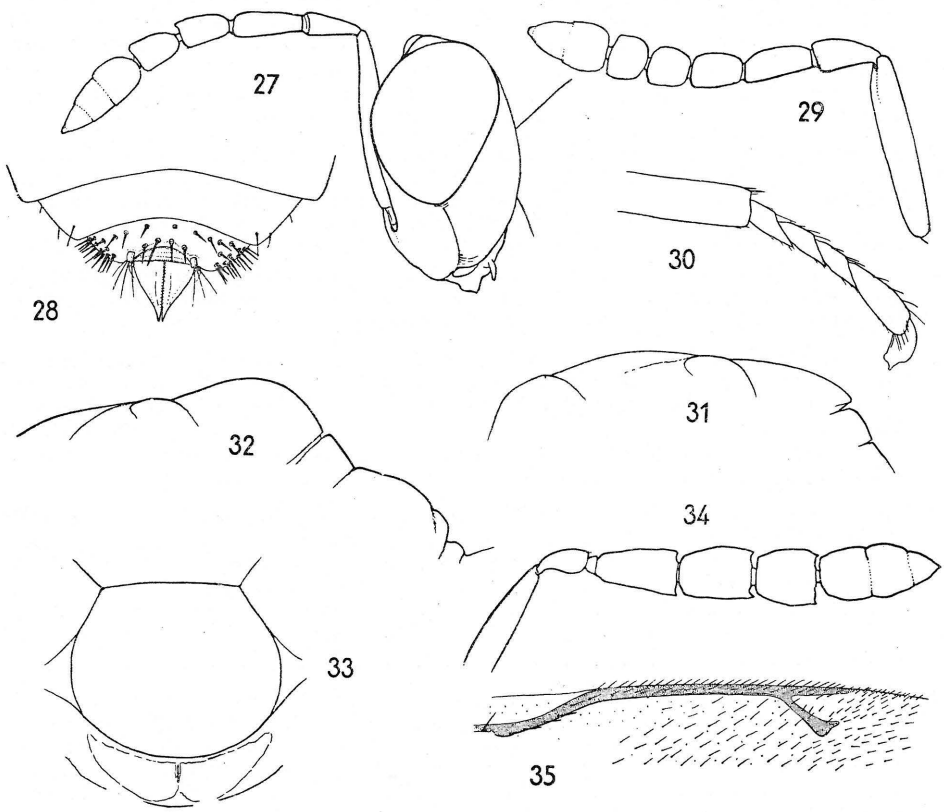
7 Fourth segment of hind tarsi subequal in length to segments 2 plus 3 (fig. 30); head and thorax mainly violaceous; plicæ usually distinct in posterior half of propodeum; female gaster round; front coxæ mainly dark . . . **cyanescens**, n. sp.

— Fourth tarsal segment barely longer than second; body greenish to golden-green; plicæ usually indistinct; female gaster usually oval; front coxæ always pale . . . . . **larvarum** (Linnaeus)

Eulophus thespius Walker

Eulophus Thespius Walker, 1839, *Monogr. Chalciditum*, 1: 127.
Cratotechus ungularis Thomson, 1878, *Hym. Scand.*, 5: 222.

This characteristic species was designated as type species of the subgenus *Onychocomedo* Graham, 1959. Judging from the name its author probably had in mind the large apical segment of tarsi, but as there exist



Figs. 27.-29. *Eulophus thespius* Walk., female head and antenna, apex of male gaster, and male antenna. — Figs. 30.-31. *Eulophus cyanescens*, n. sp., hind tarsus and thorax vault in profile. — Fig. 32. *Eulophus abdominalis* Nees, thorax in profile (note the gibbous scutellum). — Fig. 33. *Eulophus smerinthicida*, n. sp., scutellum and metascutellum. — Fig. 34. *Eulophus pennicornis* Nees, female antenna. — Fig. 35. *Eulophus æneicoxa* (Thoms.), forewing, part with veins.

several more species with shortened tarsal segments 1 to 3, I deem it better to resctrict the sense of the subgenus to the species with unbranched antennæ is males. Then also the North American species. *Eulophus anomocerus* (Crawf.) must belong here, and may be easily recognized from the European *E. thespius* by the complete arched plicæ, smoky forewing, pale clava of female antenna, and a pale subbasal spot on gaster.

In addition to the characters mentioned in the key *E. thespius* differs in some others. Pedicellus of the female antenna is at least as long as the second funicle segment; the regular bristles on vertex and thoracic dorsum very long, black; longitudinal impressions on pronotal sides just above the spiracles extend far forward, the outermost bristle stands about at the middle of this groove; crenulate groove along anterior margin of metascutellum broad and deep.

Hosts: *Acronycta leporina* L., *Aethia emortualis* Schiff., *Oporinia dilutata* Schiff., and *Pachnobia rubricosa* F.

Distribution: Northern and central Europe; from Britain and Sweden down to Hungary.

In Czechoslovakia rather local. Bohemia: Kamenná near Sokolovo, one male, 21. 7. 1951 (Bouček); Milá hill, Středohoří, 5. 7. 1956 (Bouček); Milešovka hill, Středohoří, 17. 8. 1955 (Bouček); Lovoš near Lovosice, 7. 7. 1956 (Bouček); Radotín near Praha, 2. 9. 1942 (Šustera); Modřany near Praha, 1. 7. 1934 (Šustera); Piletice near Hradec Králové, 20. 7. 1955 (Bouček); Nové Město nad Metují, 7. 1955 (Macek). — Germany: Thüringen (Schmiedeknecht); Aachen (Förster), several specimens bearing a manuscript name.

Eulophus pennicornis Nees

Eulophus pennicornis Nees, 1834, *Hym. Ichneum. affin. Monogr.*, **2**: 154.
Eulophus Drupes Walker, 1839, *Monogr. Chalciditum*, **1**: 127.
Cratotechus opaculus Thomson, 1878, *Hym. Scand.*, **5**: 221.
Eulophus opacula, Gradwell, 1957, *Ent. month. Mag.*, **93**: 141.
Comedo pennicornis, Graham, 1959, *Trans. Soc. Brit. Ent.*, **13**: 183.

Eulophus pennicornis Nees, 1834, might be suspected to by preoccupied by *Eulophus pennicornis*, Illiger, 1807, *Magazin für Insektenkunde*, **6**: 192, but the latter name appears clearly as a typographical error instead of *pectinicornis*, then without place in nomenclature. Illiger only cites "*Diplolepis pennicornis* F." as belonging to the genus *Eulophus*, but Fabricius mentions only *D. pectinicornis*.

This species is also very characteristic and is easily recognized by the characters given in the key above. Pupæ, so far known, are black, with two strong rounded horns on frons and two large semiglobose tubercles on mesoprescutum; pronotum is not distinctly elevated medially.

Hosts. The following Lepidoptera are recorded: *Barathra brassicæ* L., *Griposia aprilina* L., *Mamestra* sp., *Phlogophora meticulosa* L., *Diataraxia oleracea* L. In Czechoslovakia it has been reared from *Drymonia chaonia* Hb.

Distribution: Northern and central Europe.

Localities in Czechoslovakia. Bohemia: Sebuzín near Ústí n. L., 28. 6. 1957 (Bouček); Terezín, 8. 1917 (Sekera); Ruzyně near Praha, Spring 1954, from a green

caterpillar on *Datura stramonium* (Dirlbek), 4. 8. 1954 (Bouček), 8. 1954, from a caterpillar on apple-tree (Kodys); Koda near Beroun, 28. 5. 1954 (Bouček); Luka pod Medníkem, 4. 7. 1954 (Bouček); Velký Vřešťov, 8. 1953 and 7. 7. 1954 (Bouček); Hradec Králové-Věkoše, 25. 8. 1955 (Bouček); Mokré near Opočno p. Orl. h., 6. 7. 1952, 21. 7. 1955 (Bouček). - Slovakia: Banská Štiavnica, 13. 7. 1954, ex *Drymonia chaonia*, and 9. 1956 (both Čapek); Turňa nad Bodvou, 23. 4. 1952 (Bouček).

Eulophus abdominalis Nees

Eulophus abdominalis Nees, 1834, *Hym. Ichneum. affin. Monogr.*, **2**: 159.
Eulophus Anatole Walker, 1839, *Monogr. Chalciditum*, **1**: 126.
Cratotechus longicornis Thomson, 1878, *Hym. Scand.*, **5**: 221.
Comedo abdominalis, Graham, 1959, *Trans. Soc. Brit. Ent.*, **13**: 183.

The name *abdominalis* for this species is credited to Graham, who managed to find a syntype of *Eulophus abdominalis* Nees in Westwood's collection. Nees' description fits fairly well the characters of this species, except for his statement, "Scutellum ... planiusculum", and the description of pupæ: "Pupæ nigræ, nudæ, fronte plana, tuberis duobus superis acutis (scapis antennarum vaginis) subbicorni". Scutellum is distinctly gibbous, except perhaps in some abnormal specimens. And as to the pupæ, I examined only one batch undoubtedly belonging to this species, but they all were fuscous, with the longitudinally raised lateral parts of gaster pale testaceous. Probably also this species may have two differentiated forms, one with dark and horned overwintering pupæ, and the other one with pupæ partly pale. The examined pupæ of *E. abdominalis* (from Líšťany, Bohemia) have only weak mesoscutal tubercles as in the Summer pupæ of *E. larvarum* or *E. smerinthicida;* frontal parts are absent.

Hosts: *Notolophus antiquus* L., *Clostera (= Pygæra) anachoreta* F., *Noctuidæ* sp., *Tortricidæ* sp.

Distribution: Northern and central Europe.

In Czechoslovakia not very common. Bohemia: Líšťany near Louny, from a caterpillar, 28. 7. 1949 (Šedivý); Lovoš near Lovosice, 19. 8. 1956 (Bouček); Roudnice nad Labem, 6. 1915 (Sekera); Ruzyně, 28. 5. 1952, 6. 6. 1952, 12. 8. 1953 (Bouček); Velký Vřešťov, 8. 1953 7. 7. 1954, 8. 1954; Hradec Králové, 1. 8. 1947; Nový Hradec Králové, 21. 8. 1955; Piletice, 22. 8. 1954 (all Bouček leg.) - Moravia: Lednice, 3. 7. 1952 (Bouček). - Slovakia: Neded at Váh, 9. 9. 1953 (Bouček); Helmec valley near Slanec, 5. 8. 1954 (Bouček).

Eulophus smerinthicida, sp. nova

This is perhaps one of the less common species of the genus and, if ever met with, was overlooked because of the great resemblance to *E. larvarum*. Its main distinguishing characters are nowhere to be found in the literature and thus I consider it as new to science.

Length of body, female: 2—2.6 mm., male: 1.9—2.4 mm. Because of the delicate sculpture the thorax is much shinier than in *larvarum*. Antennæ somewhat shorter, funicle segments more distinctly decreasing in length, third segment 1.2 times as long as broad to subquadrate in female. Male antenna as in *larvarum*. Propodeum: plicæ at most shortly indicated at hind margin, median carina weak. Metascutellum usually with a median shallow

groove, rarely bearing a slight longitudinal carina on its bottom (as a continuation of the propodeal carina); impression along anterior margin narrow. Female gaster round, with a transverse pale fascia or spot usually taking posterior half of first gastral tergite (this fascia lacking in the hibernating form). In addition to this and the characters mentioned in the key the figure of scutellum and metascutellum (33) may be helpful in reliable identification. From *E. larvarum* this species differs mainly by the sculpture of scutellum, shorter tarsi (especially hind ones), shorter gaster, and in the summer form also by the somewhat brighter colour, more often tending to golden-red on thorax.

Similarly as *Eulophus larvarum* also *E. smerinthicida* has two forms of pupæ, and, accordingly, two forms of imagines. The specimens coming from the pale summer pupæ (thin-skinned, not hibernating) are more bright golden, with a pale subbasal spot on gaster. The specimens from the overwintering black and thick-skinned pupæ are more greenish or coppery, or even with slight bluish reflections, and their gaster is wholly metallic, coppery or bluish. Quite similarly to *E. larvarum* f. *ramicornis* the propodeal spiracles are distinctly larger than in the summer form. I name it *E. smerinthicida* f. *hibernans*.

Hosts: *Smerinthus populi* L. and *S. ocellatus* L, *Acronycta megacephala* Schiff.

Distribution: Germany, Czechoslovakia.

The typical (summer) form described from 35 females and 6 males from Czechoslovakia. Bohemia: Janov near Děčín, 18. 8. 1955, two females (Bouček); Praha, ex *Smerinthus ocellatus*, 1949 (Bouček); one female designated as holotype, Cat. № 3440, and one male as allotype, Cat. № 3441, N. Mus. Praha. - Slovakia: Banská Štiavnica, ex *Smerinthus populi*, 7. 1957 (Čapek); Šahy, ex *Acronycta megacephala*, 4. 1959 (Čapek); Gabčíkovo, ex *A. megacephala*, Spring 1957 (Čapek).

The darker form *E. smerinthicida* f. *hibernans* was described from 13 females and 10 males reared by M. Čapek in Banská Štiavnica, Slovakia, 4. 1959, from *Acronycta megacephala*, and by Dr. Schwenke at the Deutsches Entomologisches Institut in Berlin-Friedrichshagen, Germany, 7. 1956, from *Smerinthus populi*. The holotype and the allotype of f. *hibernans* from Banská Štiavnica deposited in the coll. N. Mus. Praha, Cat. Nos. 3442 and 3443.

Eulophus aeneicoxa (Thoms.)

Cratotechus æneicoxa Thomson, 1878, *Hym. Scand.*, 5: 221.

The features mentioned in the key above well characterize this little known species. The body is usually rather bluish-green, gaster immaculate. Propodeal plicæ are distinct in hind half, irregular, fading toward the large spiracle holes in the rugæ. Pupæ are black, scape tubercles on frons low, on mesoscutum no distinct elevations except for the depressions broadly diverging forwards (these are usually distinct on mesoscutum of the adults); surface shinier than in black pupæ of *E. larvarum* or *smerinthicida*.

Hosts: The present host records of *Clostera* (= *Pygæra*) *pigra* Hufn. and *Epinotia nigricana* H.-Sch. from Slovakia are perhaps the only reliable ones at all.

Distribution: Sweden, Czechoslovakia.

In Czechoslovakia very local. Bohemia: Javorná near Karlovy Vary, 8. 1938 (Šustera). - Slovakia: Gabčíkovo, ex *Clostera pigra*, 4. 1958 (pupæ collected 10. 1957, then hibernating) (Čapek); Rozgrund near Banská Štiavnica, 7. 3. 1957, ex *Epinotia* (= *Epiblema*) *nigricana* (leg. Čapek).

Eulophus slovacus, sp. nova

This species is very similar to the well known *E. larvarum*, and I should have considered it as a mere form of the latter if there were any intergrades. However, even though *E. larvarum* is rather variable, front coxæ and femora except sometimes a cloud above on hind ones, are always pale, and *E. slovacus* has the named parts metallic. Also the square fuscous spot on forewing is characteristic. Scutellum is distinctly cross-vaulted, so that its dorsal part is not transverse as in *larvarum*. Thorax colour green, not golden; gaster with pale sub-basal fascia; trochanters, tibiæ and tarsi (except apical segment), pale yellow. Tarsi slender, second segment of hind pair dorsally as long as apical segment (minus claws), first segment distinctly shorter than third. Length of body in female 2.5—2.6 mm., male 2—2.4 mm. Pupæ were not preserved; they are said to have been pale in the series reared.

Hosts. Reared from a caterpillar on oak leaf, probably from *Lymantria dispar* L.

Distribution: Czechoslovakia, Italy.

Described from 4 females and 2 males reared 6. 1953 by my friend Ing. J. Jamnický from the named host, collected at Dobrá Niva near Zvolen, Slovakia. One female designated as holotype, Cat. № 3462, one male as allotype, Cat. № 3444, N. Mus. Praha. Another female has been lately examined, labelled: Portici, parco, 19. 7. 1927 (coll. Novitzky).

Eulophus cyanescens, sp. nova

This species also is much akin to *E. larvarum* and might easily be confounded with it if the thorax colour did not prove to be constant. In some morphological characters it resembles, on the contrary, more *E. thespius*, especially in the black bristles on thoracic dorsum, more or less raised plicæ in rear half of propodeum, round female gaster, and short tarsal segments 1 to 3. Female antenna is nearly as in *larvarum*, only slightly slenderer. Mesoscutum without distinct impressions, finely and regularly reticulate, nearly as finely as on scutellum; the latter distinctly transverse and feebly convex as in *larvarum*. Metascutellum without median groove, basal transverse impression nearly indistinct. Propodeum regularly reticulate, spiracles not large. Forewing hyaline or with a very slight shade on disc, very sparsely hairy, interspaces between hairs on disc greater than length of each hair; postmarginal vein about 1.5 to 1.7 times as long as stigmal. Femora strong, particularly front and hind ones. Female gaster dark with hind half of first tergite testaceous or this colour more spread in a broad transverse fascia and on the sides down to apex (summer-form). Male unknown.

Host: *Graptolitha ornitopus* Hufn.

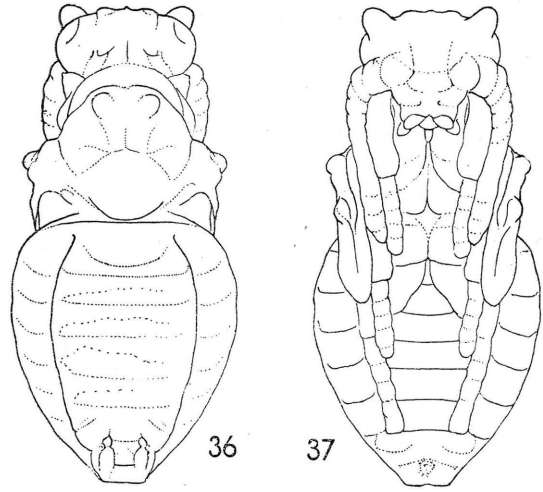
Distribution: Czechoslovakia.

Described from 7 females: one female (holotype, Cat. № 3445) swept from forest vegetation at Velký Vřešťov, Northeastern Bohemia, 12. 8. 1956 (Bouček); and six females reared from *Graptolitha ornitopus*, 29. 5. 1959 (caterpillar collected 11. 5. 1959 at Nitra, Slovakia, by M. Čapek).

Eulophus larvarum (Linn.)

Ichneumon Larvarum Linnaeus, 1758, *Systema Naturæ*, ed. 10, p. 567.
Ichneumon ramicornis Fabricius, 1781, *Species Insectorum*, 1: 441.
Eulophus dimidiatus Nees, 1834, *Hym. Ichneum. affin. Monogr.*, 2: 160.
Eulophus bombycicornis Ratzeburg, 1844, *Ichneum. d. Forstins.*, 1: 161.
Eulophus Phalænarum Ratzeburg, 1844, *ibidem*, 1: 166.
Eulophus fumatus Ratzeburg, 1848, *ibidem*, 2: 156.
?Eulophus mulierosus Karsch, 1879, *Sieb. Jahresber. Westf. Prov.-Ver.*, 1878: 31—35.
Eulophus nigribasis Gradwell, 1957, *Ent. month. Mag.*, 93: 160.

The name *Ichneumon ramicornis* Fabricius was given to a species described and figured by Geoffroy, 1762 (Histoire Abrégée des Insectes, 2: 313, pl. XV, fig. 3), and this became the type species of the genus *Eulophus* Olivier (see above). The type species having been unrecognized and misinterpreted, also the genus was given a different sense, mainly that associated with *Ichneumon pectinicornis* L. (= *Pnigalio pectinicornis* nowadays). With the increasing knowledge of the group the taxonomists have been finally able to restrict the range of *Eulophus ramicornis* to some species of the genus *Comedo* Schrank (= *Cratotechus* Thomson), i.e. to those species the pupæ of which appear gregariously round the killed caterpillar on the leaves. Further increase of knowledge, I hope, allows us to recognize what was Geoffroy's *Eulophus* called correctly zoologically *Ichneumon ramicornis* Fabr. The description of Geoffroy, "tout l'animal est d'un beau vert doré et brillant, il n'y a que les antennes qui sont jaunâtres et les pattes qui sont blanches" restricts the probability of identity to the species *E. larvarum, smerinthicida,* and *æneicoxa*. The last species may be excluded by the usually darker thorax and the pupæ without large frontal horns. Namely, Geoffroy's figure clearly shows black pupæ with large frontal horns (cf. my figs. 36 and 37). Thus the selection is restricted to the hibernating forms of *E. larvarum* and *E. smerinthicida*. It might be unreasonable, I think, to suppose that Geoff-



Figs. 36-37. *Eulophus larvarum* (L.) *f. ramicornis* (F.), male pupa in dorsal and ventral view.

roy's species were the same as *E. smerinthicida* described herewith, which seems to be very local, was reared so far only from two *Smerinthus* spp. and *Acronycta megacephala*, is known only from Germany and Czechoslovakia, whilst *E. larvarum* is the commonest and very widely distributed species of the genus in Europe, with wide host selection. Thus every evidence suggests that *E. ramicornis* is the same as *E. larvarum* f. *nigribasis* Gradwell. I propose to accept this synonymy, for nothing would be gained if we leave the type species of the genus *Eulophus* Oliv., which gave the name to the family Eulophidæ, continually with a question mark, particularly when there is no reason against the synonymy proposed. I think anyway that we could settle many nomenclatorial questions on basis of convenience, if the types of the taxa in question do not exist any more, always in favour of the stability of the nomenclature.

Eulophus ramicornis sensu Nees et Förster is the same form as understood here. A pin in the Vienna Museum with four specimens of *larvarum* f. *ramicornis* on a low block of pith bears the labels "Or. Ex." and "Eulophus ramicornis Nees" in Förster's handwriting.

Eulophus dimidiatus Nees may also be rather a synonym of *E. larvarum* than of *E. smerinthicida*. The latter species is much more shiny than *larvarum*, and Nees describes the thorax in *dimidiatus* (p. 160), "depressiusculus, subtilissime punctulatus", while in *larvarum* (p. 157), "Caput ... et thorax depressiusculus, lævia-nitida". Thus rather *E. larvarum*, Nees (nec Linnæus), might be the same as the present *E. smerinthicida*. The short gaster emphasized by Nees in the description of *dimidiatus* occurs in males of *larvarum*, even though it is usually shorter in *smerinthicida*. Specimens identified by Förster (who may have seen the Nees types in the Bonn Museum) as *E. dimidiatus* Nees belong to *E. larvarum*.

E. fumatus Ratzeburg designates obviously a form of *larvarum* with a faint cloud on forewing (this is sometimes distinct); the pale femora exclude the eventual identity with *E. slovacus*. The same may affect *E. mulierosus* Karsch.

A detailed description of the hibernating form of this species was published recently by Gradwell (1957), who also discusses the variability of the species (1958), and in particular, the interesting and unexpected occurrence of two kinds of pupæ, and, accordingly, two forms of adults emerged from them. My own results fully agree with those of Gradwell, and the knowledge of this phenomenon has helped in settling some further questions, especially in *E. smerinthicida*.

Hosts. *E. larvarum* attacks caterpillars of many species. As hosts of the typical form the following Lepidoptera are recorded: *Pieris brassicæ* L., *Ptilophora plumigera* Schiff., *Lymantria monacha* L., *Orgyia antiqua* L., *O. gonostigma* F., *Eriogaster lanestris* L., *Acronycta aceris* L., *A. leporina* L., *A. psi* L., *Mamestra brassicæ* L., *Tæniocampa pulverulenta* Esp., *Calymnia affinis* L., *C. trapezina* L., *Diataraxia oleracea* L., *Brachionycha sphinx* Hufn., *Scoliopteryx libatrix* L., *Operophthora brumata* L, *Geometra papilionaria* L., *Anisopteryx aceraria* Schiff., *Pandemis ribeana* Hbn., *Tortrix viridana* L. — Hosts of *E. larvarum* f. *ramicornis*: *Lophoteryx camelina* L.,

Orgyia antiqua L., *Acronycta leporina* L., *A. megacephala* Schiff., *Demas coryli* L., *Diataraxia oleracea* L., *Orthosia cruda* Schiff., *O. stabilis* Schiff.

Distribution: throughout Europe.

In Czechoslovakia common everywhere.

Genus **Colpoclypeus** Lucchese

Colpoclypeus Lucchese, 1941, *Boll. Lab. Ent. Portici*, 5: 33. — Type: *Colpoclypeus silvestrii* Lucchese; by monotypy.

This genus is rather well recognizable. It is interesting to see that it has clypeus similarly shaped to *Encopa* Graham: the anterior margin is produced forwards and incised in the middle (as emphasized already in the original description of the genus).

Apparently only one species occurs in Europe:

Colpoclypeus florus (Walk.)

Eulophus Florus Walker, 1839, *Monogr. Chalciditum*, 1: 127.
Colpoclypeus Silvestrii Lucchese, 1941, *Boll. Lab. Ent. Portici*, 5: 33. — N. syn.

Body greenish, gaster in female usually pale at base; legs apart from coxæ, testaceous; femora sometimes fuscous basally. Length of body, 1.1 to 1.8 mm.

Hosts: *Acalla logiana* Schiff., *Acalla* sp. on *Quercus*, *Acroclita nævana* Hb., *Cacœcia musculana* Hb., *C. xylosteana* L., *Pandemis heparana* Schiff., *P. ribeana* Hb., Microlepidopteron sp. on *Rosa*. Gregarious ectoparasite.

Distribution: Europe (Sweden, Britain, Czechoslovakia, Poland, Hungary, Italy).

Localities in Czechoslovakia. Bohemia: Janov near Děčín, 18. 8. 1955; Břehyně near Doksy, 8. 8. 1957; Velký Vřešťov, 8. 1953 (all Bouček leg.). - Slovakia: Gabčíkovo, ex *Acalla logiana*, 9. 1957 (Čapek); Banská Štiavnica, ex *Acalla* sp. on *Quercus*, 11. 8. 1957 (Čapek).

Genus **Danuviella** Erdős

Danuviella Erdös, 1958, *Acta Zool. Acad. Sci. Hung.*, 3: 212. — Type: *Danuviella subplana* Erdös; orig. design.

This genus is intremediate between *Colpoclypeus* Lucch. and *Diglyphus* Walk. From the former *Danuviella* differs mainly by the grooved scutellum and entire clypeus; from *Diglyphus* by its broad subdepressed body, rugose posterior transverse part of the abdominal petiole and the short-ovate gaster in female.

Only one species:

Danuviella subplana Erdős

Danuviella subplana Erdös, 1958, *Acta Zool. Acad. Sci. Hung.*, 3: 212.

Known only from the female holotype collected in Hungary.

The genus *Diglyphus* Walk. will be reviewed later.

For literature cited see Part II.

Tato práce tvoří první část revise středoevropských druhů čeledi Eulophidæ (drobní blanokřídlí parasitující u jiného hmyzu) a je vlastně předběžným zpracováním pro chystanou monografii do sbírky Fauna ČSR nebo jiný podobný seriál. Obsahuje podčeleď Eulophinæ v dosavadním smyslu, tj. rodu s neúplnými parapsidálními rýhami, kromě r. *Pnigalio* a *Diglyphus*, jejichž revise bude publikována později. Jsou v ní tedy zahrnuty rody *Sympiesis* (14 druhů), *Encopa* (1 druh), *Hemiptarsenus* (6 druhů), *Cleolophus* (1 druh), *Dahlbominus* (1 druh), *Dicladocerus* (2 druhy), *Necremnus* (10 druhů), *Microlycus* (5 druhů), *Eulophus* (8 druhů), *Colpoclypeus* (1 druh) a *Danuviella* (1 druh), tj. celkem 50 druhů. Několik z nich je popisováno jako pro vědu nových, u ostatních je mnoho nových změn a poznatků synonymických (většinou na základě studia příslušných typů), hodně nových poznatků o vztazích k hostitelům atd. Jádrem práce jsou však především klíče, které po prvé poskytují možnost určit středoevropské druhy (obsahují vlastně druhy celé Evropy).

Jako bezprostřední pokračování první části následuje pod stejnou hlavičkou zpracování rodů *Diaulinopsis* (u nás 1 druh) a *Cirrospilus* (15 druhů), zatím řazených do podčeledi Elachertinæ. Literatura je uvedena společně na konci této druhé části, stejně jako přehled uváděných parasitů podle hostitelů, který snad stojí zato uvést v této formě pro veliké množství nových údajů, jež byly získány mnohaletým úsilím řady entomologů od nás i z ciziny, odkud je mi zasílán materiál k určování.

Při nynější úrovni znalostí skupiny je stále ještě velmi obtížné vyvozovat nějaké platnější fyletické závěry, neboť k posouzení příbuznosti lze použít vedle morfologie těla zatím jen kusých poznatků bionomických. Těm byla věnována velká pozornost, neboť zvláště pro praktického entomologa mají právě údaje o hostitelích značný význam.

Pozoruhodný je hromadný parasitismus u *Colpoclypeus florus*, u všech druhů rodu *Eulophus* a u *Sympiesis čapeki*. Jak tento poslední druh (soudíme tak podle hromadných kukliček) tak všechny druhy rodu *Eulophus* se vyvíjejí endoparasiticky v housenkách (hromadný vývoj jim umožňuje napadat hostitele větší velikosti) a kuklí se volně na listu kolem zahubené oběti. *Colpoclypeus* je hromadným ektoparasitem. U r. *Eulophus* je tento zjev zřejmě rodovým charakterem, je však podivné, že jej nalézáme i u *Sympiesis čapeki*, tj. zástupce rodu, jehož ostatní druhy žijí (pokud známo) jednotlivě, ektoparasiticky. Morfologické znaky zatím nijak nepodporují jedinečnost tohoto zjevu natolik, aby druh *S. čapeki* mohl tvořit samostatný rod nebo podrod. Zajímavou výjimku tvoří též *S. viridula*, napadající neminující housenky. Druhy r. *Necremnus* se vyvíjejí ve volných kuklách některých brouků nebo v opouzdřených housenkách rodu *Coleophora*; ani zde se zatím různorodost hostitelů i jejich ekologické kvality neodrážejí v dosavadní systematice. U většiny ostatních druhů není způsob života známý, např. se to týká všech pěti druhů r. *Microlycus*, kde však k značné morfologické diferenciaci už došlo.

Druhy rodu *Cirrospilus*, zpracovávané v druhé části, žijí podobně jako *Sympiesis* jednotlivě u minujících housenek (i jiných larev), jsou ektoparasity a někdy se vyvíjí i několik jedinců z téhož hostitele (*C. pulcherrimus*). Blízký rod *Diaulinopsis* je vázán jak se zdá na mušky minující ve stéblech trav.