

**A STUDY ON THE RELATIONSHIP OF THE DACTYNOTINAE AND THEIR
APHIDIID PARASITES IN EUROPE
(HOMOPTERA : APHIDOIDEA, HYMENOPTERA : APHIDIIDAE)**

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1. Introduction

The study of factors influencing the host-specificity in the Aphidiidae is of great importance for the taxonomy, ecology, etc. of this group. The aim of such work is to help to estimate correctly the theoretical possibility of using a given aphidiid species as biological control agent. Nevertheless, for this study it is necessary not to deal only with economically useful species but also with those that are more or less indifferent, i. e. to cover all the group of parasites.

The Aphidiidae represent a group that originated probably from the braconoid complex. They include aphid parasites exclusively. There is no doubt that the relation to the host played an important role in the development of this group. But, as for the recent state, it is difficult to determine the correlation between aphid groups and aphidiid genera, i. e. the influence of an aphid group on the development of the genera and higher taxonomic units of the Aphidiidae. This is possible in some cases only, e. g. in the Lachnidae. In other groups or genera of Aphidiidae the features of their phylogenetic adaptation to the given group of hosts have been obscured to a great extent by the recent host-range of various species. Nevertheless, it is necessary to give consideration to the fact that the classification of various phylogenetic groups of the Aphidiidae must be commenced from the viewpoint of the development of the Hymenoptera, namely of the Braconidae, and not by excessively applying the recent host-parasite relations to higher taxonomic categories. As our studies have shown in a great number of cases the recent host-range of various aphidiid species includes also such host aphid species that have similar mode of life, but which are of quite different phylogenetic relation from the given original—"phylogenetic"—host, i. e. the type of host is sometimes more important than its taxonomic affinity. Only the width of host-range in various braconid parasites of xylophagous insects may be remembered there in this connection. A rather accurate classification of this kind has been given recently by Townes (l. c.) in the Ichneumonidae, where the much more numerous species enables also the more generalized appreciation of

factors influencing the host-specificity of the given group of parasitic Hymenoptera.

As the author's studies have shown, the host-specificity of the Aphididae is determined by two main factors: 1) By the habitat, 2) By the presence of suitable hosts in the frame of this habitat. The host-suitability is determined by the phylogenetic adaptation of a parasite to a given host and, on the other hand, by the ability of the parasite to infest and develop in a host that has similar mode of life but different phylogeny when compared with the original host.

In this connection, too, the importance of the influence of the habitat, i. e. of the parasite-complexes occurring in this habitat on the infestation of a given aphid species must be stressed. The aphid species that change habitats in connection with migration from primary to secondary host plants, usually change also the type of habitat (forest x steppe) and in this case they are infested by different parasite species or complexes of species of corresponding type of habitat.

In the recent period the different groups of aphids indicate the specific differentiation of aphidiid parasites. There is a very nice example of such relationship, i. e. the aphid subfamily Dactynotinae and their aphidiid parasites, with which this paper deals.

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The paper is based mostly on the material of parasites collected in Czechoslovakia, some generalizations have sources also in the data obtained in other European countries. As there are the mountains, broad-leaves and steppe (Danubian district) zones represented in Czechoslovakia, some generalizations for the whole Europe may be erected on this base. Taxonomically doubtful species have been quoted in the list of parasites only, whilst they have been omitted in the appreciation. For this reason, too, the literary data, being often incorrect, have also been omitted.

There are also descriptions of some new species included, which classification derives from host-parasite relationships dealt with in this paper. As the general scheme of this paper deals with host-parasite relationship, these descriptions are quoted in a separate chapter.

2. An original list of the Dactynotinae and their aphidiid parasites (in Czechoslovakia):

Subfamily: DACTYNOTINAE CB.

I. Tribe: AULACORTHINI CB.

1. Subtribe: MICROLOPHIINA CB.

Microlophium Mordv.

M. evansi (Theob.): *Aphidius ervi* Hal. (*Urtica dioica* L.). — *Praon* sp. (*Urtica dioica* L.). — *Trioxys centaureae* (Hal.) (*Urtica dioica* L.).

Acyrtosiphon Mordv.

A. caraganae (Chol.): *Aphidius caraganae*, n. sp. (*Caragana arborescens* Lam.). — *Ephedrus plagiator* (Nees) (*Caragana arborescens* Lam.). — *Praon* sp. (*Caragana arborescens* Lam.). — *Toxares deltiger* (Hal.) (*Caragana arborescens* Lam.). — *Trioxys angelicae* (Hal.) (*Caragana arborescens* Lam.).

A. nigripes HRL.: *Aphidius ervi* Hal. (*Seseli* sp.).

A. onobrychis [B. d. F.]: *Aphidius ervi* Hal. (*Astragalus* sp., *Dorycnium herbaceum* Vill., *Lathyrus* sp., *Medicago varia* Mart., *Medicago sativa* L., *Melilotus albus* Medik., *Melilotus officinalis* Lam., *Pisum sativum* L., *Trifolium montanum* L., *Trifolium recuspinatum* L., *Vicia cracca* L.). — *Aphidius* sp. (*Medicago falcata* L.). — *Ephedrus* sp. (*Trifolium pratense* L.). — *Praon dorsale* (Hal.) (*Medicago sativa* L., *Trifolium pratense* L., *Vicia cracca* L.).

A. spartii (Koch): *Ephedrus plagiator* (Nees) (*Sarothamnus scoparius* Wimm.).

A. spp.: *Aphidius ervi* Hal. (*Astragalus vesicarius* L., *Colutea* sp., *Oxytropis pilosa* DC.).

Mirotarsus CB.

M. cyparissiae (Koch): *Aphidius mirotarsi*, n. sp. (*Euphorbia cyparissias* L.).

2. Subtribe: METOPOLOPHIINA CB.

Aulacorthum Mordv.

A. chelidonii (Kalt.): *Ephedrus* sp. (*Chelidonium majus* L.).

A. geranii (Kalt.): *Aphidius aulacorthi*, n. sp. (*Geranium* sp., *Erodium cicutarium* L'Hér.).

A. spp.: *Aphidius aulacorthi*, n. sp. (*Sanguisorba minor* Scop., *Potentilla argentea* L.). — *Ephedrus plagiator* (Nees) (*Naumburgia thyrsoflora* Duby). — *Aphidius* spp. (*Naumburgia thyrsoflora* Duby, *Vincetoxicum officinale* Moench., *Geranium robertianum* L., *Vaccinium uliginosum* L.).

II. Tribe: MACROSIPHONINI CB.

1. Subtribe: MACROSIPHONINA CB.

Linosiphon CB.

L. asperulophagus Holman: *Aphidius* sp. (*Asperula odorata* L.).

L. galiophagus (Wimsk.): *Praon* sp. (*Galium* sp.).

Macrosiphon Pass.

M. funestum (Macch.): *Aphidius rosae* Hal. (*Rubus* sp.). — *Aphidius rubi* Starý (*Rubus* sp.). — *Praon* sp. (*Rubus* sp.).

M. gei (Koch): *Aphidius lonicerae* Marsh. (*Geum* sp.).

M. prenanthidis CB.: *Aphidius silvaticus* Starý (*Prenanthes purpurea* L.). — *Ephedrus plagiator* (Nees) (*Prenanthes purpurea* L.). — *Praon* sp. (*Prenanthes purpurea* L.).

M. rosae (L.): *Aphidius ervi* Hal. (*Rosa* sp.). — *Aphidius rosae* Hal. (*Rosa* spp., *Scabiosa columbaria* L.). — *Ephedrus lacertosus* (Hal.) (*Rosa* sp.). — *Ephedrus plagiator* (Nees) (*Rosa* sp.). — *Praon rosaecola* Starý (*Rosa* sp.). — *Praon* sp. (*Rosa* sp.).

M. stellariae Theob.: *Aphidius lonicerae* Marsh. (*Stellaria holostea* L.). — *Praon* sp. (*Stellaria holostea* L.).

2. Subtribe: SITOBIINA CB.

Sitobium Mordv.

S. avenae (Fabr.): *Aphidius poacearum*, n. sp. (*Festuca* sp.). — *Lysiphlebus fabarum* (Marsh.) (*Festuca* sp.).

S. spp. [esp. *S. avenae* (Fab.) and *S. granarium* (Kirby)]: *Aphidius avenae* Hal. (*Hordeum distichum* L., *Triticum vulgare* L.). — *Aphidius* sp. (*Triticum vulgare* L.). — *Ephedrus plagiator* (Nees) (*Triticum vulgare* Vill., *Dactylis glomerata* L.). — *Praon* sp. (*Triticum vulgare* L.).

S. dryopteridis (Holman): *Aphidius silvaticus* Starý (*Dryopteris austriaca* Woyen.). — *Ephedrus* sp. (*Dryopteris austriaca* Woyen.).

S. equiseti Holman: *Aphidius equiseticola*, n. sp. (*Equisetum silvaticum* L.). — *Monoctonus caricis* (Hal.) (*Equisetum silvaticum* L.).

III. Tribe: DACTYNOTINI CB.

1. Subtribe: DACTYNOTINA CB.

Titanosiphon Nevs.

T. artemisiae (Koch): ? *Aphidius absinthii* Marsh. (*Artemisia campestris* L.). — *Praon absinthii* (Bignell) (*Artemisia campestris* L.). — *Trioxys pannonicus* Starý (*Artemisia campestris* L.).

Paczoskia Mordv.

P. major CB.: *Aphidius funebris* Mack. (*Echinops sphaerocephalus* L.). — *Lysiphlebus fabarum* (Marsh.) (*Echinops sphaerocephalus* L.). — *Praon dorsale* (Hal.) (*Echinops sphaerocephalus* L.).

Phalangomyzus CB.

P. oblongus (Mordv.): *Aphidius phalangomyzi*, n. sp. (*Artemisia vulgaris* L.).

Macrosiphoniella d. Gu.

M. absinthii (L.): *Aphidius absinthii* Marsh. (*Artemisia absinthium* L.). — *Ephedrus campestris* Starý (*Artemisia absinthium* L.). — *Praon absinthii* (Bignell) (*Artemisia absinthium* L.).

M. artemisiae (B. d. F.): *Aphidius absinthii* Marsh. (*Artemisia vulgaris* L.). — *Trioxys centaureae* (Hal.) (*Artemisia vulgaris* L.).

M. millefolii (Deg.): *Aphidius absinthii* (Marsh.) (*Achillea millefolium* L., *Achillea nobilis* L.). — *Ephedrus campestris* Starý (*Achillea millefolium* L., *Achillea nobilis* L.). — *Praon absinthii* (Bignell) (*Achillea millefolium* L., *Achillea nobilis* L.). — *Trioxys centaureae* (Hal.) (*Achillea millefolium* L.).

M. stägeri HRL.: *Aphidius absinthii* (Marsh.) (*Centaurea stoebe* Sch. Thell.). — *Praon dorsale* (Hal.) (*Centaurea stoebe* Sch. Thell.).

M. tanacetaria (Kalt.): *Praon absinthii* (Bignell) (*Tanacetum vulgare* L.). — *Praon* sp. (*Tanacetum vulgare* L.).

M. xerathemi Boschko: *Aphidius absinthii* Marsh. (*Xeranthemum foetidum* Moench.).

M. spp.: *Aphidius absinthii* Marsh. (*Achillea sudetica* Opiz, *Artemisia campestris* L., *Chrysanthemum leucanthemum* L.).

Dactynotus Raf.

D. cichorii (Koch): *Aphidius funebris* Mack. (*Crepis biennis* L., *Cichorium intybus* L.). — *Ephedrus campestris* Starý (*Crepis biennis* L., *Cichorium intybus* L., *Leontodon hispidus* L.). — *Praon dorsale* (Hal.) (*Crepis biennis* L., *Cichorium intybus* L.). — *Trioxys centaureae* (Hal.) (*Crepis biennis* L., *Cichorium intybus* L.).

D. cirsii (L.): *Aphidius funebris* Mack. (*Cirsium* sp.).

D. muralis (Bckt.): *Aphidius funebris* Mack. (*Mycelis muralis* Dum.). — *Ephedrus campestris* Starý (*Lactuca quercina* L.). — *Trioxys centaureae* (Hal.) (*Mycelis muralis* Dum.).

D. obscurus (Koch): *Aphidius funebris* Mack., — *Ephedrus campestris* Starý (*Hieracium* sp.). — *Trioxys centaureae* (Hal.) (*Hieracium* sp.).

D. picridis (F.): *Aphidius funebris* Mack. (*Picris hieracioides* L.). — *Ephedrus campestris* Starý (*Picris hieracioides* L.).

D. sonchi (L.): *Aphidius funebris* Mack. (*Sonchus oleraceus* L.). — *Praon dorsale* (Hal.) (*Sonchus oleraceus* L.).

D. tanacetii (L.): *Ephedrus* sp. (*Tanacetum vulgare* L.).

D. taraxaci (Kalt.): *Praon* sp. (*Taraxacum officinale* Web.).

Uromelan Mordv.

U. aeneus HRL.: *Aphidius funebris* Mack. (*Carduus crispus* L., *Carduus acanthoides* L.). — *Ephedrus campestris* Starý (*Carduus nutans* L.). — *Trioxys centaureae* (Hal.) (*Carduus crispus* L.).

U. campanulae (Kalt.): *Ephedrus campestris* Starý (*Campanula* sp.). — *Praon dorsale* (Hal.) (*Campanula rotundifolia* L.). — *Praon* sp. (*Campanula* sp.). — *Trioxys centaureae* (Hal.) (*Campanula* sp.).

U. jaceae (L.): *Aphidius funebris* Mack. (*Centaurea scabiosa* L., *Centaurea jacea* L., *Centaurea stoebe* Sch. Thell.). — *Ephedrus campestris* Starý (*Centaurea scabiosa* L., *Centaurea stoebe* Sch. Thell.). — *Praon dorsale* (Hal.) (*Centaurea scabiosa* L., *Centaurea stoebe* Sch. Thell.). — *Trioxys centaureae* (Hal.) (*Centaurea scabiosa* L., *Centaurea stoebe* Sch. Thell.).

U. linariae (Koch): *Praon dorsale* (Hal.) (*Aster linosyris* Bernh.).

U. spp.: *Aphidius funebris* Mack. (*Campanula sibirica* L., *Carduus* sp., *Hieracium* sp.). — *Ephedrus campestris* Starý (*Carlina vulgaris* L.). — *Trioxys centaureae* (Hal.) (*Cirsium* sp.).

2. Subtribe: METOPEURINA CB.

Metopeurum Mordv.

M. fuscoviride Stroyan: *Aphidius tanaceticola*, n. sp. (*Tanacetum vulgare* L.). — *Lysiplebus hirticornis* Mack. (*Tanacetum vulgare* L.).

IV. Tribe: MEGOURINI CB.

1. Subtribe: MEGOURINA CB.

Amphorophora Bckt.

A. ampullata Bckt: *Aphidius silvaticus* Starý (*Dryopteris austriaca* Woyen.). — *Praon* sp. (*Dryopteris austriaca* Woyen.).

Nectarosiphon Schout.

N. rubi (Kalt.): *Ephedrus* sp. (*Rubus* sp.). — *Praon* sp. (*Rubus* sp.).

Megoura Bckt.

M. viciae Bckt. *Aphidius* sp. (*Lathyrus pratensis* L.).

3. Discussion

In this chapter the host-parasite relationship is discussed (records—see ch. 2).

Note: Under "steppe habitat" there are also included cultured steppe habitats (fields, meadows, waste places, etc.). "Forest habitat" includes various kinds of forests (and parks).

I. Tribe: AULACORTHINI

1. Subtribe: MICROLOPHIINA

Microlophium Mordv.: *M. evansi* (Theob.) — occurs in steppe or intermediate habitats. Parasitized by some oligophagous species of steppe habitats: *Aphidius ervi* Hal., rarely by *Trioxys centaureae* (Hal.). No specialized parasite-complex.

Acyrtosiphon Mordv.: The species occur in steppe and forest habitats. *A. caraganae* (Chol.) — occurs in forest habitats (parks); parasitized mostly by polyphagous species of forest habitats — *Ephedrus plagiator* (Nees), *Trioxys angelicae* (Hal.). *Aphidius caraganae*, n. sp. seems to be specialized parasite. — *A. nigripes* Hrl. — occurs in steppe habitats; parasitized by oligophagous *Aphidius ervi* Hal. — *A. onobrychis* (B. d. F.) — typical species of steppe habitats; its main parasite is *Aphidius ervi* Hal., to a lesser degree *Praon dorsale* (Hal.). — *A. spartii* (Koch) — occurs in forest or intermediate habitats; parasitized by polyphagous *Ephedrus plagiator* (Nees) which occurs in forest habitats.

Mirotarsus CB.: *M. cyparissiae* (Koch) — occurs in steppe and intermediate habitats; *Aphidius mirotarsi*, n. sp. seems to be specialized parasite.

2. Subtribe: METOPOLOPHIINA

Aulacorthum Mordv.: The species occur mostly in forest or intermediate habitats. A specialized parasite complex (*Aphidius aulacorthi*, n. sp.), seems to exist. Polyphagous parasite species of forest habitats attack the quoted aphid species to a lesser degree.

Results: The species of different genera of Microlophiina occur both in steppe and forest habitats. The parasite-complexes of those genera are, therefore, mixed. There are more typical parasite-complexes occurring in steppe habitats. The typical species is *Aphidius ervi* Hal., infesting in this type of habitats species of *Acyrtosiphon* and *Microlophium*, and *Aphidius mirotarsi*, n. sp. which seems to be monophagous parasite of *Mirotarsus cyparissiae* (Koch).

Aphid species of Microlophiina that occur in forest habitats (*Acyrtosiphon caraganae* [Chol.]) are parasitized by polyphagous aphidiid species of forest habitats, to a lesser degree by specialized parasites.

The species of Metopolophiina (only *Aulacorthum*) seem to have specialized parasite-complex in forest habitats.

II. Tribe: MACROSIPHONINI

1. Subtribe: MACROSIPHONINA

Linosophon CB.: — The species occur in forest habitats. There is probably specialized parasite-complex, being obscure as yet.

Macrosiphon Pass.: — The species occur in steppe and forest habitats. In forest habitats occurs: *M. funestum* (Macch), parasitized by *Aphidius rubi* Starý and to a lesser degree by *Aphidius rosae* Hal. — *M. rosae* [L.] — its main parasite is *Aphidius rosae* Hal., with which associate in intermediate habitats — near forests: *Ephedrus plagiator* (Nees), *Ephedrus lacertosus* (Hal.), — near steppe: Rarely *Aphidius ervi* Hal. — *M. prenanthidis* CB. — parasitized by oligophagous *Aphidius silvaticus* Starý, and polyphagous parasite species of forest habitats — *Ephedrus plagiator* (Nees). — *M. gei* (Koch), *M. stellariae* Theob. — parasitized by oligophagous *Aphidius lonicerae* Marsh. In steppe habitats there occurs *M. solanifolii* (Ashm.) which parasites have not yet been studied in Czechoslovakia.

2. Subtribe: SITOBIIINA

Sitobium Mordv.: — The species occur both in steppe and forest habitats. *S. avenae* (Fabr.), *S. granarium* (Kirby) — parasitized in steppe habitats by oligophagous *Aphidius avenae* Hal., and to a lesser degree by *Ephedrus plagiator* (Nees) that is by species not typical of steppe habitats, and very rarely by a common polyphagous species *Lysiphlebus fabarum* (Marsh.), which is only a facultative parasite in this case. — *S. equiseti* Holman — parasitized in forest habitats by specialized *Aphidius equiseticola*, n. sp. and oligophagous *Monoctonus caricis* (Hal.).

Results: Species of the genus *Macrosiphum* are attacked by comparatively numerous complex of parasites in forest habitats, the influence of polyphagous parasite species of forest habitats being of lesser importance.

The specific composition of the parasite-complex of *Sitobium* has been heretofore obscure. In steppe habitats *S. avenae* and *S. granarium* are parasitized by *Aphidius avenae* Hal. which seems to be a typical member of the corresponding parasite-complex.

III. Tribe: DACTYNOTINI

1. Subtribe: DACTYNOTINA

Titanosiphon Nevs.: — *T. artemisiae* (Koch) is a typical species of steppe habitats, being parasitized here by the strictly monophagous *Trioxys pannonicus* Starý and the oligophagous *Praon absinthii* (Bign.).

Paczoskia Mordv.: — *P. major* CB. is attacked in steppe habitats by the oligophagous *Aphidius funebris* Mack. and *Praon dorsale* (Hal.); *Lysiphlebus fabarum* (Marsh.) is only a facultative parasite.

Phalangomyzus CB.: — *P. oblongus* (Mordv.) — attacked in steppe habitats by the monophagous *Aphidius phalangomyzi*, n. sp.

Macrosiphoniella d. Gu.: — The species are parasitized in steppe habitats by the oligophagous *Ephedrus campestris* Starý, *Praon absinthii* (Bign.), *Aphidius absinthii* (Marsh.) and *Trioxys centaureae* (Hal.).

Dactynotus Raf., *Uromelan* Mordv.: — The species are attacked in steppe habitats by the oligophagous *Ephedrus campestris* Starý, *Praon dorsale* (Hal.), *Aphidius funebris* Mack. and *Trioxys centaureae* (Hal.).

2. Subtribe: METOPEURINA

Metopeurum Mordv.: — *M. fuscoviride* Stroyan — attacked in steppe habitats by typical parasite-complex [*Aphidius tanaceticola*, n. sp., *Lysiphlebus hirticornis* Mack.].

Result: The members of the subtribe Dactynotina are typical representatives of steppe fauna. They are attacked by a typical aphidiid parasite-complex in steppe habitats. The host-range in various species of this complex is not equal, in some cases the differentiation of closely related species is distinct.

Trioxys pannonicus Starý is a strictly monophagous parasite of *Titanosiphon artemisiae* (Koch); it has not any specific affinity to *Trioxys centaureae* (Hal.). *Ephedrus campestris* Starý and *Trioxys centaureae* (Hal.) are typically oligophagous species, parasites of *Macrosiphoniella*, *Dactynotus* and *Uromelan*-species. In the genus *Praon* the differentiation of two closely related species may be quoted: *Praon absinthii* (Bign.) is a parasite of *Macrosiphoniella*, *Praon dorsale* (Hal.) is a parasite of *Paczoskia*, *Dactynotus* and *Uromelan*. In the genus *Aphidius* there are three closely related species: *Aphidius absinthii* Marsh. — parasite of *Titanosiphon*, *Macrosiphoniella* spp.; *Aphidius funebris* Mack. — parasite of *Dactynotus* and *Uromelan* spp.; *Aphidius phalangomyzi*, n. sp. — parasite of *Phalangomyzus*.

The members of the subtribe Metopeurina (*M. fuscoviride* Stroyan) are attacked in steppe habitats by a strictly characterized parasite-complex, which is quite different from the parasites of Dactynotina. This complex is composed of *Aphidius tanaceticola* n. sp. and *Lysiphlebus hirticornis* Mack.

IV. Tribe: MEGOURINI

There is not enough material for the appreciation of the host-parasite relationship in Czechoslovakia.

Conclusions.

The effect of factors, influencing the host-specificity in the Aphididae, as they have been ascertained by the author, i. e. the influence of the habitat and suitable hosts present in this habitat, can be well demonstrated in the composition of the aphidiid parasites of different groups of the Dactynotinae.

The specific composition of parasites seems to be relatively more numerous in the tribes Aulacorthini and Macrosiphonini which include aphids living in steppe and forest habitats. In forest habitats, beside specialized parasites, polyphagous aphidiid species of forest habitats have a strong influence. In the steppe habitats the species of the quoted aphid groups seem to have a more typical fauna of parasites.

The tribe Dactynotini, which includes typical species of steppe habitats fauna, has a corresponding typical steppe-complex of aphidiid parasites, the influence of polyphagous species of steppe habitats being nearly none. On the contrary, species of the above cited complex have in some cases the ability to parasitize the species of other aphid groups, e. g. *Trioxys centaureae* (Hal.) can parasitize *Microlophium evansi* and *Pergandeida* sp., *Praon dorsale* (Hal.) — *Acyrtosiphon onobrychis* (B. d. F.). The specific differentiation of parasites, especially in the genus *Praon* and *Aphidius*, is distinct in this complex.

The subtribe Metopeurina (*Met. fuscoviride*) has also a typical parasite-complex, which is formed by strictly monophagous species.

When we appreciate the different groups of the subfamily Dactynotinae from the viewpoint of their relation to their aphidiid parasites, the following data may be generalized:

1. The different subtribes of the subfamily Dactynotinae have comparatively characteristic complexes of aphidiid parasites.
2. The specific composition of parasite-complex is, in the aphid-genera having species which occur in steppe and forest habitats, not uniform and includes both specialized and polyphagous parasite-species that are typical of given type of habitat. Similarly, the specific composition of parasite-complexes of the aphid-genera having species which occur only in a certain type of habitat (steppe or forest), are typical for certain type of habitat.
3. The influence of widely polyphagous species is distinct especially in forest habitats, while in steppe habitats living aphids of the subfamily Dactynotinae are attacked by steppe polyphagous aphidiid species only facultatively.
4. Judging from the specific differentiation of the parasites, the separate subtribes of the subfamily Dactynotinae seem to represent natural groups. The oligophagous species of parasites are specialized only in the frame of subtribe, but infest other subtribes of the Dactynotinae or other groups of aphids only exceptionally.

4. Descriptions of new species of the Aphidiidae.

The differential diagnoses of new species are of quite preliminary character in some cases relating them to the known species only, although they are sometimes much more related to some undescribed species that are known to the author. Their real affinity will be dealt with in a comprehensive paper on the genus *Aphidius*.

Aphidius aulacorthi, n. sp.

Related to *Aphidius avenae* Hal., differing from the latter by the shape and structure of tergite 1, the number of antennal segments, the host complex and the habitat.

Female. — Head transverse, smooth, shiny, sparsely haired, roundly narrowed behind eyes, wider than thorax at tegulae. Temple $\frac{1}{6}$ narrower than transverse eye-diameter. Gena as wide as $\frac{1}{4}$ of longitudinal eye-diameter. Eyes of medium size, oval, sparsely shortly haired, convergent towards clypeus. Interocular line somewhat longer than half of transfacial 1. Transfacial 1. somewhat shorter than facial 1. Clypeus oval, densely haired — with 11–17 hairs. Tentorio — ocular 1. as $\frac{1}{3}$ of intertentorial 1. Antennae 16–17 (rarely 18) — segmented, filiform, reaching half of abdomen. Flagellar segment 1 4 times as long as wide, equal to $F_2.F_1 - 0$, $F_2 - 1-3$, $F_3 - 4-5$ rhinaria. Socket-ocular 1. less than half of socket — diameter.

Mesoscutum somewhat raised above prothorax, without covering it when viewed from side; smooth, shiny, with sparse long hairs at base, on sides and along effaced notaulices on the disc. Notaulices distinct on descending part, narrow, crenulate, effaced on disc. Propodeum areolated (Fig. 12); upper areola with 5–6, lower with 2–3 hairs. Wing: Pterostigma 4–5 times as long as wide, always longer than metacarp. Radial abscissa 1 half longer than width of pterostigma; radial absc. 2 somewhat shorter or equal to absc. 1.

Abdomen lanceolate. Tergite 1 (Fig. 15) 3–3.5 times as long as wide at spiracles, gradually dilating towards apex, with very feeble lateral impressions behind spir. tubercles; central longitudinal carina very poorly visible to indistinct; granulo-transverse-rugose, comparatively flat, with feeble central longitudinal impression and lateral protuberances at the hind part, sparsely haired, half wider at apex than at spiracles. Spiracular tubercles poorly prominent, situated before half of the tergite. Following tergites smooth, shiny, sparsely haired. Genitalia see fig. 17.

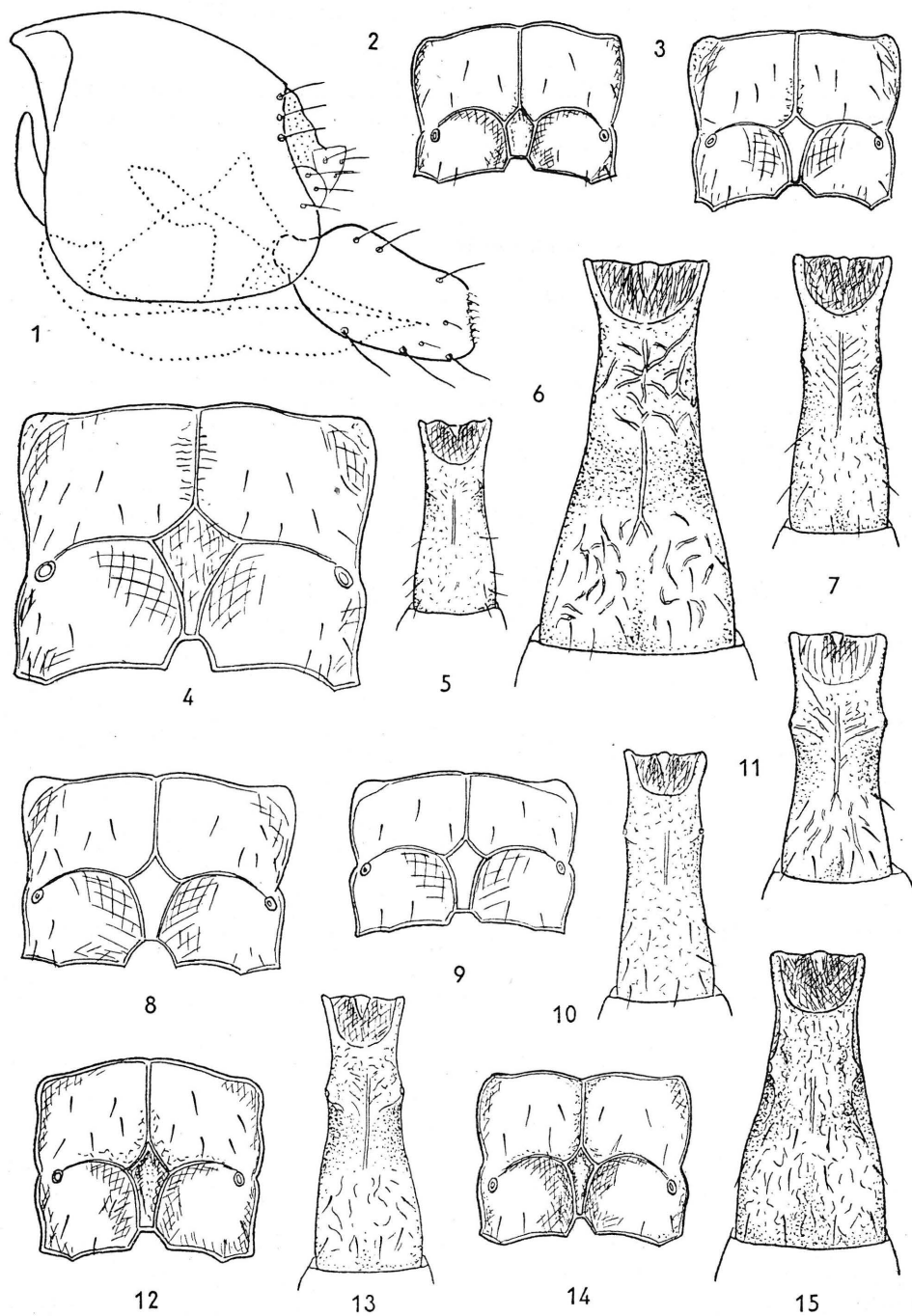
Coloration: Head black brown, clypeus and its neighbourhood more or less yellowish; mouthparts yellowish (except apices of mandibles) to yellow brownish. Antennae brown, base of F_1 and sometimes base of scape and pedicel yellowish. Thorax brown black, prothorax lighter. Wings very slightly brownish, venation brownish, inter-radial vein colourless. Legs brown to yellow brownish, trochanters and base of tibiae lighter. Abdomen brown, tergite 1 more or less, base of tergite 2 and suture between tergites 2 and 3 yellowish.

Length of body 2.1–2.4 mm.

Male. — Antennae 20-segmented. Brown black; mouthparts (mandibles yellowish, with brownish apices), bases of tibiae and tergite 1 brownish.

General distribution: Europe (Czechoslovakia).

Material examined: Czechoslovakia. — Mladá Boleslav, 5. VII. 1959 (*Aulacorthum geranii* on *Erodium cicutarium*, 3 ♀♀, paratypes), lgt. Holman. Karlštejn, 27. V. 1960 (*Aulacorthum* sp., *Sanguisorba minor*, stony hillside, 1 ♀, 2 ♂♂ paratypes), lgt. P. Starý. Čelákovice, 26. V. 1960 (*Aulacorthum* sp., *Potentilla argentea*, 2 ♀♀ paratypes), lgt. Holman. Praha, Botanical garden of the Charles University, 27. VI. 1961 (*Aula-*



corthum geranii, *Geranium* sp., park, ♀ holotype, ♂ allotype, 4 ♀, ♀ paratypes], lgt. P. Starý.

Holotype: ♀: Czechoslovakia, Praha, Botanical garden of the Charles University, 27. VI. 1961 (*Aulacorthum geranii*, *Geranium* sp., park), lgt. P. Starý [in coll. of author].

Allotype ♂: With the same data as the holotype ♀ [in coll. of author].

Habitat: Parks (so far as is known).

Host: *Aulacorthum geranii* (Kalt.) on *Erodium cicutarium* L'Hér., *Geranium* sp., Czechoslovakia; *Aulacorthum* spp. on *Potentilla argentea* L., *Sanguisorba minor* Scop., Czechoslovakia.

***Aphidius caraganae*, n. sp.**

Related to *Aphidius avenae* Hal., differing from the latter by the shape and structure of tergite 1, the host complex and habitat.

Female. — Head transverse, smooth, shiny, roundly narrowed behind eyes, wider than thorax at tegulae. Temple $\frac{1}{5}$ — $\frac{1}{6}$ narrower than transverse eye-diameter. Gena as $\frac{1}{4}$ — $\frac{1}{5}$ of longitudinal eye-diameter. Eyes of middle size, slightly prominent, oval, with sparse short hairs, convergent towards clypeus. Interocular 1. about $\frac{1}{3}$ shorter than transfacial 1. Transfacial 1. equal to facial 1. Clypeus oval, with 5—9 long hairs. Tentorio-ocular 1. as $\frac{1}{3}$ of intertentorial 1. Antennae 17—18-segmented, filiform, somewhat longer than head, thorax and tergite 1 together. F₁ 3 times as long as wide, equal to F₂ F₁—0, F₂—1—2, F₃—1—3. Socket-ocular 1. as about half of socket-diameter.

Mesoscutum slightly raised above prothorax, without covering it when viewed laterally, smooth, shiny, with sparse long hairs at base, sides and along effaced notaulices on the disc. Notaulices distinct on descending part, narrow, slightly crenulate. Propodeum areolate (Fig. 3); upper areola with 4—10, lower with 2—5 hairs. Wing: Pterostigma 4 times as long as wide, metacarp $\frac{1}{3}$ — $\frac{1}{5}$ shorter than pterostigma. Radial abscissa 1 about twice as long as width of pterostigma. Rad. absc. 2 shorter than rad. absc. 1.

Abdomen lanceolate. Tergite 1 (Fig. 11) 3 times as long as wide at spiracles, slender, with short central longitudinal carina along which there are oblique rugosities at the fore part; with feeble lateral impressions behind spiracular tubercles; with slight central longitudinal impression and feebly prominent lateral protuberances on its sides at the hind part; granulo-rugose, sparsely haired; $\frac{1}{3}$ wider at apex than at spiracles. Spiracular tubercles slightly prominent, situated before half of the tergite. Following tergites sparsely haired. Genitalia see fig. 1.

Coloration: Head black, clypeus more or less and mouthparts (except apices of mandibles) yellow brownish to yellow. Antennae dark brown, only base of F₁ yellowish. Thorax brown black, prothorax brownish. Wings brownish, venation brownish; inter-radial vein colourless. Legs brown yellowish, trochanters and base of tibiae lighter. Abdomen dark brown, tergite 1 yellow to brownish; suture between tergites 2 and 3 yellowish.

Length of body 1,7—2,8 mm.

Fig. 1: *Aphidius caraganae*, n. sp., genitalia. — Fig. 2: *A. poacearum*, n. sp., propodeum. — Fig. 3: *A. caraganae*, n. sp., propodeum. — Fig. 4: *A. phalangomyzi*, n. sp., propodeum. — Fig. 5: *A. poacearum* n. sp., tergite 1. — Fig. 6: *A. phalangomyzi*, n. sp., tergite 1. — Fig. 7: *A. equiseticola*, n. sp., tergite 1. — Fig. 8: *A. mirotarsi*, n. sp., propodeum. — Fig. 9: *A. poacearum*, n. sp., tergite 1. — Fig. 10: *A. phalangomyzi*, n. sp., tergite 1. — Fig. 11: *A. caraganae*, n. sp., tergite 1. — Fig. 12: *A. aulacorthi*, n. sp., propodeum. — Fig. 13: *A. mirotarsi*, n. sp., tergite 1. — Fig. 14: *A. equiseticola*, n. sp., propodeum. — Fig. 15: *A. aulacorthi*, n. sp., tergite 1.

Male. — Antennae 21-segmented. Head black, mouthparts brown. Antennae dark brown. Thorax black, prothorax brownish. Legs brown. Abdomen dark brown, suture between tergites 2 and 3 lighter.

General distribution: Europe (Czechoslovakia).

Material examined: Czechoslovakia. — Praha, Botanical garden of the Charles University, 24. VI. 1960 (*Acyrtosiphon caraganae*, *Caragana arborescens*, park, holotype ♀, allotype ♂, 2 ♀ ♀ paratypes), lgt. P. Starý. Ditto, 15. VII. 1961 (*A. caraganae*, *C. arborescens*, park, 1 ♀, 1 ♂ paratypes), lgt. P. Starý. Praha, Kinského sady, 21. VI. 1960 (*A. caraganae*, *C. arborescens*, park, 1 ♀ paratype), lgt. P. Starý. Ditto, 6. VII. 1959 (*A. caraganae*, *C. arborescens*, 1 ♀ paratype), lgt. P. Starý. Ditto, 25. VI. 1961 (*A. caraganae*, *C. arborescens*, park, 1 ♀ paratype), lgt. P. Starý. Bechyně, 24. VIII. 1959 (*A. caraganae*, *C. arborescens*, park — mixed wood, 1 ♀ paratype), lgt. P. Starý.

Holotype ♀: Czechoslovakia, Praha, Botanical garden of the Charles University, 24. VI. 1960 (*Acyrtosiphon caraganae*, *Caragana arborescens*, park), lgt. P. Starý (in coll. of author).

Allotype ♂: With the same data as the holotype ♀ (in coll. of author).

Habitat: Parks (as far as is known).

Host: *Acyrtosiphon caraganae* (Chol.) on *Caragana arborescens* Lam., Czechoslovakia.

***Aphidius equiseticola*, n. sp.**

Related to *Aphidius avenae* Hal., but differs from the latter by the shape and structure of tergite 1, coloration and habitat.

Female. — Head transverse, smooth, shiny, sparsely haired, roundly narrowed behind eyes, wider than thorax at tegulae. Temple $\frac{1}{5}$ narrower than transverse eye-diameter. Gena somewhat wider than $\frac{1}{3}$ of longitudinal eye-diameter. Eyes of middle size, oval, sparsely shortly haired, convergent towards clypeus. Interocular 1. somewhat longer than half of transfacial 1 (10—11:17). Transfacial 1. equal to facial 1. Clypeus oval, with 6—8 hairs. Tentorio-ocular 1. equal to $\frac{1}{3}$ of intertentorial 1. (or somewhat longer than $\frac{1}{3}$) (2:5.5). Antennae 17—18-segmented, filiform, reaching half of abdomen. F_1 3 times as long as wide, equal to $F_2.F_1 - 0$, $F_2 - 2$, $F_3 - 2$. Socket-ocular 1. as half of socket-diameter.

Mesoscutum slightly raised above prothorax, without covering it when viewed laterally, with long sparse hairs at base, sides and along effaced notaulices on the disc. Notaulices distinct on descending part, narrow, crenulate, effaced on disc. Propodeum areolate (Fig. 14); upper areola with 3—4, lower with 2—3 hairs. Wing: Pterostigma 4 times as long as wide, metacarp $\frac{2}{5}$ shorter than pterostigma. Radial abscissa 1 somewhat shorter than twice of pterostigma-width. Rad. absc. 2 shorter than absc. 1.

Abdomen lanceolate. Tergite 1 (Fig. 7) 3 times as long as wide at spiracles, slender, gradually dilating towards apex; with comparatively long feebly prominent central longitudinal carina along which there are oblique rugosities; with very poorly visible spiracular tubercles; with feeble central longitudinal impression and lateral protuberances on its sides at the hind part; very feebly granulo-rugose, sparsely haired; less than half wider at apex than at spiracles. Following tergites sparsely haired. Genitalia see fig. 21.

Coloration: Head dark brown; clypeus, mouthparts (except brown apices of mandibles) yellow. Antennae brown, base of F_1 and sometimes base of F_2 and F_3 yellowish. Thorax brown, prothorax lighter. Wings brownish, lower part of intermedian + median and interradian vein colourless. Legs yellow brownish, coxae and femora brownish. Abdomen brown; tergite 1 and suture between tergites 2 and 3 yellow brownish.

Length of body 1.7–2.2 mm.

Male. — Antennae 10–20-segmented, entirely brown. Coloration darker than in the female.

General distribution: Europe (Czechoslovakia).

Material examined: Czechoslovakia. — Prachov, 4. X. 1960 (*Sitobium equiseti*, *Equisetum silvaticum*, undergrowth of spruce forest, 1 ♂, 5 ♀♀ paratypes), lgt. Holman. Ditto, 2. VIII. 1961 (*Sitobium equiseti*, *Equisetum silvaticum*, undergrowth of spruce forest, ♀ holotype, ♂ allotype, 7 ♀♀, 1 ♂ paratypes), lgt. Holman. Vimperk, 3. IX. 1960 (*Sitobium equiseti*, *Equisetum silvaticum*, undergrowth of coniferous forest, 1 ♀, 1 ♂ paratypes), lgt. Holman.

Holotype ♀: Czechoslovakia, Prachov, 2. VIII. 1961 (*Sitobium equiseti*, *Equisetum silvaticum*, undergrowth of spruce forest), lgt. Holman (in coll. of author).

Allotype ♂: With the same data as the holotype ♀ (in coll. of author).

Habitat: Undergrowth of coniferous (spruce) forests, submountain districts.

Host: *Sitobium equiseti* Holman on *Equisetum silvaticum* L., Czechoslovakia.

***Aphidius mirotarsi*, n. sp.**

Related to *Aphidius avenae* Hal., differing from the latter in the shape and structure of tergite 1, coloration and host complex.

Female. — Head transverse, smooth, shiny, sparsely haired, roundly narrowed behind eyes, wider than thorax at tegulae. Temple $\frac{1}{4}$ – $\frac{1}{5}$ narrower than transverse eye-diameter. Gena as $\frac{1}{5}$ – $\frac{1}{6}$ of longitudinal eye-diameter. Eyes large, widely oval, sparsely haired, convergent towards clypeus. Interocular 1. $\frac{1}{3}$ shorter than transfacial 1. Transfacial 1. somewhat shorter than facial 1. Clypeus oval, with 6–10 long hairs. Tentorio-ocular 1. as $\frac{1}{3}$ of intertentorial 1. Antennae 17–18 (rarely 16 or 19)-segmented, filiform, reaching half of abdomen. F₁ a little longer than 3 times as long as wide, equal to F₂:F₁ = 0, F₂ = 1–2, F₃ = 2–3. Socket-ocular 1. as half of socket-diameter.

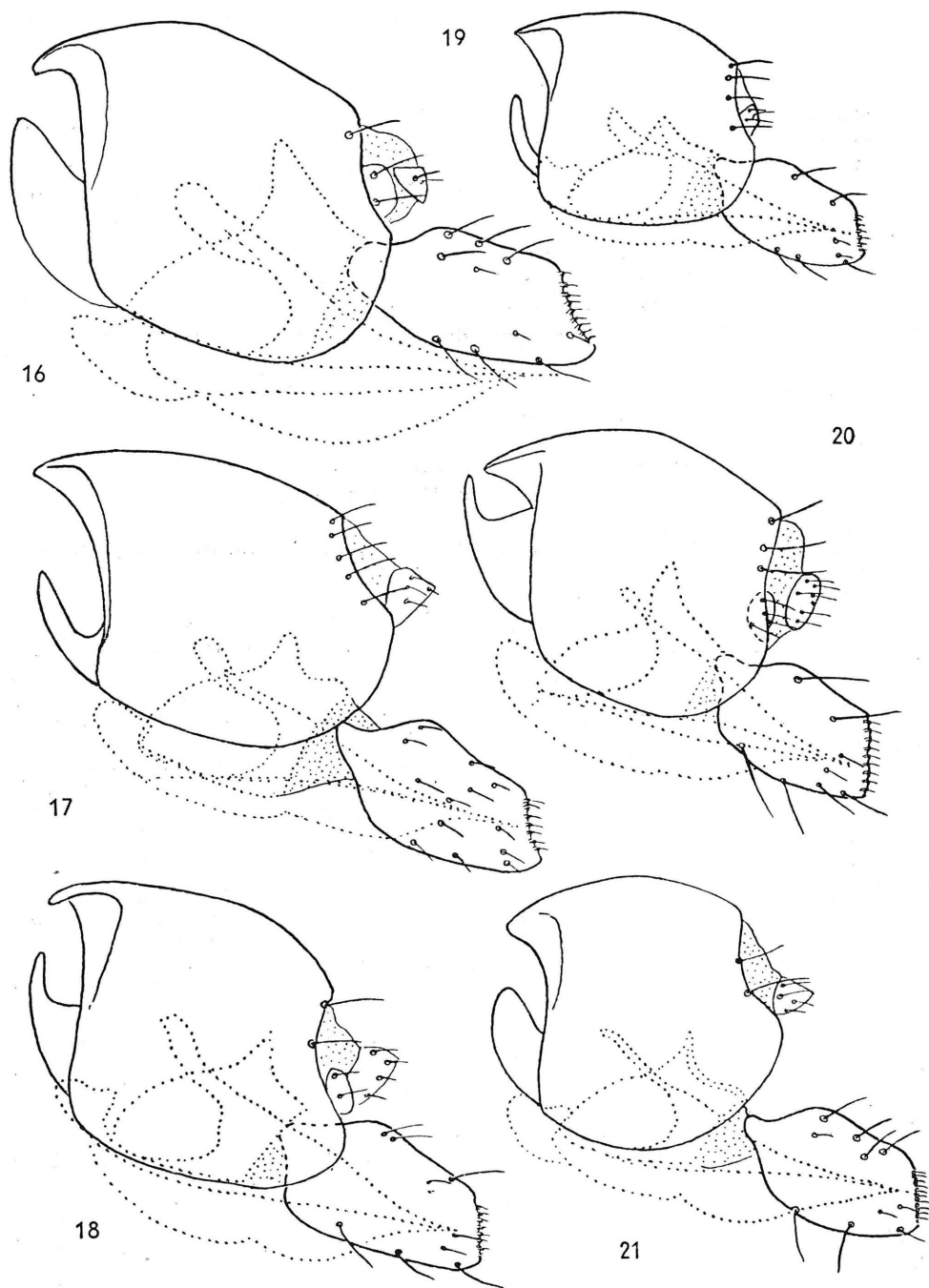
Mesoscutum slightly raised above prothorax, without covering it when viewed laterally; with sparse long hairs at base, sides and along effaced notaulices on the disc. Notaulices deep and rugose on descending part, effaced on disc. Propodeum areolated (Fig. 8); upper areola with 5–7, lower with 3–4 hairs. Wing: Pterostigma 4.5–5 times as long as wide, somewhat longer than metacarp. Radial abscissa 1 twice longer than width of pterostigma, rad. absc. 2 shorter than 1. Interradial v. as $\frac{1}{3}$ of rad. absc. 1.

Abdomen lanceolate. Tergite 1 (Fig. 13) 3–3.5 times as long as wide at spiracles, slender, with slightly developed central longitudinal carina; with lateral impressions behind spiracular tubercles; slightly raised at the hind part, $\frac{1}{3}$ wider at apex than at spiracles; coarsely rugose, sparsely haired. Genitalia see fig. 18.

Coloration: Head black, lower part of genae, part of clypeus, mouthparts (except darkened apices of mandibles), yellow; rarely lower part of temples, genae, clypeus and face, yellow. Antennae dark brown, base of F₁ and sometimes lower part of scape and pedicel, yellowish. Thorax black, with variably distributed yellow orange colour on prothorax, mesoscutum and mesopleurae. Wings slightly brownish, venation brownish, interr radial v. colourless. Legs yellowish, sometimes with more or less distributed brownish coloration on coxae and femora; apices of tarsi darkened. Abdomen dark brown, tergite 1 entirely brown to entirely yellow, suture between tergite 2 and 3 yellowish.

Length of body 1.7–2.1 mm.

Male. — Antennae 20–21 (rarely 19)-segmented. Coloration variable as in the female. Antennae dark brown, except base of F₁.



Genitalia: Fig. 16: *A. phalangomyzi*, n. sp. — Fig. 17: *A. aulacorthi*, n. sp., — Fig. 18. *A. mirotarsi*, n. sp. — Fig. 19: *A. poacearum*, n. sp. — Fig. 20: *A. tanaceticola*, n. sp. — Fig. 21: *A. equiseticola*, n. sp. — All figures drawn from females.

General distribution: Europe (Czechoslovakia).

Material examined: Czechoslovakia. — Karlštejn, 17. V. 1960 (*Mirotarsus cyparissiae*, *Euphorbia cyparissias*, stony hillside, limestone, 5 ♀♀ ♂♂ paratypes), lgt. P. Starý. Plešivec, 10. VI. 1961 (*Mirotarsus cyparissiae*, *Euphorbia cyparissias*, stony steppe, 3 ♀♀ paratypes), lgt. P. Starý. Ditto, 13. VI. 1961 (*Mirotarsus cyparissiae*, *Euphorbia cyparissias*, 1 ♂ paratype), lgt. P. Starý. Kamenica n./Hronom, 28. VI. 1961 (*Mirotarsus cyparissiae*, *Euphorbia cyparissias*, stony steppe, 1 ♂ paratype), lgt. P. Starý. △ Piliš, Slov. N. Mesto — env., 9. VI. 1961 (*Mirotarsus cyparissiae*, *Euphorbia cyparissias*, waste place — old vineyard, ♀ holotype, ♂ allotype, 11 ♀♀ ♂♂ paratypes), lgt. P. Starý.

Holotype ♀: Czechoslovakia, Piliš, Slov. N. Mesto — env., 9. VI. 1961 (*Mirotarsus cyparissiae*, *Euphorbia cyparissias*, waste place — old vineyard), lgt. P. Starý (in coll. of author).

Allotype ♂: With the same data as the holotype ♀ (in coll. of author).

Habitat: Steppe, xerothermic waste places.

Host: *Mirotarsus cyparissiae* (Koch) on *Euphorbia cyparissias* L., Czechoslovakia.

Aphidius phalangomyzi, n. sp.

Related to *Aphidius absinthii* (Marsh.) and *A. funebris* Mack. Differs from the quoted species by the number of antennal segments and the host.

Female. — Head transverse, strongly roundly narrowed behind eyes, sparsely haired, wider than thorax at tegulae. Temple $\frac{1}{3}$ — $\frac{1}{4}$ wider than transverse eye-diameter. Gena as $\frac{1}{4}$ — $\frac{1}{5}$ of longitudinal eye-diameter. Eyes large, prominent, widely oval, convergent towards clypeus, with sparse short hairs. Interocular 1. $\frac{1}{3}$ — $\frac{1}{4}$ shorter than transfacial 1., less than half shorter than facial 1. Facial 1. longer or equal to transfacial 1. Clypeus transverse, slightly, prominent, with about 10 long hairs. Tentorio-ocular 1. as $\frac{1}{2}$ of intertentorial 1. Antennae 20—21-segmented, filiform, reaching half of abdomen. F₁ and F₂ of equal length, 4—5 times as long as wide. F₁ — 0, F₂ — 1, F₃ — 3. Socket-ocular 1. equal to half socket-diameter.

Mesoscutum falling comparatively vertically to prothorax; smooth, with sparse long hairs at base, sides and along effaced notaulices on the disc. Notaulices distinct on descending part, deep, crenulate, effaced on disc. Propodeum areolated (Fig. 4); upper areola with 5—9, lower with 4—7 hairs. Wing. Pterostigma 4—4.5 times as long as wide. Metacarp $\frac{1}{3}$ — $\frac{1}{4}$ shorter than pterostigma. Radial abscissa 1 twice as long as width of pterostigma or nearly so. Rad. absc. 2 about $\frac{1}{3}$ shorter than 1. Interradial v. shorter than half of rad. absc. 1.

Abdomen lanceolate. Tergite 1 (Fig. 6) 3 times as long as wide at spiracles, slender, with central longitudinal prominent carina, irregularly rugose; with smooth lateral impressions behind spiracular tubercles; with slight central longitudinal impression and lateral rugose prominences at the hind part, sparsely haired; $\frac{1}{3}$ wider at apex than at spiracles. Spiracular tubercles slightly prominent, situated before the half of the tergite. Genitalia see fig. 16.

Coloration: Upper part of head (frons, vertex, occiput, upper part of temples) black; lower part (except brown apices of mandibles) yellow orange. Antennae dark brown; scape, pedicel and half of F₁ yellowish, sometimes the most part of F₁ and F₂ yellowish. Prothorax, basal part of mesoscutum and part of its lobes and along notaulices, mesopleurae and sometimes metapleurae yellow orange; the rest dark brown. Wings slightly brownish; venation brownish, interradian v. colourless. Legs yellow orange, apices of tarsi darkened. Abdomen dark brown, suture between tergites 2 and 3 yellowish. (Note: The coloration seems to vary in a similar way as in *A. absinthii* Marsh. or *A. funebris* Mack.).

Length of body 1.7—3 mm.

Male. — Antennae 21—22-segmented. Coloration as in the female. Mesoscutum sometimes entirely brown. F₁ and the following segments nearly entirely brown.

General distribution: Europe (Czechoslovakia).

Material examined: Czechoslovakia. — Domica, env. of Plešivec, 13. VI. 1961 (*Phalangomyzus oblongus*, *Artemisia vulgaris*, waste place near a steppe, 2 ♀♀ paratypes), lgt. P. Starý. Karlštejn, 23. VI. 1961 (*Phalangomyzus oblongus*, *Artemisia vulgaris*, waste place, road side, ♀ holotype, ♂ allotype, 1 ♂ paratype), lgt. P. Starý.

Holotype ♀: Czechoslovakia. — Karlštejn, 23. VI. 1961 (*Phalangomyzus oblongus*, *Artemisia vulgaris*, waste place, roadside), lgt. P. Starý (in coll. of author).

Allotype ♂: With the same data as the holotype ♀ (in coll. of author).

Habitat: Steppe, xerothermic waste places.

Host: *Phalangomyzus oblongus* (Mordv.) on *Artemisia vulgaris* L., Czechoslovakia.

Aphidius poacearum, n. sp.

Related to *Aphidius avenae* Hal., differing from the latter by the number of antennal segments, shape of central areola on propodeum, shape and structure of tergite 1 and coloration.

Female. — Head transverse, smooth, shiny, sparsely roundly narrowed behind eyes, wider than thorax at tegulae. Temple somewhat narrower than transverse eye-diameter (8:9). Gena as $\frac{1}{4}$ of longitudinal eye-diameter. Eyes of medium size, oval, convergent towards clypeus, slightly prominent, sparsely shortly haired. Interocular 1. somewhat longer than half of transfacial 1. (10:18). Transfacial 1. equal to facial 1. Clypeus oval, with 6—9 long hairs. Tentorio-ocular 1. somewhat longer than $\frac{1}{3}$ of interteritorial 1. (2:5). Antennae 16-segmented, filiform, reaching half of abdomen. F₁ 3 times as long as wide, equal to F₂. F₁ — 0, F₂ — 2, F₃ — 2. Socket-ocular 1. equal to half of socket-diameter.

Mesoscutum falling comparatively vertically to prothorax, without covering it when viewed laterally; smooth, shiny, with sparse long hairs at base, sides and along effaced notaulices. Notaulices distinct on descending part, narrow, crenulate, effaced on disc. Propodeum areolated (Fig. 2); upper areola with 2—4, lower with 2 hairs. Wings: Pterostigma 4—5 times as long as wide, longer than metacarpus. Radial abscissa 1 twice as long as pterostigma-length. Radial absc. 2 shorter than 1.

Abdomen lanceolate. Tergite 1 (Fig. 5) 3 times as long as wide at spiracles, slender, with comparatively prominent slight central longitudinal carina; with slight lateral impressions behind spiracular tubercles; slightly prominent at the hind part; slightly granulo-rugose, with sparse long hairs; somewhat wider at apex than at spiracles (5:6). Following tergites sparsely haired. Genitalia see fig. 19.

Coloration: Head dark brown; face, clypeus, mouthparts (except apexes of mandibles) yellowish. Antennae brownish, scape and pedicel, F₁ and F₂ yellowish, sometimes scape, pedicel and F₂ slightly brownish. Thorax brown; prothorax yellowish to yellow brownish. Wings slightly brownish, venation brown; lower part of intermedian + median v. and interrarial v. colourless but distinct. Legs yellow, apexes of tarsi darkened. Abdomen brown; tergite 1, base of tergite 2 and suture between tergite 2 and 3 yellow.

Length of body 1.5—1.7 mm.

Male. — Antennae 17—19-segmented. Head brown black; mouthparts brownish, mandibles yellowish (except apexes). Antennae brown. Thorax brown, prothorax lighter. Wings brownish. Legs brown, coxae, bases of tibiae and tarsi yellow brownish. Abdomen dark brown, suture between tergite 2 and 3 lighter.

General distribution: Europe (Czechoslovakia).

Material examined: Czechoslovakia. — Bílý Kostel, 9. VIII. 1960 (*Sitobium avenae*, *Festuca* sp., edge of coniferous forest, ♀ holotype, ♂ allotype, 2 ♀♀, 2 ♂♂ paratypes), lgt. Holman.

Holotype ♀: Czechoslovakia, Bílý Kostel, 9. VIII. 1960 (*Sitobium avenae*, *Festuca* sp., edge of coniferous forest), lgt. Holman (in coll. of author).

Allotype ♂: With the same data as the holotype ♀ (in coll. of author)

Habitat: Edges of coniferous forests (as far as is known).

Host: *Sitobium avenae* (Fabr.) on *Festuca* sp., Czechoslovakia.

***Aphidius tanaceticola*, n. sp.**

Belongs to the group of species characterized by having tentorio ocular 1. as long as half of intertentorial 1. Differs from its relatives in having 16—17-segmented antennae, very narrow temples and large eyes, the shape and structure of tergite 1, coloration and the host complex.

Female. — Head transverse, roundly narrowed behind eyes, with sparse long hairs, wider than thorax at tegulae. Temple very narrow, $\frac{1}{3}$ narrower than transverse eye-diameter. Gena as $\frac{1}{5}$ of longitudinal eye-diameter. Eyes very large, very slightly oval (width: length as 4:5), prominent, sparsely haired, slightly convergent towards clypeus. Interocular 1. more than $\frac{1}{5}$ shorter than transfacial 1. Transfacial 1. equal to facial 1. Clypeus oval, with about 6 hairs. Tentorio-ocular 1. as half of intertentorial 1. Antennae 16—17-segmented, filiform, reaching half of abdomen. F1 3 times as long as wide, equal to F2. F1 — 0, F2 — 2—4, F3 — 3—4. Socket-ocular 1. $\frac{1}{3}$ shorter than socket-diameter.

Mesoscutum falling comparatively vertically to prothorax, without covering it when viewed from side, smooth, shiny, with sparse long hairs at base, sides and along effaced notaulices on the disc. Notaulices distinct on descending part, slightly crenulate, effaced on disc. Propodeum areolated (Fig. 9); upper areola with 3—4, lower with 2—3 hairs. Wings: Pterostigma 4 times as long as wide. Metacarp $\frac{1}{3}$ shorter than pterostigma. Radial abscissa 1 shorter than twice of pterostigma-length. Rad. absc. 2 a little shorter than 1. Interradial v. as $\frac{1}{3}$ of rad. absc. 1.

Abdomen lanceolate. Tergite 1 (Fig. 10) 3 times as long as wide at spiracles, slender, with short central carina; with slight lateral impressions behind spiracular tubercles; slightly convex at the hind part, granulo-rugose, sparsely haired; $\frac{1}{3}$ wider at apex than at spiracles. Following tergites sparsely haired. Genitalia see fig. 20.

Coloration: Head black; lower part of temples, genae, face, clypeus, mouthparts (except apexes of mandibles) yellow. Antennae brown, base of F1 and sometimes lower part of scape and pedicel yellowish. Thorax black, prothorax and sometimes base of mesoscutum yellow. Wings brownish, lower part of intermedian + median v. and inter-radial v. colourless. Fore legs yellow brownish, middle and hind legs brownish, trochanters and base of tibiae yellow. Abdomen brown, tergite 1 and suture between tergite 2 and 3 yellow.

Length of body 1.7—2.3 mm.

Male. — Antennae 18—19-segmented. Coloration similar but darker than in the female.

General distribution: Europe (Czechoslovakia).

Material examined: Czechoslovakia. — Lysá n./L., 3. IX. 1957 (*Metopeurum fuscoviride*, *Tanacetum vulgare*, waste place near a meadow, ♀ holotype, ♂ allotype, about 30 paratypes ♀♀ ♂♂), lgt. P. Starý. Liběchov, 24. VI. 1957 (*Metopeurum fuscoviride*, *Tanacetum vulgare*, waste place, 4 ♀♀ ♂♂ paratypes), lgt. P. Starý. Dobřichovice, 26. VII. 1960

(*Metopeurum fuscoviride*, *Tanacetum vulgare*, field habitat, 3 paratypes ♀♀ ♂♂), lgt. P. Starý. Valley of the river Mže, env. of Milíkov, VIII. 1956 (*Metopeurum fuscoviride*, *Tanacetum vulgare*, waste place, 10 paratypes ♀♀ ♂♂), lgt. Hanzáková. Valley of the river Střela, env. of Rabštejn, VII. 1956 (*Metopeurum fuscoviride*, *Tanacetum vulgare*, meadow, 9 paratypes ♀♀ ♂♂), lgt. P. Starý. Štúrovo, 1. VII. 1961 (*Metopeurum fuscoviride*, *Tanacetum vulgare*, sandy habitat—bank of the river Danube, 8 paratypes ♀♀ ♂♂), lgt. P. Starý.

Holotype ♀: Czechoslovakia, Lysá n./L., 3. IX. 1957 (*Metopeurum fuscoviride*, *Tanacetum vulgare*, waste place near a meadow), lgt. P. Starý [in coll. of author].

Allotype ♂: With the same data as the holotype ♀ [in coll. of author].

Habitat: Field habitats—meadows, waste places.

Host: *Metopeurum fuscoviride* Stroyan on *Tanacetum vulgare* L., Czechoslovakia.

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