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## The *Aphaereta* FÖRSTER species of the Carpathian Basin (Central-Europe)

(Hymenoptera, Braconidae: Alysiniinae)

With 3 plates (Figs. 1–20)

### Introduction

The Section on Parasitology of the National Institute of Public Health, Budapest, had, as one of its main themes of research, chosen the systematical and ecological investigation of our home synanthrope and synbovine fly species. As a preliminary to the investigations, flies were bred from the excrements of man and domestic animals. Together with the Sarcophagid species, also their parasites were found hatched from larvae and pupae of the flies. By examining the parasites of the flies, it was immediately apparent that they belonged to the subfamily Alysiniinae of the family Braconidae, being taxa of the genus *Aphaereta* FÖRSTER. It naturally followed that if one were to continue any kind of ecological study on the *Aphaereta* species as parasites, the systematical investigation of the species found will be indispensable. This is the sole aim of my present paper. The revision of the *Aphaereta* species collected in the Carpathian Basin was made partly on the basis of the materials bred<sup>1</sup>, partly on the collection of the Hungarian Natural History Museum. In the course of study it was found that in the area discussed (zoogeographically the Central Danubian faunal district; DUDICH, 1954), there live only four *Aphaereta* species. MOCSÁRY (1896:64) listed only one of them in his Catalogue (*Aphaereta cephalotes* FÖRSTER = *Aphaereta minuta* NEES). It is quite probable that by future special collecting and breeding methods this number will increase, and we shall find species new as well for our fauna as for science.

### *Aphaereta* FÖRSTER

*Aphaereta* FÖRSTER, Verh. nat. Ver. preuss. Rheinl. Westph., 19, 264; 1862.

*Aphaerete* DALLA TORRE, Cat. Hym., 4, 41; 1898.

*Trichesia* PROVANCHER, Nat. Canad., 12, 203; 1881.

*Trinaria* PROVANCHER, Addit. Corr. Faune Ent. Canada Hym., 149; 1886.

The three synonymous generic taxa of *Aphaereta* FÖRSTER is listed above on the basis of MUESEBECK's work (1951:148).

The genus *Aphaereta* FÖRSTER is characterized by the following aggregate of features:

Of medium size, the length of the species varies between 1.7–2.5 mm. The head, thorax, abdomen, wings and legs are of normal structure, without any special appendages.

<sup>1</sup> This part of my material had been bred by J. B. SZABÓ, for whose friendly cooperation and the ceding of the flies it is my agreeable duty to express my sincere thanks also in this place.

The head is generally twice as wide as long, its surface smooth, shiny. The hairs of the face, clypeus, and mandible are long and sparse. The maxillary palpi are 6-, the labial palpi 4-jointed. The mandibles are dentate. The compound eye is of average size, slightly convex. The ocelli are not situated on a common protruberance, but are elevated singly. There is a longitudinal depression in the center of the vertex. The antennae are longer than the body, the antennal joints shorten distally, and are hairy. The proportion (as to length) to each other of the first 6—8 antennal joints is often of specific value. The thorax is invariably shorter than the abdomen. The several parts of the thorax are smooth and shiny, except the metathorax and the pseudothoracic segment. The metathorax is longitudinally rugose. The pseudothoracic segment bears more or less conspicuously elevated ridges, dividing its surface into five portions. These areas (except for the two proximal ones) are rugose, either wholly or only along the ridges. The parapsidal furrow is present, usually in traces, only on the mesonotum. There can be a triangular impression on the side of the prothorax. The sternauli is present in varying degrees. The thorax is sparsely hairy. The venation of the wings are occasionally faint, generally well visible. The stigma is narrow. The first cubital and the first discoidal cells are coincident (hence this section of the n. media is absent). The second cubital cell is elongate. The cubital vein evanescent. The wings are never fumous, hyaline. The legs are normal. The longitudinal proportion of the first and second tarsal joints is a specific character. The abdomen (when viewed from above) is approximately elliptical. Its length is almost invariably shorter than head and thorax together. The first tergite is sculptured, otherwise the abdomen is smooth and shiny, sparsely hairy. The body is blackish-brown or brownish-black. The first 3—4 antennal joints, the palpi, the tegula, the legs, and, to a varying degree, the first tergites are light.

Hosts: a number of fly species of the families Sarcophagidae, Coelopidae, and Anthomyiidae.

Type-species: *Aphaereta minuta* NEES, 1811.

Until recently, there had been described 9 species from the Palearctic Region, 6 from the Nearctic Region, and one from the Neotropic Region. Concerning the Palearctic Region, we know the following species (localities in brackets):

- A. brevis* TOBIAS, 1962 (Soviet Union, Hungary)
- A. debilitata* MORLEY, 1933 (England)
- A. difficilis* NIXON, 1939 (Morocco, Hungary, Roumania)
- A. elegans* TOBIAS, 1962 (Soviet Union)
- A. falcigera* GRAHAM, 1959 (England, Ireland)
- A. maior* THOMSON, 1895 (Sweden, England, Ireland)
- A. minuta* NEES, 1811 (Europe)
- A. rubicunda* TOBIAS, 1962 (Soviet Union)
- A. tenuicornis* NIXON, 1939 (England, Ireland, Germany, Hungary, Soviet Union).

Of the 9 species, there were only 4 collected as yet in the Carpathian Basin.

**Key of species ♀♀ and ♂♂**

- 1 (2) Length below 2 mm; factually 1.6—1.7 mm. Parapside usually extending to center of mesonotum. A dot-like impression (Fig. 1) in front of prescutellar furrow (where the two parapsidal traces meet). Proportion of width of head and thorax 6:4 (Fig. 1). Ovipositor, when viewed laterally, short: failing to attain even half length of abdomen (1:0.3—0.2).  
Range: Soviet Union, Hungary, Czechoslovakia. . . . . *brevis* TOBIAS
- 2 (1) Length over 2 mm.
- 3 (4) Antenna strikingly long: 23—25-jointed; proportion of joints 4—8 as 12:10:8:8.5 (Fig. 16). Proportion of width of head and thorax 8:5 (Fig. 4). Parapside usually extending to center of mesonotum. A dotlike impression in front of prescutellar furrow (where traces of the two parapsides meet). Proportion of tarsal joints 1—2 of third leg 1:0.56 (Fig. 20). Ovipositor, when viewed laterally, as long as abdomen. Length 2.4—2.6 mm.  
Range: Ireland, England, Germany, Czechoslovakia, Hungary. *tenuicornis* NIXON
- 4 (3) Antenna not strikingly long, number of joints at most 23, usually 20—22. Parapside present in traces only.
- 5 (6) Body squat: proportion of width of head and thorax 9:5.5; proportion of width and length of head 8:4.5 (Fig. 3). Medial tooth of mandible strong (Fig. 11). Prescutellar furrow wide, deep, with 3—4 crenulae. Sternauli also wide and crenulated. Length 2.2—2.5 mm.  
Range: Europe. . . . . *minuta* NEES
- 6 (5) Body not squat: proportion of width of head and thorax 7:4.5, proportion of width and length of head 7:3.5 (Fig. 2). Prescutellar furrow shallow and medium long, with 3—4 crenulae. Sternauli present as an impression, finely crenulated. Length 2—2.2 mm.  
Range: Morocco, Hungary, Roumania. . . . . *difficilis* NIXON

***Aphaereta brevis* TOBIAS, ♂ novus**

(Figs. 1, 5, 10, 14, 17)

*Aphaereta brevis* TOBIAS, 1962; **31**, p. 88—89, ♀.

♀♂: Head, when viewed from above, nearly twice as wide as long: 6:3.5 (Fig. 1), entirely smooth and shiny. Ocelli situated at corners of an equilateral triangle. Face hairy. Antenna considerably longer than body, 19-jointed. Antennal joints 4—8 strikingly long, proportioned as 10:8:6.5:6 (Fig. 14). Both sides of mandible arched, tooth pointed (Fig. 10). Head blackish-brown. Mandible and first 4 antennal joints yellow, other joints deep brown. Clypeus brownish, hyalinous. — Proportion of width of head and thorax 6:4 (Fig. 1). Thorax sparsely hairy. Pronotum, mesonotum, scutellum, pleura, and breast smooth and shiny. Parapside, in anterior third of mesonotum well developed, otherwise its continuation present only in traces. Parapside sometimes present only in beginning of mesonotum, generally, however, extending to center of mesonotum. A dot-like (punctiform) impression centrally and in front of prescutellar furrow (where two parapsides meet in traces). Prescutellar furrow of medium depth, finely crenulated. Edges on propodeum generally well developed, interstices between ridges weakly rugulose. Sternauli on mesopleura short, not crenulated, medial impression (on edge toward metapleura) punctiform. Thorax, similarly to head, blackish-brown. Prothorax yellow or brownish-yellow, tegula pale. Wing, especially basally, narrow. Veins

well developed but faint. Second cubital cell slightly arcuate. Characteristical features are (Fig. 5): situation and decurrence as related to each other of all veins, shape of medial and second cubital cell. Legs normal. Proportion of tarsal joints 1—2 of third leg 1:0.4 (Fig. 17). Legs yellow, end of last joint and claws dark. — Head and thorax together longer than abdomen (1:0.8). Tergite 1 finely and lineately rugulose, plate protruding, sides (especially on ♂♂) sharp. Other tergites and all sternites smooth and shiny, sparsely hairy. Ovipositor in a lateral view shorter than half abdominal length (1:0.3—0.2). Abdomen blackish-brown. First (♀♀) or first and second (♂♂) tergites brownish-yellow, sometimes also first tergites blackish-brown (♀♀).

Length: 1.6—1.7 mm.

Host unknown.

Differentiating characters: 1. Length of body. — 2. Proportion of width of head and thorax (6:3.5): Fig. 1. — 3. Length and joints 3—7 of antenna. — 4. Parapside, punctiform impression of mesonotum. — 5. Shape of wing and venation (Fig. 5). — 6. Shortness of ovipositor.

Localities within Carpathian Basin: II/2<sup>2</sup>: Pokorágy (Slovenska Pokoradz), 20 August 1915, 1 ♂, leg. SZABÓ-PATAI. — VI/1: Nagypeterd, 12 August 1925, 3 ♀♀ and 5 ♂♂, leg. BÍRÓ.

Range: Soviet Union (environments of Leningrad), Hungary, Czechoslovakia. New for the faunas of the latter two countries.

***Aphaereta difficilis* NIXON**

(Figs. 2, 6, 18)

*Aphaereta difficilis* NIXON, Proc. R. Ent. Soc., 8 (Ser. B), 64—65; 1939: ♀♂.

♀♂: When viewed from above, head twice as wide as long: 7:3.5 (Fig. 2). Basis of clypeus finely rugulose, head otherwise smooth and shiny. Shape of mandible corresponding to, but not as squat as that of *A. minuta*. Base of triangle construed of ocelli somewhat longer than its sides. Face, clypeus, and mandibles with long hairs. Antenna longer than body, number of antennal joints 18—20, usually 20. Antennal hairs long, joints 3—10 gradually shortening. Head brownish-black. Mandible brownish-yellow, palpi and antennal joints 1—2 pale yellowish (light colours sometimes brownish). — Proportions of width of head and thorax 7:4.5 (Fig. 2). Pronotum, mesonotum, scutellum and breast smooth and shiny. Dorsal side sparsely hairy. Parapside absent from mesonotum, at most only traces left on anterior side (in bend) of mesonotum (Fig. 2). Prescutellar furrow shallow and of medium depth, with 3—4 crenulae. Metanotum finely rugulose. Edges of propodeum well discernible, interstices finely rugulose, except for anterior two. Furrow (sternauli) of mesopleura present as an impression, not or very finely crenulated; medial impression punctiform on side toward metapleura. Thorax blackish-brown. Prothorax either completely brownish-black, or brownish-rufous, hyaline to varying degrees. Tegulae light. Wing hyaline, veins generally well developed, but thin. Characteristical features (Fig. 6): relatively narrow wing, situation and decurrence as related to each other of n. basalis, n. radialis, n. transverso-cubitalis, n. recurrens, and n. media; narrow second cubital cell. Legs normal. Proportion of length of tarsal joints 1—2 as 1:0.5 (Fig. 18). Legs pale yellowish, end of tibiae and tarsus

<sup>2</sup> The numbers (II/2, I/1, III/2 etc.) mean the zoogeographical subdistricts of the Carpathian Basin (MÓCZÁR, 1948).

pale fumous, last tarsal joints and claw dark (legs sometimes wholly brown). — Proportion of length of head, thorax, and abdomen as 1:0.8 (0.9), hence abdomen only slightly shorter than head and thorax together. Tergite 1 finely rugulose, medially with a minute shield, extending anteriorly in two edges. Other tergites and all sternites smooth, shiny, sparsely hairy. Ovipositor in lateral view as long as, or slightly shorter than, abdomen (1:0.8—1). Tergite 1 brownish-yellow, otherwise abdomen, similarly to head and thorax, brownish-black.

Length: ♀♀ 1.8—2.2 mm, average 2—2.2 mm. ♂♂ 1.7—2.2 mm, average 2.1 to 2.2 mm.

Host: 1. Sarcophagid larvae breeding in human excrement (Hungary). 2. Bred from *Chorthophila brassicae* (BOUCHÉ), Morocco.

Differentiating characters: 1. Length of body. — 2. Proportion of width of head and thorax (7:4.5): Fig. 2. — 3. Proportion of length of head + thorax and abdomen (1:0.8 to 0.9). — 4. Venation of wing (Fig. 6). — 5. Number of antennal joints.

Localities within the Carpathian Basin: I/1: Budapest, Rákos, 15 August 1896, 1 ♀, leg. SZÉPLIGETI. Kisoroszi, 24 May—16 Sept. 1961, 11 ♀♀ and 6 ♂, leg. J. B. SZABÓ. Lórénv, 25 August 1961, ex pupae Sarcophagidae in faeces hominis, 1 ♀, leg. J. B. SZABÓ. Pörboly, Gemenci-erdő (Forest Gemence), 18 May 1957, 1 ♀, leg. MIHÁLYI. Püspökladány, 10 June 1912, 1 ♀, leg. BÍRÓ. Szigethalom, 5 Oct. 1961, ex pupae Sarcophagidae in faeces hominis, 1 ♀ and 1 ♂, leg. J. B. SZABÓ. — II/1: Budakalász, 26 May—25 Sept. 1961, ex pupae Sarcophagidae in faeces hominis, 22 ♀♀ and 6 ♂♂, leg. J. B. SZABÓ. Budapest, Hűvösvölgy, 16 June 1907, 1 ♀, leg. BÍRÓ. Fehérvárcsurgó, Sept. 1923, 1 ♀, leg. BÍRÓ. Szentendre, 21 July 1961, ex pupae Sarcophagidae in faeces hominis, 1 ♀ and 2 ♂♂, leg. J. B. SZABÓ. — II/2: Rád (Com. Nógrád), June 1927, 1 ♀, leg. SZILÁDY. Sződ, 24 August 1920, 1 ♀, leg. BÍRÓ. Vác, 5 August 1923, in Salicetis, 2 ♀♀, leg. BÍRÓ. Vác, near gipsy camp, 16—24 August 1961, ex pupae Sarcophagidae in faeces hominis, 13 ♀♀ and 8 ♂♂, leg. J. B. SZABÓ. Vác, Tudós-domb, 1 August 1926, in Robinietis, 1 ♀, leg. BÍRÓ. Vác, 24 August—14 Sept. 1961, ex pupae Sarcophagidae in faeces hominis, 2 ♀♀ and 3 ♂♂, leg. J. B. SZABÓ. — III/2: Tihuca (= Tihuța), 1 July 1897, 1 ♂, leg. PÁVEL. — III/3: Szászskézd (= Saschiz), 1 ♀, leg. ? —

General characterization of its distribution within the Carpathian Basin: collected mainly in hilly regions; flying from June till beginning of October, most frequent in August–September; a rare species.

Range: Morocco, Hungary, Roumania. New for the faunas of the latter two countries.

### *Aphaereta minuta* (NEES)

(Figs. 3, 7, 11, 15, 19)

*Stephanus minutus* NEES, Magaz. Ges. Naturf. Fr., 5, 5; 1811: ♀♂.

*Alysia cephalotes* HALIDAY, Ent. Mag., 1, 265; 1833.

*Alysia fuscipes* NEES, Hym. Ichn. affin. Mon., 1, 254; 1834.

*Alysia confluens* RATZBURG, Ichn. Forstins., 1, 55; 1844. **Syn. nov.** (after FAHRINGER).

*Alysia stigmatalis* THOMSON, Opusc. Ent., 20, 2289; 1895.

*Aphaereta minuta* (NEES); SZÉPLIGETI: Gen. Ins., 22, 203; 1904.

♂♂: Viewed from above, head generally twice as wide as long, 8:4.5 (Fig. 3). This proportion, however, frequently varies, head being sometimes nearly cubiform, at other times strikingly wide. Base of clypeus rugose, head otherwise smooth and shiny. Hairs of face, clypeus, and mandibles long. Upper edge of mandible (Fig. 11) widely arcuate, median tooth strong. Ocelli situated on corners of an equilateral triangle. Antenna essentially longer than body, number of joints 20 to 22, hairs of several joints long, joints 3—10 gradually shortening (Fig. 15). Head

brownish-black. Mandible rufous-brown, mandibles and joints 1—2 of antenna pale yellow. — Proportion of width of head and thorax 9:5.5 (Fig. 3). Pronotum, mesonotum, scutellum, pleura, and breast smooth and shiny. Dorsal side sparsely hairy. Parapside present at most in traces, anteriorly on mesonotum (Fig. 3). Prescutellar furrow wide, deep, with 3—4 crenulae. Edges generally well discernible on pseudothoracic segment; interstices rugulose, except for two upper (anterior) ones. Furrow (sternauli) of mesopleura wide, ribbed; medial impression toward metapleura large, finely rugulose. Thorax brownish-black. Side of prothorax hyaline, rufous-brown. Tegulae light. Wing hyaline, veins generally well developed. Characteristical features (Fig. 7): great size of wing (of the four home species, this one has the relatively largest wings), shape of radial cell, situation and decurrence as related to each other of basal, radial, transversal, cubital, recurrent, and median veins. Legs normal. Proportion of length of tarsal joints 1—2 as 1:0.6 (Fig. 19). Legs pale yellow, end of legs and tarsi fumous. — Proportion of length of head+thorax and abdomen 1:1 (—1.2), therefore abdomen usually as long as head and thorax together. Tergite 1 rugose, with two ridge-shaped convergent protuberances in anterior third, continuous on side of medially elevated shieldlet. All other tergites and sternites smooth and shiny, sparsely hairy. Ovipositor in lateral view longer than half length of abdomen, but never as long as abdomen (1:0.6—0.7). Tergite 1 brownish-yellow, otherwise abdomen (similarly to head and thorax) brownish-black.

Length: ♀♀: 2—3 mm, average 2.4—2.5 mm. — ♂♂: 2.1—2.8 mm, average 2.2—2.4 mm.

Host: 1. In Hungary, the larvae of flies (Sarcophagidae) breeding in human excrement, as demonstrated by J. B. SZABÓ's experiments (Budapest). 2. The larvae of *Calliphora erythrocephala* MEIGEN (NIXON, 1939:65).

Differentiating characters: 1. Proportion of length of head and thorax (9:5.5). — 2. Length of body. — 3. Proportion of length of head + thorax and abdomen (1:1—1.2). — 4. Shape of mandible. — 5. Development and structure of venation. — 6. Number of antennal joints (20—23). — 7. Deep and wide prescutellar furrow.

Localities within the Carpathian Basin: I/1: Borosjenő (= Ineu), 1 ♀, leg. DIÓSZEGHY. Budapest, Kelenföld, 20 Sept. 1918, netted on alkaline fields, 3 ♀♀, leg. BÍRÓ. Budapest, the Kerepes graveyards, 6 August 1916, 1 ♀, leg. SZÉPLIGETI. Budapest, Rákosszentimre, 15 August to 15 Sept. 1896, 7 ♀♀ and 3 ♂♂, 2 July 1895, 1 ♀, 25 August 1895, 1 ♀, leg. BÍRÓ. Debrecen, 2 Sept. 1914, 1 ♀, leg. BÍRÓ. Kisoroszi, 24 May—11 Sept. 1961, 138 ♀♀, 26 ♂♂, ex pupae Sarcophagidae in faeces hominis, leg. J. B. SZABÓ. Lőrinc, 22 June—25 Sept. 1961, ex pupae Sarcophagidae in faeces hominis, 21 ♀♀, 5 ♂♂, leg. J. B. SZABÓ. Siófok, 1 ♂, leg. SZÉPLIGETI. Szeghalom, 27 June 1894, 1 ♀, leg. KERTÉSZ. Szigethalom, 5 Sept. 1961, 13 ♀♀, 6 ♂♂, leg. J. B. SZABÓ. Szigetszentmiklós, 10—29 Sept. 1911, 3 ♀♀ & 2 ♂♂, leg. BÍRÓ. Vencsellő, 29 July 1921, 1 ♂, leg. HORVÁTH. — II/1: Budakalász, 21 July—25 Sept. 1961, ex pupae Sarcophagidae in faeces hominis, 59 ♀♀, 16 ♂♂, leg. J. B. SZABÓ. Budapest, 8 Sept. 1896 and 17 Sept. 1897, 4 ♂♂, leg. SZÉPLIGETI. Budapest, Diósárok, 18 Sept. 1896, 7 ♀♀, 2 ♂♂, leg. SZÉPLIGETI. Budapest, Hűvösvölgy, 13 Sept. 1927, 1 ♀ retis ope in Quercetis; 1 Oct. 1929, 6 ♀♀ in Quercetis; 8 Oct. 1929, 1 ♀ in Quercetis; 14 May 1931, 2 ♀♀, leg. BÍRÓ. Budapest, Obuda, 18 August 1895, 1 ♀; 15 May 1896, 1 ♂, leg. SZÉPLIGETI. Budapest, Sashegy (= Mt. Sas), 15 August 1926, 1 ♀, leg. BÍRÓ. Etyek, 6 Sept. 1918, 1 ♂, leg. BÍRÓ. Fehérvár, Sept. 1923, 1 ♂, leg. BÍRÓ. Gyenesdiás, 7 August 1910, 1 ♂; 7 Sept., 1 ♀, leg. GYÖRFFY. Pápa, Oct. 1899, 1 ♀; Sept.—Oct. 1900, 3 ♀♀, leg. SZÉPLIGETI. Révfülöp, 26 August 1926, 1 ♂, leg. BÍRÓ. Szentendre, 21—25 July 1961, ex pupae Sarcophagidae in faeces

hominis, 30 ♀♀, leg. J. B. SZABÓ. Tihany, 25 Sept. 1930, in pratis retis ope, 2 ♀♀ and 2 ♂♂, leg. Bíró. Tihany, 12 Oct. 1934, 1 ♀, leg. MIHÁLYI. Tihany, June 1929, 1 ♀, leg. Z.-SEBESS. — II/2: Nagymaros, 24 May 1961, 1 ♀, leg. SZABÓ. Rimaszombat (= Rimavská Sobota), July 1921, 1 ♀, leg. SZABÓ-PATAY. Sátoraljaújhely, 5 Sept. 1892, 1 ♀, leg. SZÉPLIGETI. Vác, 5 August 1923, ripa Danubis in Salicetis, 3 ♀♀, leg. Bíró. Vác, gipsy camp, 4 July—14 Sept., ex pupae Sarcophagidae in faeces hominis, 250 ♀♀, 77 ♂♂, leg. J. B. SZABÓ. Vác, Tudós-domb, 1 August 1926, in Robinietis, 2 ♀♀, leg. Bíró. Vác-Szöd, 30 August 1925, 1 ♀; 26 May 1926, 1 ♀, leg. Bíró. — III/2: Szinna (= Snina), 7 July 1881, 1 ♂, leg. Bíró. — III/5: Dicső-szentmárton (= Tarnaveni), 1 ♀, 1 ♂, leg. CSIKI. — VI/1: Komló, 17 Sept. 1954, netted, 1 ♀, leg. MIHÁLYI. — VI/2: Fonyód, 3 ♀♀, leg. SZÉPLIGETI. — VII: Novi, 12 July 1899, 1 ♀, leg. KERTÉSZ. —

General characterization of its distribution in the Carpathian Basin: on the basis of occurrences and localities, the species can be collected in plain hilly areas. The relatively high number of localities and specimens imply the frequency of the species. The wasp is on the wing from May till beginning of October, being the most frequent in August–September. Range: England, France, Germany, Sweden, Czechoslovakia, Hungary, Roumania, the European Soviet Union.

Remarks: The characteristic features of the species are extremely varying, at least according to the specimens examined. The variability extends to the following characteristics: length of body, proportional measurements as related to each other of several body-parts, venation, sculpture of propodeum. It would be highly interesting to examine methodically the variability of specimens collected in a given geographical unit (space factor), that is, those of generation (time factor). One could possibly establish a certain degree of transition to other allied species.

*Aphaereta minuta* var. *cephalotes* HALIDAY probably does not occur in the Carpathian Basin. Its absence could be explained by NIXON's statement (1939:66), corroborated by STELFOX (1941:14–15), namely that the variety parasitizes the larvae of a fly (Coelopidae) living in rotting seaside sedges.

***Aphaereta minuta* var. *inepta* MORLEY, ♂ novus**

(Fig. 8)

*Aphaereta minuta* var. *inepta* MORLEY, The Entomologist, **66**, 159; 1933: ♀.

Distinguished from the nominate form by the following characters: 1. "... a brachypterous form of this female, differing from the typical one in no way but the alar structure: though the wings are but slightly smaller, their neuration is reduced to the costal margin and median nervure; besides these, only the anal nervure is visible, running up in an even curve through the recurrent to the cubital nervure, which fades just beyond the very short second transverse cubital, whereat the entire radial nervure is obtusely angled" (MORLEY, 1933:159): Fig. 8.

Length of body ♀♀: 1.7–2.5 mm, average 2.2–2.3 mm. — ♂♂: 1.9–2.4 mm, average 1.9–2 mm.

The length of the body is generally smaller than that of the nominate form.

Localities within the Carpathian Basin: I/1: Kisoroszi, 24 May–6 Sept. 1961, 27 ♀♀, 30 ♂♂, leg. J. B. SZABÓ. Lórén, 25 August 1961, 2 ♀♀, leg. J. B. SZABÓ. Szentendre, 21 July–4 Sept. 1961, 5 ♀♀, ex pupae Sarcophagidae in faeces hominis, leg. J. B. SZABÓ. Szigethalom, 5 Sept. 1961, 1 ♀, ex pupae Sarcophagidae in faeces hominis, leg. J. B. SZABÓ. — II/1: Budakalász, 24 August–25 Sept. 1961, 16 ♀♀, 4 ♂♂, ex pupae Sarcophagidae in faeces hominis, 16 ♀♀, 4 ♂♂, leg. J. B. SZABÓ.

Range: Collected hitherto only in England and Hungary.

***Aphaereta tenuicornis* NIXON**

(Figs. 4, 9, 12, 13, 16, 20)

*Aphaereta tenuicornis* NIXON, Proc. R. Ent. Soc., 8 (Ser. B), 63; 1939: ♀♂.

♂♂: When viewed from above, head twice wider than long, 8:3.5 (Fig. 4). Cheeks strikingly protruding. Head smooth and shiny, face and mandible sparsely hairy. Median tooth of mandible of ♀♀ blunt (Fig. 12), that of ♂♂ sharp, resembling *A. minuta* in this respect (Fig. 13). Base of triangle construed by ocelli longer than sides. Antennae longer than body, 23–25-jointed (rarely 21–22). Long and thin 4–8 antennal joints vary striking, proportion of their lengths being 12:10:8:8.5:6 (Fig. 16). All antennal joints hairy. Head brownish-black, mandible yellow. Antennal joints 1–3 yellow, 4–7 gradually darkening to brown, other joints blackish-brown. — Proportion of length of head and thorax 8:5 (Fig. 4). Thorax sparsely hairy. Except for metathorax and pseudothoracic segment, thorax smooth and shiny. Parapside usually present up to middle of mesonotum, yet sometimes (♂♂) confined to anterior margin of mesonotum. A punctiform impression in front of prescutellar furrow (where traces of two parapsides meet). Prescutellar furrow wide, of medium depth, with 2–3 crenulae. Metanotum finely rugose. Propodeum more or less showing edges, with adjoining areas finely rugulose. Medial impression punctiform on side toward mesopleura. Thorax brownish-black. Tegula pale. Wing hyaline, normal. Veins well developed. Characteristic features (Fig. 9): situation and decurrence as related to each other of all veins, large second cubital cell. Legs normal, yellow. Proportion of tarsal joints of third leg 1:0.56 (Fig. 20). — Head and thorax hardly longer than, or as long as, abdomen (1.1–1:1). Tergite 1 finely and lineately rugose, margin of protruding shieldlet edge-like. All other tergites and sternites smooth, shiny, sparsely hairy. Ovipositor in lateral view as long as abdomen. Abdomen brownish-black. Tergite 1 (♀♀) yellowish or tergites 1–2(–3) deep brown (♂♂).

Length: 2.4–2.6 mm.

Host unknown.

Differentiating characters: 1. Length of body. — 2. Proportion of width of head and thorax (8:3.5): Fig. 4. — 3. Long and thin antennal joints 4–8 (Fig. 16). — 4. Venation of wing (Fig. 9). — 5. Long ovipositor.

Localities within the Carpathian Basin: I/1: Borosjenő, 1 ♀, leg. Diószeghy. Debrecen, 7 May 1927, 1 ♂, leg. ? Helvécia, 19 May 1898, 1 ♂, leg. SZÉPLIGETI. Pörboly, Gemenci-erdő (= Forest Gemence), 18 May 1957, 1 ♂, leg. MIHÁLYI. Szigetszentmiklós, 21 Sept. 1911, 1 ♀, leg. BÍRÓ. Tompa, 28 June 1956, 1 ♂, leg. BAJÁRI. Túrkeve, Sept. 1933, 1 ♂, leg. ? — I/2: Kovácspatak (= Kovačov), 16 May 1912, 1 ♂, leg. BÍRÓ. — II/1: Bakonypölöske, Kupi-erdő (= Forest Kup), 29 May 1962, 1 ♂, leg. PAPP. Budakalász, 24 August to 12 Sept. 1961, 1 ♂, leg. J. B. SZABÓ. Budapest, Hűvösvölgy, 8 Oct. 1929, 1 ♀ retis ope in Quercetis; 14 May 1931, 1 ♂, leg. BÍRÓ. Budapest, Népliget, 10 July 1919, 1 ♂, leg. BÍRÓ. Révfölöp, 26 August 1926, 1 ♂, leg. BÍRÓ. — II/2: Letkés, 11 July 1920, in pratis ripae fluvii Ipoly, 1 ♂, leg. BÍRÓ. — VI/2: Kisbalaton, Diás-sziget (= Insel Diás), 20 May 1950, 1 ♂, leg. KAKASSNÉ.

Range: Ireland, England, Germany, Czechoslovakia, Hungary. New for the faunas of the latter two countries.



## Summary

During the exploration of the Hungarian synanthrop and synbovin flies — carried out by the Institute of Public Health — a lot of Braconid specimens were bred which belong to the genus *Aphaereta* FÖRSTER. On the base of the bred material and the collection of the Hungarian Natural History Museum it was necessary to elaborate the *Aphaereta* FÖRSTER species of the Carpathian Basin from the viewpoint of taxonomy and zoogeography. After this elaboration it is possible to investigate the detailed ecology of that species. As a result of the taxonomical work we now know 4 *Aphaereta* FÖRSTER species (*Aphaereta brevis* TOBIAS, *Aphaereta difficilis* NIXON, *Aphaereta minuta* NEES, and *Aphaereta tenuicornis* NIXON) in the Carpathian Basin, but this number will increase in the future investigation. The monography contains the characterization of the genus *Aphaereta* FÖRSTER, the key of the four species, a minute description of the species, and the enumeration of the localities of the species in the Carpathian Basin.

## Zusammenfassung

Im Verlauf der Untersuchung der synanthropen und synbovinen Fliegen in Ungarn durch das Gesundheitsinstitut wurde eine große Anzahl von Braconiden gezüchtet, die zur Gattung *Aphaereta* FÖRSTER gehören. Auf Grund dieses Zuchtmaterials und der Sammlung des Ungarischen Naturwissenschaftlichen Museums war es notwendig, die Arten von *Aphaereta* FÖRSTER im Karpathenbecken unter dem Gesichtspunkt der Taxonomie und Zoogeographie auszuwerten. Diese Auswertung ermöglicht eine eingehende Untersuchung der Ökologie dieser Arten. Als Ergebnis dieser taxonomischen Arbeiten sind jetzt 4 Arten *Aphaereta* FÖRSTER im Karpathenbecken bekannt, nämlich *Aphaereta brevis* TOBIAS, *Aphaereta difficilis* NIXON, *Aphaereta minuta* NEES und *Aphaereta tenuicornis* NIXON. Durch weitere Untersuchungen wird sich diese Zahl noch erhöhen. Die vorliegende Monographie enthält eine Charakterisierung der Gattung *Aphaereta* FÖRSTER, eine Bestimmungstabelle der vier Arten, eine genaue Beschreibung der Arten und eine Aufzählung der Standorte der Arten im Karpathenbecken.

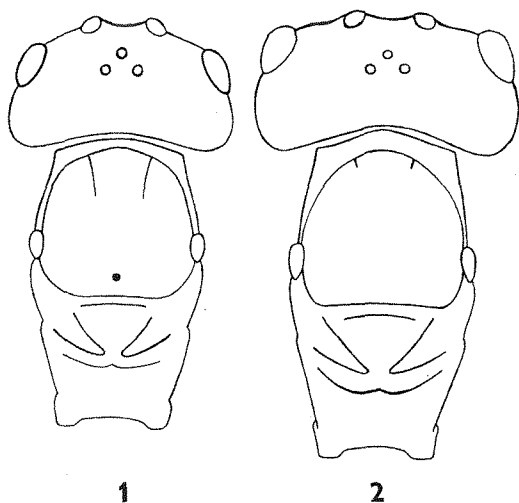
## Резюме

В ходе исследования Институтom здравоохранения синантропных и синбовинных мух Венгрии было выведено большое число Braconidae, которые относятся к роду *Aphaereta* FÖRSTER. На основании полученного материала и коллекции Венгерского музея истории природы стало необходимым оценить виды *Aphaereta* FÖRSTER Карпатского бассейна с точки зрения таксономии и зоогеографии. Эта оценка дает возможность подробного исследования экологии этих видов. В результате этих таксономических работ для Карпатского бассейна в настоящее время известно 4 вида *Aphaereta* FÖRSTER, а именно: *Aphaereta brevis* TOBIAS, *Aphaereta difficilis* NIXON, *Aphaereta minuta* NEES и *Aphaereta tenuicornis* NIXON. В ходе дальнейших исследований это число еще увеличится. Предлагаемая монография содержит характеристику рода *Aphaereta* FÖRSTER, классификационную таблицу четырех видов, точное описание видов и перечисление мест обитания видов в Карпатском бассейне.

## References

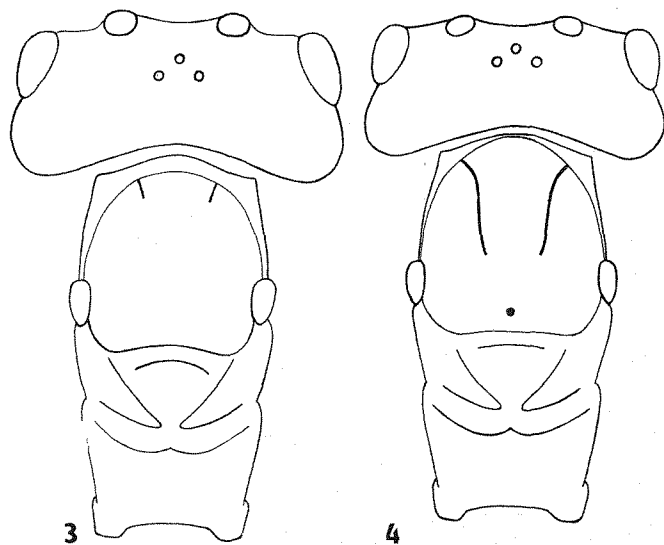
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### Plate 1

Figs. 1—4. Head and thorax: Fig. 1, *Aphaereta brevis* TOBIAS, ♀: proportion of width of head and thorax as 6:4. — Fig. 2. *Aphaereta difficilis* NIXON, ♀: proportion of width of head and thorax as 7:4.5. — Fig. 3. *Aphaereta minuta* (NEES), ♀: proportion of width of head and thorax as 9:5.5. — Fig. 4. *Aphaereta tenuicornis* NIXON, ♀: proportion of width of head and thorax as 8:5



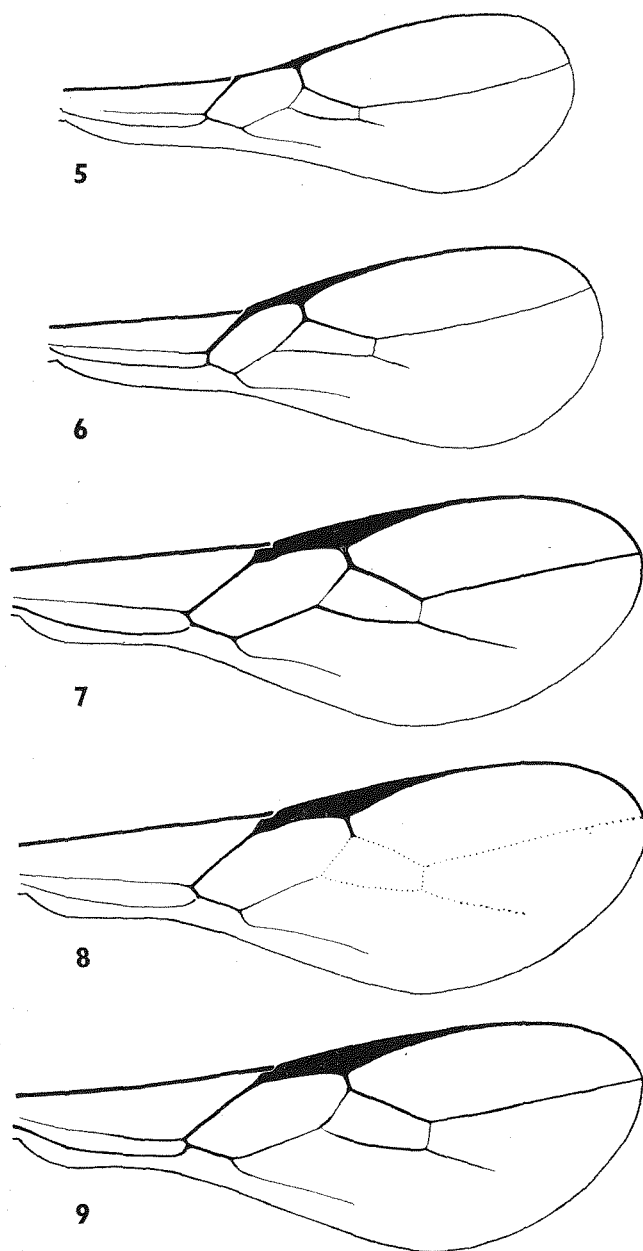
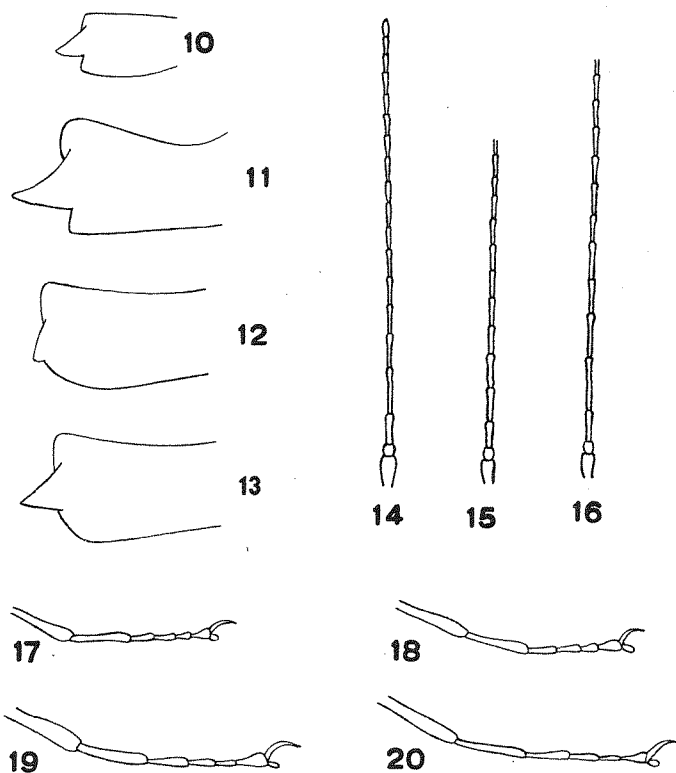


Plate 2

Figs. 5—9. Right upper wing: Fig. 5. *Aphaereta brevis* TOBIAS, ♀♂. — Fig. 6. *Aphaereta difficilis* NIXON, ♀♂. — Fig. 7. *Aphaereta minuta* (NEES), ♀♂. — Fig. 8. *Aphaereta minuta* var. *inepta* MORLEY, ♀♂. — Fig. 9. *Aphaereta tenuicornis* NIXON, ♀♂



### Plate 3

Figs. 10–13. Left mandible: Fig. 10. *Aphaereta brevis* TOBIAS, ♀♂. — Fig. 11. *Aphaereta minuta* (NEES), ♀♂. — Fig. 12. *Aphaereta tenuicornis* NIXON, ♀. — Fig. 13. *Aphaereta tenuicornis* NIXON, ♂. —

Figs. 14–16. Antenna: Fig. 14. *Aphaereta brevis* TOBIAS, ♀♂. — Fig. 15. *Aphaereta minuta* (NEES), ♀♂ (first 13 joints). — Fig. 16. *Aphaereta tenuicornis* NIXON, ♀♂ (first 13 joints). —

Figs. 17–20. Tarsal joints of third leg: Fig. 17. *Aphaereta brevis* TOBIAS, ♀♂ (proportion of joints 1–2 as 1:0.4). — Fig. 18. *Aphaereta difficilis* NIXON, ♀♂ (proportion of joints 1–2 as 1:0.5). — Fig. 19. *Aphaereta minuta* (NEES), ♀♂ (proportion of joints 1–2 as 1:0.6). — Fig. 20. *Aphaereta tenuicornis* NIXON, ♀♂ (proportion of joints 1–2 as 1:0.56)