

**A survey of the European species of *Apanteles* Först.
(Hymenoptera, Braconidae: Microgastrinae),
VIII. The *metacarpalis*-, *formosus*-, *popularis*- and *suevus*-group**

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Abstract — Key to the species of *metacarpalis*-, *formosus*-, *popularis*- and *suevus*-group, comprising 41 European and 10 extra-European (9 eastern Palaearctic and 1 Nearctic) totalling 51 *Apanteles* species, is given. Three species, *Apanteles delitutus* sp. n. (within the *popularis*-group), *A. prinoptus* sp. n. and *A. quadrifacies* PAPP (originally described as *A. metacarpalis* var. *quadrifacies* PAPP, 1973) (within the *metacarpalis*-group), are new to science, their description is presented. Original type-examinations revealed the following synonymies: 1. *A. andromica* NIXON, 1976 = *A. mihalyii* Papp, 1973, partim. 2. *A. caberae* MARSHALL, 1885 = *A. mihalyii* Papp, 1973, syn. n. 3. *A. mycale* NIXON, 1972 = *A. coniferoides* Papp, 1972, syn. n.; = *A. trogos* Nixon, 1973, syn. n. 4. *A. peisonis* FISCHER, 1965 = *A. subfirmus* Abdinbekova, 1969, syn. n. 5. *A. sibyllarum* WILKINSON, 1936, ?jun. syn. ? = *A. halisidotae* Muesebeck, 1931, ?sen. syn. 6. *A. suevus* REINHARD, 1880 = *A. brevisternis* Tobias, 1964, syn. n.; = *A. minutus* Szépligeti, 1896, syn. n.; = *A. sesostris* Nixon, 1976, syn. n.; = *susplicax* Tobias, 1964, syn. n. All species are enumerated in alphabetical order within their respective species-group. With 125 figures.

The *METACARPALIS*-group

The following features characterize the species of the *metacarpalis*-group: 1. Hypopygium weakly sclerotized, always with a medio-longitudinal infold, and usually with more or less lateral creases. 2. First tergite narrowing from base to apex, second tergite usually subtriangular (Figs. 13 26, 62-63). 3. Metacarp variable in length, i.e. shorter than to distinctly longer than pterostigma (Figs. 5, 25, 60, 72). 4. Head and mesonotum either shining or with satin to pruinose sheen. 5. Anal vein of hind wing usually short, as long as one-fifth to one-fourth of fold of vannal lobe.

The species-group comprises 23 species in Europe, and further 3 species in the eastern Palaearctic Region.

The hosts of the species of the *metacarpalis*-group cover the lepidopterous families Coleophoridae, Cosmopterygidae, Gelechiidae, Gracillariidae, Leucopteridae, Tortricidae and Yponomeutidae.

KEY TO THE SPECIES OF THE *METACARPALIS*-GROUP

Females

- 1 (4) Head in dorsal view unusually large, more or less broader than mesonotum between tegulae (Figs. 1, 4). If, rarely, head/mesonotum measurements are transitional, then between clypeus and mandible a distinct elliptic split (Fig. 2). Penultimate 3-4 flagellar joints cubic.
- 2 (3) Eye in dorsal view as long as temple, head behind eyes slightly broadening, rounded (Fig. 1). *d2* only somewhat longer than *d1*, pterostigma issuing radial vein distal from its middle (c.f. Fig. 60). Between clypeus and mandible a narrowing elliptic split, i.e. labrum deeply retracted (Fig. 2). Head rarely less distinctly broader than

mesonotum between tegulae (cf. Fig. 59). Middle and hind tarsi brownish, latter sometimes rather blackish fumous. ♀♂: 3–3.8(–4) mm. — Hungary, Germany, USSR (European part, Azerbaïdžhan). (= *A. metacarpalis* THOMSON sensu TOBIAS, 1976)

A. prinoptus sp. n.

- 3 (2) Eye in dorsal view one-fourth to one-third longer than temple, head behind eyes not broadening, rounded (Fig. 4). *d2* nearly twice to almost thrice longer than *d1*, pterostigma issuing radial vein from its middle (Fig. 5). Between clypeus and mandible no split as usually, i.e. labrum not retracted. Head always distinctly broader than mesonotum between tegulae (Fig. 4, see arrows). Middle and hind tarsi yellow(ish) to dirty yellowish, each tarsal joint usually with apical infusate pattern. ♀: 2.5–2.8 mm, ♂: 2.3–2.5 mm. — Algeria, Israel; supposedly a Mediterranean species

A. olivierellae WILKINSON, 1936 (!)*

- 4 (1) Head in dorsal view not large, usual in size, not broader than mesonotum between tegulae (Fig. 59). Penultimate 3–4 joints of flagellum more or less longer than broad, in a few species joints 2–3 cubic.
- 5 (30) Metacarp very short, distinctly shorter than pterostigma, distance between distal end of metacarp and that of radial vein either somewhat longer than or at most as long as metacarp itself (Figs. 6, 9, 12, 17, 25, 29, 60).
- 6 (17) First tergite conspicuously broad at its base, its length at most 1.5–1.6 times, and usually 1.4(–1.5) times, as long as broad basally (Figs. 8, 13, 62). Ovipositor sheath** long, in lateral view at least as long as hind tarsal joints 1–2, and usually as long as tarsal joints 1–3.
- 7 (8) Posterior or declivous half of propodeum, first tergite apically and second tergite entirely rugose-rugulose. Proximal joints of flagellum relatively long, its 10th joint twice as long as broad, penultimate three joints of antenna cubic. Mesosoma in lateral view more or less elongated, distinctly one-third to almost twice longer than high. Tegula yellow. ♀: 3.5 mm. — Austria, Romania, USSR: Azerbaïdžhan. (= *subfirmus* ABDINBEKOVA, 1969, **syn. n.**)

A. peisonis FISCHER, 1965 (!)

- 8 (7) Propodeum and tergites 1–2 smooth, polished; at most around lunule of propodeum with very short rugulae and first tergite distal-laterally uneven or chagreened. 10th joint of flagellum either longer or shorter than that of *A. peisonis*.
- 9 (12) Second tergite more transverse, 5–6(–6.5) times wider behind than long medially, third tergite distinctly twice longer than second tergite (Fig. 8). *d1* always shorter than *d2*, i.e. nervulus issuing from proximal third to fourth of *d*.
- 10 (11) *r1* always shorter than *cuqul* and issuing hardly distally from stigma (Fig. 6). *d2* 1.7–2 times as long as *d1*, i.e. *d1* in comparison with that of next species shorter. Penultimate joint of antenna subcubic, minutely longer than broad. Ovipositor sheath in lateral view wide, as wide as length of four joints of hind tarsus (Fig. 7). Pterostigma opaque brown, with a basal yellow spot (Fig. 6). Wings hyaline to subhyaline. ♀♂: 2.5–3.3 mm. — Turkmenia and Kazakhstan (USSR), Mongolia

A. floralis TOBIAS, 1966 (!)

- 11 (10) *r1* always distinctly longer than *cuqul* and issuing clearly distally from stigma (Fig. 9). *d2* twice as long as *d1*, i.e. *d1* in comparison to previous species shorter. Penultimate joint of antenna 1.8–2 times longer than broad. Ovipositor sheath in lateral view

* (!) = I have studied either the holotype or paratype(s).

(!) = I have studied authenticated specimen(s), i.e. specimen(s) named by Marshall, Nixon, Reinhard, Telenga Tobias, Wilkinson (Palaeartic Region) and Marsh, Mason, Muesebeck, Watanabe (Nearctic or East Palaeartic Region).

** "Ovipositor sheath" means always the hairy and more or less in lateral view widening part of the sheath.

narrow, half to two-thirds as wide as length of four joints of hind tarsus (Fig. 10). Stigma entirely blackish brown (Fig. 9). Wings fumous. ♀♂: 2.5–3 mm. — USSR: Azerbaidzhan (Nachitshevskaya)

A. znoikoi TOBIAS, 1976 (!)

12 (9) Second tergite less transverse, 3–3.5 times wider behind than long medially, third tergite 1.5–1.8(–1.9) times longer than second tergite (Fig. 13). *d1* and *d2* either equal in length or *d2* somewhat longer than *d1* (Fig. 60), i.e. nervulus issuing from about middle of *d*.

13 (14) Mesonotum mainly on its posterior half to two-thirds and scutellum with somewhat unusually long, dense and silvery pubescence. Meso-, metapleuron and propodeum of males also somewhat more pubescent. Radial vein issuing distinctly distally from pterostigma, metacarp only somewhat longer than half pterostigma (Fig. 11). Penultimate joint of antenna either cubic or only minutely longer than broad. Ovipositor sheath in lateral view as long as hind basitarsus. Tegula and legs yellow, coxae black(ish), femora sometimes with more or less blackish pattern. Pterostigma straw yellow, metacarp brown, veins whitish. ♀♂: 3 mm. — USSR: Kazakhstan, Turkmenia, Uzbekistan

A. pilosus TELENGA, 1955 (!)

14 (13) Mesosoma with usual pubescence. Radial vein issuing less distally from stigma, metacarp distinctly longer than half stigma (Figs. 12, 60–61).

15 (16) Setae of median and usually of submedian cell sparse, setae separated from each other by about their own length (Fig. 15). Temple in dorsal view, and in comparison to the next species, less rounded (Fig. 14). In lateral view ovipositor sheath as long as hind tarsal joints 1–2 to 1–3. First tergite broad at base, its basal width twice greater than apical width. Metacarp always shorter than stigma (Fig. 12). Penultimate joint of antenna either cubic or minutely longer than broad. Tegula yellow to bright yellow. Hind tibia yellow to deep yellow, apically darkening. Pterostigma brown to opaque brown with a small, more or less distinct basal and yellow(ish) spot. Veins weakly pigmented. ♀♂: usually 2.8–3 mm, extremely 2.1–3.5 mm. — USSR (Soviet Middle Asia, Kazakhstan, Azerbaidzhan, Armenia, European part), Mongolia, Hungary and France

A. firmus TELENGA, 1949 (!!)*

— Femora and tibiae yellow to reddish yellow (in nominate form femora 2–3 black to blackish)

var. rufipes TELENGA, 1955

16 (15) Setae of median and submedian cells dense as usually, separated from each other by distinctly less than their own length (Fig. 24). Temple in dorsal view, and in comparison to previous species, more rounded (Fig. 59). In lateral view ovipositor sheath hardly longer than hind basitarsus. First tergite less broad at base, its basal width 1.5 times greater than apical width (Fig. 62), or more narrowing apically similarly to *A. firmus* TEL. (Fig. 63). Metacarp variable in length, usually about as long as pterostigma, but frequently either somewhat shorter or longer than pterostigma (Figs. 60–61). Penultimate joint of antenna about one-quarter longer than broad. Tegula black to blackish brown. For further details see at couplet 50 (51)

A. metacarpalis THOMSON, 1895 (!!)

17 (6) First tergite less broad at its base, its length twice as long as its basal width (Figs. 20, 23, 26, 30, 32). Ovipositor sheath short, in lateral view at most as long as first joint of hind tarsus.

* My synonymization of this name with *A. metacarpalis* THOMSON (PAPP 1971) was a misinterpretation of the valid specific features; *A. firmus* TELENGA and *A. metacarpalis* THOMSON represent two distinct species.

18 (19) Eye conspicuously large, in dorsal view temple strongly constricted (Fig. 16). Face less transverse, together with clypeus only somewhat lower than wide, inner margin of eyes parallel. Head in dorsal view 2.1–2.2 times broader than long (Fig. 16). Metacarp very short (Fig. 17). Penultimate joint of antenna 1.2–1.4 times as long as broad. Prescutellar furrow relatively deep and finely crenulated. Tegula yellow, stigma opaque yellow. Head and mesosoma black, metasoma rusty brown. Legs yellow, hind coxa brownish. Wings hyaline. ♀♂: 2.2–2.6 mm. — Turkmenia in the USSR

A. oculatus TOBIAS, 1966 (!)

19 (18) Eye usual in size, in dorsal view temple rounded (Fig. 27); face distinctly transverse. Head in dorsal view at most twice broader than long (Fig. 27).

20 (21) Mesosoma in lateral view dorso-ventrally flattened, twice longer than high (Fig. 18). Ovipositor sheath in lateral view short and downcurved, hypopygium pointed (Fig. 19). Median field of second tergite relatively large (Fig. 20). For distal part of fore wing see Fig. 12. Tegula yellow. Stigma opaque brown with small yellow(ish) basal spot. Metacarp, *r1+cuqul* brownish and further veins faintly pigmented. ♀: 2.6–2.8 mm, ♂: 2.3–2.6 mm. — Mongolia

A. extentus PAPP, 1977 (!!)

21 (20) Mesosoma in lateral view usual in form, about one-and-one-half to one-and-one-third longer than high. Ovipositor sheath in lateral view not downcurved (Figs. 21, 28, 31, 33). Median field of second tergite relatively less large (Figs. 23, 26, 30, 32).

22 (27) Median field of second tergite conspicuously small (Figs. 23, 26, 30).

23 (26) Pterostigma yellow to bright yellow, metacarp brownish. Hypopygium pointed though not projected spinuliform (Figs. 28, 31).

24 (25) Body, in comparison with that of next species, strong. Penultimate joint of antenna cubic. Pterostigma (2.7–)2.8 times longer than wide, emitting *r1* distally from its middle, *D* less wide, 1.2 times wider than high (Fig. 25). Lateral sulcus of second tergite less diverging posteriorly, first tergite not gradually attenuating from base to apex (Fig. 26). Ovipositor sheath in lateral view wide, apically rather truncate (Fig. 28). Tegula brown. Wings faintly brownish (Italian forms) or hyaline (Mongolian forms). ♀♂: 2.1–2.5 mm. — Italy, Mongolia

A. pelopea NIXON, 1973 (!!)

25 (24) Body, in comparison with that of previous species, less strong. Penultimate joint of antenna 1.5 times longer than broad. Pterostigma 2.6 times longer than wide, emitting *r1* from its middle, *D* wide, 1.35 times wider than high (Fig. 29). Lateral sulcus of second tergite more diverging posteriorly, first tergite gradually attenuating from base to apex (Fig. 30). Ovipositor sheath in lateral view less wide, apically somewhat pointed (Fig. 31). Tegula yellow. Wings hyaline. ♀♂: 1.9–2 mm. — Mongolia

A. gobicus PAPP, 1976 (!!)

26 (23) Pterostigma and metacarp opaque brown to brown. Hypopygium projected apically spinuliform (Fig. 21). *r1* very short, *cuqul* 2.5 times as long as *r1* (Fig. 22). Penultimate 4–5 joints of antenna subcubic, i.e. minutely longer than broad. Ovipositor sheath in lateral view somewhat downcurved (Fig. 21). First tergite gradually attenuating from base to apex (Fig. 23). Pterostigma opaque brown with a pale basal spot. ♀: 1.9 mm. — Mongolia

A. acutus PAPP, 1971 (!!)

27 (22) Median field of second tergite usual in size within species-group (Fig. 32).

28 (29) Propodeum entirely polished. Penultimate 3–5 joints of antenna either minutely longer than broad or cubic. Metacarp distinctly shorter than stigma. First tergite

relatively strongly narrowing posteriorly (Fig. 32). Ovipositor sheath in lateral view at most as long as hind basitarsus. Head in dorsal view distinctly twice broader than long. Nervellus straight. Vertex, mesonotum and scutellum characteristically pruinose. ♀♂: 1.7–2.3 mm. See also couplet 51 (50). — Kazakhstan (USSR), Mongolia

A. ingenuus TOBIAS, 1964 (!)

- 29 (28) Propodeum anteriorly or above polished, posteriorly or below rugulose. Penultimate 6–7 joints of antenna cubic. In further features similar to previous species. ♀♂: 2–2.2 mm. — Bulgaria

A. brevivalvatus BALEVSKI et TOBIAS, 1980*

- 30 (5) Metacarp not short, at least as long as or longer than pterostigma; distance between distal end of metacarp and that of radial vein as long as or shorter than metacarp itself (Figs. 35, 40, 49, 50, 55, 56, 60–61, 68, 72).
- 31 (52) Metacarp short, about as long as pterostigma; metacarp usually more or less shorter than its distance from distal end of radial vein (Figs. 35, 40, 50, 55, 60–61). Mesonotum subpunctate to superficially punctulate, punctation more or less confluent.
- 32 (37) Flageller joints 15–17 cubic, in dorsal view as long as broad, at most and rather exceptionally 15th joint (very) slightly longer.
- 33 (36) Pterostigma dark brown to blackish. Ovipositor sheath in lateral view as long as half to two-thirds of hind tibia.
- 34 (35) Head in dorsal view behind eyes moderately rounded, temple as long as or slightly longer than eye (Fig. 34). Second tergite twice wider behind than long medially, first tergite slightly less narrowing (cf. Figs. 62–63). Pterostigma relatively large, its inner margin close proximally from *r1* nearly parallel with outer margin of pterostigma, *r1* distinctly shorter than *cuqul* (Fig. 60). Hind claw below without spinule. Basitarsus of hind leg twice longer than second tarsal joint. Tegula rusty or brown to dark brown. ♀♂: 3–3.4 mm. — Hungary (= *A. metacarpalis* var. *quadri-facies* PAPP, 1973)

A. quadrifacies PAPP, 1973 (!)**

- 35 (34) Head in dorsal view behind eyes more rounded, temple shorter than eye (Fig. 38). Second tergite thrice wider behind than long medially, first tergite slightly more narrowing (Fig. 39). Pterostigma usual in size, its inner margin close proximally from *r1* not parallel with outer margin of pterostigma, *r1* somewhat shorter than *cuqul* (Fig. 40). Hind claw below with two or three spinules (Fig. 41). Basitarsus of hind leg 2.2(–2.3) times longer than second tarsal joint. Tegula black. ♀♂: 2.8–3 mm. — England, Denmark, North Italy, Germany, Hungary, Bulgaria, Greece, Turkey

A. atreus NIXON, 1973 (!)

- 36 (33) Pterostigma bright yellow. Ovipositor sheath in lateral view as long as hind tibia. Mesonotum densely punctate, dull. First tergite moderately narrowing behind, second tergite half as long as third tergite. ♀: 2.5 mm, ♂: 2.3 mm. — Armenia (USSR)

A. verae TOBIAS, 1976***

* I know this species from its original description (BALEVSKI & TOBIAS 1980) which is rather less matching with the requirements to separate it from *A. ingenuus* TOBIAS. The available description insinuate me to indicate its possible identity with *A. ingenuus* TOBIAS.

** *A. quadrifacies* PAPP is very near to and closely allied with *A. metacarpalis* THOMSON. The distinctive features between the two species are tabulated at the end of the description of the first taxon, see p. 000.

*** My knowledge of this species is restricted to its original description (TOBIAS 1976). A proper deliberation of its arrangement in the species-group system is hardly to be achieved owing its inadequate characterization. The definite taxonomical placement of the species in question requires further studies. Besides the *metacarpalis*-group the species-groups *laspeyresella*, *lineipes* and *circumscriptus* also may be considered as likely candidates to accommodate this species.

- 37 (32) Flagellar joints 15–17 at most subcubic, usually 15–16th joints distinctly longer than broad, 17th joint less longer.
- 38 (39) Ovipositor sheath in lateral view conspicuously wide, as wide as length of second joint of hind tarsus; its length also unusual for species-group, i.e. as long as hind tibia or somewhat shorter (Fig. 43). Tergites 1–2 very similar to that of *A. metacarpalis* THOMSON (cf. Fig. 62). Legs blackish; apex of fore femur, entire fore tibia and base of tibiae 2–3 yellowish. Wings either fumous or hyaline, venation also either brownish pigmented or whitish and only *r1+cuqul* pigmented. In general habitus like *A. metacarpalis* THOMSON. ♀♂: 2.2–3 mm. — USSR (Armenia, Krasnodarsk), Turkey, Sweden

A. aragatzi TOBIAS, 1976

- 39 (38) Ovipositor sheath in lateral view usual in width, distinctly less wide than length of second joint of hind tarsus; its length at most two-thirds of hind tibia (Figs. 47, 51, 58, 65).
- 40 (41) Penultimate three joints of antenna unusual in length: 15th joint twice, 16th joint 1.3–1.45 times and 17th joint subcubic, i.e. 1.2 times longer than broad (Fig. 44). Ocelli relatively large, distance between fore and a hind ocelli about as long as diameter of an ocellus. Head behind eyes rounded (Fig. 45). First tergite almost evenly attenuating from base to apex, second tergite triangular (Fig. 46). *r1* and *cuqul* meeting each other rather angularly. Pterostigma opaque brown, with an effaced pale basal spot. ♀: 2.5–3 mm. — England

A. chrysis NIXON, 1973 (!)

- 41 (40) Penultimate three joints of antenna different in measurements, gradually shortening distally. Ocelli usually smaller, distance between fore and a hind ocellus distinctly longer than diameter of an ocellus.
- 42 (43) Tegula yellow. First tergite polished. Mesonotum shiny with superficial punctation. First tergite gradually narrowing posteriorly, second tergite transverse, third tergite almost twice longer than second tergite (Fig. 48). Hind tibial spurs equal in length. Ovipositor sheath widening apically (Fig. 47). *r1* longer than *cuqul* (Fig. 49). Light pattern of legs pale yellow. Pterostigma opaque brown, somewhat paler basally and apically. A member of the *lineipes*-group with some features resembling of *metacarpalis*-group, e.g. fringeless vannal lobe, form of first tergite. ♀♂: 2.5–2.8 mm. — Germany, France, England

[**A. laevisimus** (RATZBURG, 1848) (!)]

- 43 (42) Tegula black. First tergite not polished, dull to shiny with more or less sculpture.
- 44 (45) Mesosoma elongated, in lateral view 1.5 times longer than high. Mesonotum with dense and fine punctation, interspaces dull. Discoidal cell wide (Fig. 50, see arrows), 1.3–1.4 times wider than high; pterostigma issuing radial vein distinctly distally from its middle. Hypopygium in lateral view pointed spinuliform, ovipositor sheath as long as hind tarsal joints 3–4 (Fig. 51). Second tergite high triangle in outline, its hind width twice greater than median length, first tergite corresponding to that characteristic for species-group (Fig. 52). Wings subhyaline to faintly fumous. Pterostigma greyish brown with a small pale basal spot. ♀♂: 2.8–3 mm. — Hungary

A. szelenyii PAPP, 1972 (!)

- Mesosoma also elongated, however, metacarp shorter than pterostigma, penultimate three joints of antenna subcubic to cubic, ovipositor sheath as long as hind basitarsus. For further details see at couplet 28 (29)

A. ingenuus TOBIAS, 1964 (!)

- 45 (44) Mesosoma not elongated, in lateral view 1.3–1.4 times longer than high. Discoidal cell less wide, usually 1.1–1.2 times wider than high (Fig. 60, see arrows).

46 (47) Third femur flattened, 2.7–2.8(–3) times as long as broad (Fig. 53). Face trapeziform, distinctly 1.3 times wider than high, inner margin of eyes converging below (Fig. 54). *r1* arising from middle or slightly distally from middle of pterostigma (Fig. 55). Outer spur of hind tibia somewhat though distinctly longer than inner spur. Ovipositor sheath in lateral view as long as hind tarsal joints 1 to 1–2. Wings subfumous. ♀♂: 2–2.5 mm. — Hungary, Yugoslavia, Turkey, Crete, Canary Islands

A. bajariae PAPP, 1975 (!!)

47 (46) Third femur not flattened, 3–3.5 times as long as broad (Fig. 64). Face less trapeziform to transverse, 1.5–1.8 times wider than high, inner margin of eye parallel-subparallel (Fig. 66).

48 (49) Metacarp as long as Pterostigma, *R* somewhat shortened or radial vein only approaching tip of wing; distance between distal end of metacarp and that of radial vein one-fifth as long as metacarp itself; *r1* as long as *cuqul* (Fig. 56). Three penultimate joints of antenna 1.5–1.6 times longer than broad. Outer side of hind tibia with two kinds of spinules situated rather on its distal half (Fig. 57). Ovipositor sheath in lateral view widening posteriorly and somewhat downcurved apically (Fig. 58). Pterostigma dark to opaque brown. Wings subhyaline-subfumous. ♀♂: 2.2–2.4 mm. — England, Austria, Greece

A. myron NIXON, 1973 (!!)

— Metacarp and radial vein similar to *A. myron* (Fig. 87, in Papp 1979), however, second tergite transverse (and not triangular, Fig. 88 l.c.), ovipositor sheath in lateral view (Fig. 89 l.c.) posteriorly less widening and almost straight. Member of the *laevigatus*-group with a few transitional features towards the *metacarpalis*-group. For further details see couplet 58 (53)

[**A. mycale** NIXON, 1972 (!!)]

49 (48) Metacarp either as long as pterostigma or somewhat shorter, *R* not shortened or radial vein reaching tip of wing; distance between distal end of metacarp and that of radial vein equal to length of metacarp itself, minute deviation possible (Figs. 60–61, 68). *r1*, corresponding to the characteristic of species-group, shorter than *cuqul* (Figs. 60–61, 68).

50 (51) Body, in comparison to that of next species, stronger and longer. Prescutellar furrow always distinct as a linear depression. First tergite rather subparallel-sided and apically narrowing (Figs. 62–63). Pterostigma less triangular, i.e. its proximo-inner side more or less arched, *cuqul* about 1.5 times longer than *r1* (Figs. 60–61). Ovipositor sheath in lateral view more or less widening posteriorly (Fig. 65). Basal spot of stigma usually distinct and pale to straw yellow. ♀♂: (2.8–)3.–3.5 mm. See also at couplet 16 (15). — In the western Palearctic Region a rather frequent species, eastwards distributed as far as Azerbaidzhan in the USSR and Mongolia

A. metacarpalis THOMSON, 1895 (!!)

51 (50) Body, in comparison to that of previous species, less strong and less long. Prescutellar furrow indistinct. First tergite attenuating almost evenly from base to apex (Fig. 69). Pterostigma triangular, i.e. its proximo-inner side straight (Fig. 68). Ovipositor sheath in lateral view not widening posteriorly (Fig. 70). Basal spot of pterostigma faint to indistinct. ♀♂: 2–2.5 mm. — Mongolia, Turkey, Bulgaria, Hungary, Germany, France (? = *frater* TOBIAS, 1976)*

A. ingenuoides PAPP, 1971 (!!)

* The original description of this species, *A. frater* TOBIAS, is relatively short, however, the expounded specific features decidedly suggest its identity with my species in question. An authentic synonymization of the two names requires further studies.

— Metacarp shorter than pterostigma, exceptionally approaching its length. Mesonotum pruinose to dull (and not shiny or subshiny). First tergite less narrowing apically (Fig. 32). For further details see at couplet 28 (29)

A. ingenuus TOBIAS, 1964 (!!)

- 52 (31) Metacarp long to very long, distinctly longer than pterostigma, and distinctly 4–6 times longer than its distance from distal end of radial vein (Fig. 72). Mesonotum regularly and closely punctate, punctation rather not confluent.
- 53 (58) Head in dorsal view distinctly twice broader than long, (2–2.1 : 1). Fore wing usual in size, i.e. not narrower than usually; discoidal cell as wide as high or indistinctly wider.
- 54 (55) First tergite parallel-sided (Fig. 88) or rather indistinctly subparallel-sided and rounded at its hind end; median field of second tergite subtriangular (Fig. 88). Hypopygium sclerotized, without creases or medio-longitudinal fold. *r1* and *cuqul* usually equal in length, exceptionally *r1* more or less shorter (Fig. 90). Mesonotum with rather closely placed, regular and minute punctation. Penultimate joint of antenna 1.3–1.5 times longer than broad. ♀♂: 2–2.3(–2.5) mm. A member of the *popularis*-group with a few transitional features towards *metacarpalis*-group. — Western Palearctic Region

[A. triangulator (WESMAEL, 1837) (!!)]

- 55 (54) First tergite attenuating from base to apex (Fig. 71). Hypopygium less strongly sclerotized, at least with a medio-longitudinal fold. *r1* either somewhat longer or as long as *cuqul* (Fig. 72).
- 56 (57) Head in dorsal view behind eyes rounded, i.e. temple not conspicuously short (cf. Fig. 14). Penultimate two joints of antenna 1.5 times longer than broad. First tergite less attenuating posteriorly, its length 1.5–1.7 times as long as wide at base, second tergite transverse (Fig. 71). Ovipositor sheath short, in lateral view as long as three-fifths to equal length of hind tibia. Inner spur of hind tibia as long as to somewhat longer than half basitarsus. Spines on outer side of hind tibia, especially on its upper half, dense and scale-like (Fig. 137, in PAPP 1980: 251). *r1* either shorter than *cuqul* (Fig. 72) or two veins about equal in length. Ocelli relatively large, distance between fore and a hind ocelli equal with diameter of an ocellus. Mesonotum evenly and densely punctate, interspaces shorter than diameter of punctures, strength of punctation somewhat variable. Antenna black. Palps pale yellow, first joint fumous to blackish. Middle and hind femora black. Hind tibia yellow to reddish yellow, distally with variable infuscation. ♀♂: 2–2.5 mm, usually 2.3–2.5 mm. — Europe as far eastwards as Georgia in the USSR. (= *aptus* PAPP, 1977, !!; = *lucidus* SZÉPLIGETI 1896)

A. corvinus REINHARD, 1880 (!!)

- 57 (56) Head in dorsal view behind eyes strongly constricted, i.e. temple conspicuously shorter than eye (Fig. 67/2, in TOBIAS 1976: 245). Penultimate two joints of antenna cubic. First tergite more attenuating posteriorly, its length 1.8–1.9 times as long as wide at base. Second tergite less transverse (Fig. 67/3, l.c.). Ovipositor sheath long, 1.5 times longer than hind tibia. Inner spur of hind tibia shorter than half basitarsus. Scape and pedicel brownish yellow, flagellum black(ish). Legs yellow, hind coxa black except its brownish yellow apex, distal end of hind tibia and entire hind tarsus brownish. ♀: 3 mm. — Azerbaidzhan (USSR).

A. negativus TOBIAS, 1976*

* Again a species which was included in my species-group system and identification key only on the basis of its description. TOBIAS (1976) ranged it in the *metacarpalis*-group, however, it may represent either my *laspeyrestella*-group or *lineipes*-group.

58 (53) Head in dorsal view 1.8(-1.9) times broader than long. Fore wing somewhat narrower than usually; discoidal cell distinctly 1.4 times wider than high (Fig. 87, Papp 1979: 244). Mesonotum evenly and densely punctate, interspaces shorter than diameter of punctures, dull to subshiny. Ovipositor sheath in lateral view variable in length, as long as hind basitarsus to three-fourths of hind tibia. Penultimate joint of antenna 1.3-1.5 times longer than broad. Second tergite rather transverse, first tergite markedly narrowing distally (Fig. 88, l.c.). Inner spur of hind tibia slightly longer, outer spur slightly shorter than half basitarsus. A dark coloured species. Legs rather with few yellow(ish) pattern. Wings subhyaline to subfumous, pterostigma opaque brown, basally sometimes with an indistinct pale spot. ♀♂: 2-2.5 mm. A member of the *laevigatus*-group (PAPP 1979) with a few features (e.g. *r1* shorter than *cuqul*) towards *metacarpalis*-group. — Sweden, Slovakia (ČSSR), Hungary, Bulgaria. (= *coniferoides* PAPP, 1972, !!, **syn. n.**; = *trogos* NIXON, 1973, !!, **syn. n.**)
[A. *mycale* NIXON, 1972, !!]

THE SPECIES OF THE *METACARPALIS*-GROUP

(Synonymus are in italics, numbers refer to couplet-number)

<i>acutus</i> PAPP 26 (23)	<i>metacarpalis</i> THOMSON 16 (15), 50 (51)
<i>aptus</i> PAPP 56 (57)	<i>myron</i> NIXON 48 (49)
<i>aragatzi</i> TOBIAS 38 (39)	<i>negativus</i> TOBIAS 57 (56)
<i>atreus</i> NIXON 35 (34)	<i>oculatus</i> TOBIAS 18 (19)
<i>bajariae</i> PAPP 46 (47)	<i>olivierellae</i> WILKINSON 3 (2)
<i>brevivalvatus</i> BALEVSKI et TOBIAS 29 (28)	<i>peisonis</i> FISCHER 7 (8)
<i>chrysis</i> NIXON 40 (41)	<i>peloepa</i> NIXON 24 (25)
<i>corvinus</i> REINHARD 56 (57)	<i>pilosus</i> TELENGA 13 (14)
<i>extentus</i> PAPP 20 (21)	<i>prinoptus</i> sp. n. 2 (3)
<i>firmus</i> TELENGA 15 (16)	<i>quadri-facies</i> (PAPP) 34 (35)
<i>floralis</i> TOBIAS 10 (11)	var. <i>rufipes</i> TELENGA 15 (16)
<i>?frater</i> TOBIAS 51 (50)	<i>subfirmus</i> ABDINBEKOVA 7 (8)
<i>gobicus</i> PAPP 25 (24)	<i>szelenyii</i> PAPP 44 (45)
<i>ingenuoides</i> PAPP 51 (50)	<i>verae</i> TOBIAS 36 (33)
<i>ingenuus</i> TOBIAS 28 (29), 44 (45), 51 (50)	<i>znoikoi</i> TOBIAS 11 (10)
<i>lucidus</i> SZÉPLIGETI 56 (57)	

TRANSITIONAL SPECIES TOWARDS THE *METACARPALIS*-GROUP

(Synonyms are in italics, respective species-groups are in parenthesis, numbers refer to couplet-number)

<i>coniferoides</i> PAPP 58 (53)
(<i>laevigatus</i> -group)
<i>laevissimus</i> (RATZEBURG) 42 (43)
(<i>lineipes</i> -group)
<i>mycale</i> NIXON 48 (49), 58 (53)
(<i>laevigatus</i> -group)
<i>triangulator</i> (WESMAEL) 54 (55)
(<i>popularis</i> -group)
<i>trogos</i> NIXON 58 (53)
(<i>laevigatus</i> -group)

DESCRIPTION OF THE NEW SPECIES

Apanteles prinoptus sp. n. ♀

(Figs. 1-3)

♀. Body 3-3.6 mm long. Head in dorsal view transverse (Fig. 1), twice broader than long, eye as long as temple or slightly shorter, temple somewhat broadening, i. e. head between temples somewhat broader than between eyes; occiput moderately excavated. Ocelli small and forming rather a low triangle, posterior imaginary tangent to fore ocellus clearly before hind pair of ocelli; distance between fore and a hind ocelli somewhat longer than diameter of an ocellus; POL twice longer than distance between fore and a hind ocelli, POL somewhat longer than OOL. Eye in lateral view 2.5 times higher than wide; temple 1.3 times wider than eye. Cheek distinctly shorter than basal width of mandible. Face transverse, about 1.5 times wider than high, inner margin of eyes parallel. Between clypeus and mandible a distinct elliptic split (Fig. 2). Face uneven-subrugulose, frons and vertex smooth and shiny, temple posteriorly with strengthening and somewhat undulate rugulosity. Antenna as long as head, mesosoma and half metasoma. First flagellar joint thrice longer than apically broad, further joints gradually shortening so that penultimate three (i. e. 15th to 17th) joints cubic to slightly transverse. Flagellum distally slightly thickening.

Mesosoma in lateral view 1.4 times as long as high. Mesonotum somewhat wider between tegulae than long medially, its disc with fine to very fine punctation, shiny. Prescutellar furrow narrow and rather shallow. Scutellum with similar though scattered punctation to that of mesonotum, shiny. Polished field of postaxille reaching up near to base of scutellum. Propodeum polished. — Hind femur broad, 2.6 times as long as broad (Fig. 3). Hind tibia and tarsus equal in length. Two spurs of hind tibia equalling and somewhat shorter than half basitarsus.

Fore wing as long as body. Pterostigma (cf. Fig. 60) 2.8(-3) times longer than wide, issuing radial vein distal from its middle; metacarp shorter than length of pterostigma, distance between distal end of metacarp and that of radial vein either as long as metacarp or slightly to indistinctly shorter (cf. Figs. 60-61). *r1* perpendicular to fore margin of pterostigma, shorter than width of pterostigma and length of *cuqul*, *r1* and *cuqul* meeting each other angularly. *D* not wide, 1.1-1.2(-1.3) times wider than high, *d2* (1.6-)-1.7 times longer than *d1*. *R* approaching tip of wing. Nervellus of hind wing incurved, as long as *n. anal*. *Cu* usual in length, *cul* 1.4 times longer than *n. bas*.

Metasoma about as long as mesosoma. First tergite (cf. Fig. 62) similar to that of *A. metacarpalis*, 1.4-1.5 times longer than wide at base, its anterior half with parallel-subparallel sides, its posterior half narrowing. Second tergite somewhat more than twice wider behind than long medially. Third tergite longer than second tergite. Hind horizontal fourth to third of first tergite uneven to subpunctate, shiny, otherwise every tergite polished. In lateral view hypopygium pointed; ovipositor sheath half as long as hind tibia, relatively wide (cf. Fig. 65).

Body black. Palpi brownish to brown. Tegula black. Legs black to blackish; distal half to third of fore femur and entire fore tibia, apex of middle femur and proximal half of middle tibia, proximal third of hind tibia rusty to reddish yellow. Distal half of middle tibia and tarsi 1-3 infusate, distal two-thirds of hind tibia blackish infumate, middle tibia distally frequently also blackish infumate. Wings hyaline, pterostigma either evenly blackish brown or basally with small and rather faint yellowish suffusion. Veins with brownish to pale pigmentation.

♂. Similar to female. Antenna longer than body. Flagellum attenuating distally, its every joint thrice longer than broad.

Host unknown.

Localities — I. Type-specimens from Hungary. Holotype ♀, allotype ♂ and 16 ♀ + 9 ♂ paratypes: Hungary, Bugac, Feketeszék, swept from *Pimpinella saxifraga* L., 18 September 1979, leg. J. Papp. — 4 ♀ + 5 ♂ paratypes: Hungary, Kerekegyháza, Kondor-tó, 23 August 1979, leg. J. Papp. — 3 ♀ + 1 ♂ paratypes: Hungary, Kunfehértó, Holdrutáserdő (= -forest), 23 August 1979, leg. L. Zombori. — 8 ♀ + 4 ♂ paratypes: Hungary, Budapest, Rákosszentimre, 15 August to 15 September 1896, leg. Szépligeti. — 2 ♀ paratypes: Hungary, Budapest, 19 September 1908, leg. Biró. — 1 ♀ paratype: Hungary, Sződ, 24 August 1920, leg. Biró. — 1 ♀ paratype: Hungary, Pomáz, September 1921, leg. Szilády. — 1 ♀ paratype: Hungary, Debrecen, Pallagpuszta, 24 September 1959, leg. Bajári. — 2 ♀ paratypes: Hungary, Búcsúszentlászló, 22-23 August 1951, leg. Soós. — 2 ♀ paratypes: Hungary, Tompa, 11 September 1962, leg. Bajári. — 1 ♀ paratype: Hungary, Kelebia, halastó (= fish pond), 12 September 1962, leg. Bajári. — 1 ♂ paratype: Hungary, Budafok, 19 September 1896, leg. Szépligeti. — 2 ♂ paratypes: Hungary, Budapest, 10 September 1897, leg. Szépligeti. — 1 ♂ paratype: Hungary, Budapest, Mátyásföld, August 1897, leg. Szépligeti. — 1 ♂ paratype: Hungary, Budapest, Óbuda, 18 August 1895, leg. Szépligeti. — 1 ♂ paratype: Hungary, Vác-Sződ, 30 August 1925, leg. Biró. — 1 ♂ paratype: Hungary, Örszentmiklós, 1912, leg. Sajó. — 2 ♂ paratypes: Hungary, Ócsa, swept from *Medicago sativa* L., 8 September 1952, leg. Bajári.

Holotype, allotype and 41 ♀ + 28 ♂ paratypes are deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. No. 5416 (holotype), 5427 (allotype) and 5417-5426, 5428-5475 (paratypes).

II. Type-specimens from Germany. 3 ♀ + 2 ♂ paratypes: GDR, Leipzig, 1 ♀: 16 August 1890 and 2 ♀ + 2 ♂: 7 September 1919, leg. Krieger.—2 ♀ paratypes: GDR, Rügen, Göhren, 30 August 1901, leg. Enderlein.

4 ♀ + 2 ♂ paratypes in the Zoologisches Museum, Berlin, and 1 ♀ paratype are deposited in the Hungarian Natural History Museum, Budapest; Hym. Typ. No. 5476.

The new species, *A. prinoptus* sp. n., is related to *A. olivierellae* WILKINSON, 1936 (Algeria, Israel) by its strong head; their differences are included in the key for the species of the *metacarpalis*-group, see couplets 1 (4)-3 (2).

Structurally the new species resembles *A. metacarpalis* THOMSON, 1895 (western Palaearctic Region), the specific differences restrict to but a few features:

A. prinoptus sp. n.

1. Head in dorsal view somewhat though distinctly broader than mesonotum between tegulae; eye slightly shorter than or as long as temple; head behind eyes somewhat broadening (Fig. 1).
2. Penultimate 3 joints of antenna cubic to slightly transverse.
3. Third femur in lateral view broad, 2.6 times as long as broad (Fig. 3).
4. Hind tarsal joints relatively thick, basitarsus as long as tarsal joints 2-4 (Fig. 3).

A. metacarpalis THOMS.

1. Head in dorsal view as broad as mesonotum between tegulae; eye more or less longer than temple; head behind eyes not broadening (Fig. 59).
2. Penultimate 3 joints of antenna (usually) 1.2-1.3 times longer than broad.
3. Third femur in lateral view less broad, thrice as long as broad (Fig. 64).
4. Hind tarsal joints not thick or usual in size, basitarsus somewhat shorter than tarsal joints 2-4 (Fig. 64).

Apanteles quadrifacies PAPP, 1973, emend. n.

(Figs. 34-37)

Apanteles metacarpalis var. *quadrifacies* PAPP, 1973, *Anns hist.-nat. Mus. natn. hung.*, 65: 295, ♀ ♂, locus typicus: Órszentmiklós (Hungary).

♀. Body 3-3.4 mm long. Head in dorsal view (Fig. 34) transverse, almost twice to twice (i.e. 1.8-2 times) broader than long, eye as long as or slightly shorter than temple, latter moderately rounded, occiput moderately excavated. Ocelli small and forming a low triangle, posterior imaginary tangent to fore ocellus clearly before hind pair of ocelli; distance between fore and a hind ocelli twice as long as greatest diameter of hind ocellus; POL equalling to OOL. Eye in lateral view 2.2-2.3 times higher than wide; temple as wide as eye. Cheek one-fifth to one-fourth longer than basal width of mandible; in frontal view cheek (Fig. 36) less rounded giving a relatively quadratic appearance to head (Fig. 67). Face slightly wider than high, inner margin of eyes parallel. Between clypeus and mandible no split, i.e. labrum not retracted. Head above smooth to almost smooth, shiny; face uneven to subpunctate, temple undulate uneven, subshiny. Antenna one-fourth shorter than body. First flagellar joint thrice longer than broad, further joints gradually shortening so that penultimate three (or 15th to 17th) joints cubic, at most 15th joint slightly longer than broad.

Mesosoma in lateral view 1.5 times as long high. Mesonotum somewhat wider between tegulae than long medially, its disc with dense subpunctation, interspaces shorter than punctures, dull. Prescutellar furrow narrow and shallow, without crenulation. Scutellum with less densely punctation, interspaces as long as or somewhat longer than punctures, subshiny to shiny. Polished field of post-axille reaching up one-third to one-fourth before base of scutellum. Propodeum polished, at most around lunule and at hind corner uneven. — Hind femur 2.6 times longer than broad. Hind tibia as long as hind basitarsus. Outer side of hind tibia with rather broad formed spines (Fig. 37). Hind basitarsus somewhat shorter than tarsal joints 2-4, somewhat longer than tarsal joints 2-3, and twice longer than second tarsal joint. Inner spur of hind tibia somewhat longer than outer one and half as long as basitarsus.

Fore wing about as long as body. Pterostigma (Fig. 35) 2.5-2.7 times longer than wide, issuing radial vein distal from its middle; metacarp either just shorter than or as long as pterostigma; distance between distal end of metacarp and that of radial vein somewhat shorter than or as long as metacarp. Pterostigma relatively large, its inner margin close proximally from *r*1 nearly parallel

with its outer margin (Fig. 35). *r1* about half as long as width of pterostigma and shorter than *cuqul*, *cu2* and *cuqul* about equal in length. *D* less wide and less high, i.e. only slightly wider than high and *n. bas.* less than twice as long as *n. rec.*, *d2* 1.3–1.4 times longer than *dl*. *R* approaching tip of wing. Nervellus (of hind wing) distinctly incurved. *Cu* somewhat elongated, *cul* distinctly longer than *n. bas.*

Metasoma in lateral view about as long as mesosoma. First tergite similar to that of *A. metacarpalis* THOMSON, 1.4–(1.5) times longer than wide at base, its anterior half subparallel sided, its posterior half narrowing (cf. Fig. 62). Second tergite twice wider behind than long medially, third tergite longer than second tergite. Tergites polished, except uneven hind or horizontal fourth of first tergite. In lateral view hypopygium pointed, ovipositor sheath as long as half to two-thirds of hind tibia.

Body black. Palpi and oral organs brown to dark brown. Mandible rusty. Antenna black. Tegula reddish yellow, rusty or brown, dark brown, and never black. Legs black with reddish yellow to brown pattern. Distal half to almost entire fore femur, fore tibia, apex of middle femur and middle tibia more or less proximally, proximal third to two-thirds of hind tibia reddish yellow. to rusty brown. Hind femur sometimes with reddish suffusion. Tarsi reddish yellow to rusty, together with tibia more or less blackish fumous. Wings subhyaline. Pterostigma brown, veins yellowish brown.

♂. Similar to female. Antenna one-fifth longer than body, attenuating distally, its penultimate joint 2.5 times longer than broad. Tegula brown to dark brown, blackish brown. Wings hyaline.

Host unknown.

Localities. — Holotype ♀, allotype ♂ and 2 ♀ + 1 ♂ paratypes: Hungary, Órszentmiklós, 27 August 1917 (holotype), 23 August 1918 (allotype), 18 August 1917 (1 ♀ paratype), 29 August 1917 (1 ♀ paratype), 26 August 1879 (1 ♂ paratype), leg. Sajó. — 2 ♀ paratypes: Hungary, Debrecen, Nagyerdő, 22 September 1959, leg. Sólymosné. — 1 ♀ paratype: Hungary, Budapest, Gellért-hegy, 9 September 1896, leg. Szépliget. — 1 ♀ paratype: Hungary, Tompa, 11 September 1962, leg. Bajári. — 3 ♀ + 1 ♂ paratype: Hungary, Vác, „Tudósdomb”, 8 September 1929, leg. Biró. — 1 ♀ paratype: Hungary, Zamárdi-felső, 4–5 September 1965, leg. L. Móczár. — 1 ♂ paratype: Hungary, „Vác-Szód”, 31 August 1925, leg. Biró.

A. quadrifacies PAPP, emended hereby to species-level and originally it had been described as a variety from Hungary (PAPP 1973), is nearest to *A. metacarpalis* THOMSON, 1895 (western Palaearctic Region), they distinction is difficult and requires a practice in the recognition of the specific features in question:

A. quadrifacies PAPP

1. Head behind eyes moderately rounded (Fig. 34).
2. Penultimate three joints of antenna cubic, at most 15th joint slightly longer than broad.
3. In frontal view cheek relatively less rounded (Fig. 36), inner margin of eyes parallel (Fig. 67).
4. Pterostigma relatively large, its inner margin close proximally from *r1* nearly parallel with outer margin (Fig. 35).
5. Tegula reddish yellow, rusty to (dark) brown, never entirely black.

A. metacarpalis THOMS.

1. Head behind eyes rounded (Fig. 59).
2. Penultimate three joints of antenna 1.2–1.3 times longer than broad.
3. In frontal view cheek relatively more rounded (Fig. 42), inner margin of eyes moderately to slightly converging towards oral part (Fig. 66).
4. Pterostigma usual in size, its inner margin close proximally from *r1* not parallel with outer margin (Figs. 60–61).
5. Tegula black or at most brownish black.

Remark — 1. I consider this species as being in statu nascendi, i.e. as in the conditions evolving in the recent time-period in a geohistorical sense towards the species-level. In its evolution it has been surpassed the subspecies- and is approaching the species nature.

2. Holotype ♀, allotype ♂ and 14 paratypes (10 ♀ + 4 ♂) are deposited in the Hungarian Natural History Museum, Budapest, their catalogue numbers are identical with that of *A. metacarpalis* var. *quadrifacies* PAPP (Hym. Typ. No. 2127–2145) except the paratypes with the following catalogue number indicating the species name which they represent (or to which they were transferred):

- Hym. Typ No 2129 — 1 ♂ (and not ♀!) *A. metacarpalis* THOMS.
 2138 — 1 ♀ *A. sp.?* *A. quadrifacies* PAPP
 2141 — 1 ♀ *A. metacarpalis* THOMS.
 2145 — 1 ♂ *A. firmus* TEL.

The *FORMOSUS*-group

The following features characterize the species of the *formosus*-group: 1. Lateral part of pronotum without sulcus. 2. Hind corner of propodeum weakly angular. 3. *d2* distinctly longer than *dl*, latter oblique to *d2*; *r1* and *cuqul* meeting angularly (Fig. 76). 4. Two sulci of second tergite short and directed to lateral side of tergite (Figs. 74, 77). 5. First tergite brightly yellow to reddish yellow. 6. Inner spur of hind tibia distinctly, usually two-thirds to three-fourths, longer than half basitarsus; outer spur about half as long as basitarsus.

The species-group comprises 3 European species.

The hosts of the species of the *formosus*-group cover the the lepidopterous families Geometridae and Lymantriidae.

KEY TO THE SPECIES OF THE *FORMOSUS*-GROUP

Females

- 1 (2) Pterostigma unusually wide, 1.9–2 times longer than wide; *r1* and *cuqul* equal in length (Fig. 73). Penultimate two joints of antenna 1.2–1.4 times as long as broad. First tergite relatively broad, only 1.8(–1.9) times longer than wide at base, its two sides less arched, rather subparallel (Fig. 74). In lateral view hypopygium truncate, ovipositor sheath surpassing beyond end of metasoma (Fig. 75). First tergite reddish to rusty brown, second and further tergites black; membraneous sides of tergites 1–2 yellow. Hind coxa black. ♀: 2.5–3 mm. — France, Hungary, Bulgaria, Azerbaidzhan (USSR), Jordan

***A. sancus* NIXON, 1965 (!)**

- 2 (1) Pterostigma less wide, 2.5–2.6 times longer than wide; *r1* always longer than *cuqul* (Fig. 76). Penultimate two joints of antenna 2.2–2.5 times as long as broad. First tergite relatively less broad, 2.1–2.3 times longer than wide at base, its two sides rather arched (Fig. 77). First tergite yellow to bright yellow.

- 3 (4) Fifth joint of fore tarsus in dorsal view constricted at its middle (Fig. 78), and in lateral view with a curved spine (Fig. 79). In lateral view hypopygium subtruncate to truncate apically (Fig. 80). Nervellus of hind wing not entirely straight, somewhat though distinctly broken (Fig. 81). Hind coxa black or brownish black. ♀: 4–4.5 mm, ♂: 3.5–4 mm. — England, Belgium, Germany, USSR (Armenia, West Siberia), Japan. (= *marshalli*) BIGNELL, 1901)

***A. formosus* ((WESMAEL, 1837) (!)**

- 4 (3) Fifth joint of fore tarsus normal, in dorsal view not constricted at its middle (Fig. 82), and in lateral view without a spinule. Hypopygium in lateral view strongly produced and acutely pointed, distinctly surpassing end of metasoma (Fig. 83). Nervellus of hind wing entirely straight, i.e. not broken and directed somewhat more inward (Fig. 84). Hind coxa bright yellow. ♀: 3–3.2 mm. — Japan, Korea, ČSSR

***A. pompelon* NIXON, 1965 (!)**

THE SPECIES OF THE *FORMOSUS*-GROUP

(Synonym is in italics, numbers refer to couplet-numbers)

formosus (WESMAEL) 3 (4)
marshalli BIGNELL 3 (4)
pompelon NIXON 4 (3)
sancus NIXON 1 (2)

The *POPULARIS*-group

The following features characterize the species of the *popularis*-group: 1. First tergite parallel-subparallel sided (Figs. 93, 104), or slightly though distinctly broadening posteriorly (Figs. 101, 114). 2. Propodeum usually smooth and shiny to uneven except in 3 species (*A. endemus* NIXON, *A. enephes* NIXON and *A. parallelus* LYLE). 3. Fifth joint of fore tarsus on its outer-distal side usually with a spinule (females) (Fig. 112) except in two species (*A. mandanis* NIXON and *A. parallelus* LYLE). 4. Hypopygium smooth and well sclerotized, i.e. without lateral creases or medio-longitudinal fold. Ovipositor sheath short, in lateral view at most as long as hind basitarsus. 5. Penultimate joint of antenna 1.5–2 times longer than broad, except in *A. iapetus* NIXON. 6. Ocelli relatively large, distance between fore and a hind ocelli usually shorter than diameter of an ocellus; or posterior imaginary tangent to fore ocellus usually distinctly transecting hind pair of ocelli. 7. Face, mesonotum+scutellum usually superficially punctate, except in 2 species (*A. endemus* NIXON, *A. parallelus* LYLE). 8. In most species phragma present on latero-scutellum.

R e m a r k — In general the habitus of the species of the *popularis*-group are deceptively resembling the species of the *glomeratus*-group. The combinations of the above characters, however, differentiate them from species of this group.

The species-group comprises 12 species in Europe (+1 in the eastern Palearctic and 1 Nearctic Region each).

The hosts of the species of the *popularis*-group cover the lepidopterous families Geometridae (mainly), Arctiidae and Plusiidae.

KEY TO THE SPECIES OF THE *POPULARIS*-group

F e m a l e s

- 1 (10) Propodeum transitional in sculpture, medially rugose-rugulose-subrugulose to a variable extent, laterally smooth to nearly smooth. Median and lateral cristulae more or less to indistinctly present. Species of the *glomeratus*-group, excepting *A. parallelus* with a few features resembling the *popularis*-group.
- 2 (7) Inner spur of hind tibia distinctly longer than half basitarsus and usually distinctly longer than outer spur.
- 3 (4) First tergite parallel-sided narrowing at its hind third to quarter, second tergite less transverse, rather subtriangular (Fig. 93). Mesonotum sharply punctate, intermediate between those of *A. sybillarum* and *A. abjectus*. Ocelli relatively large, distance between fore and hind ocelli slightly less than half diameter of hind ocellus. For further details see at couplet 16 (15). A member of the *popularis*-group

***A. parallelus* LYLE, 1917 (!)**

— First tergite weakly though distinctly broadening posteriorly (Fig. 110). Head behind eyes moderately though clearly constricted (Fig. 109) (*A. enephes*), or propodeum

with an indefinite transverse keel (*A. endemus*); notaulix indistinct (*A. endemus* and *A. enephes*) or distinct by crowded punctate-rugosity and cristula of propodeum distinct (*A. limbatus*). For further details see at couplets 34 (21) to 37 (36).

A. endemus NIXON, 1965 (!)

A. enephes NIXON, 1965 (!)

[**A. limbatus** MARSHALL, 1885 (!)]

4 (3) First tergite broadening posteriorly, second tergite transverse. Mesonotum either strongly punctate (*A. sibyllarum*) or rather weakly punctate (*A. abjectus*). Ocelli relatively small, distance between fore and hind ocelli slightly more than half diameter of hind ocellus. The next two species are members of the *glomeratus*-group with a few transitional features towards the *popularis*-group.

5 (6) Mesonotum with strong and clearly separated punctuation, interspaces shiny. Scutellum with similar punctuation, though interspaces greater, i.e. about as long as diameter of punctures. First tergite distinctly longer than wide behind. Penultimate joint of antenna twice as long as broad. First 2-3 sternites bright yellow. ♀♂: 2.7-3.4 mm. A member of the *glomeratus*-group. — England, Germany, supposedly much wider distributed in Europe; ?U.S.A. (? = *halisidotae* MUESEBECK, 1931, ?sen. syn.)

[**A. sibyllarum** WILKINSON, 1936 (!)]

6 (5) Mesonotum with less strong and rather confluent punctuation, interspaces dull. Scutellum with scattered punctuation, interspaces much longer than diameter of punctures. First tergite only somewhat longer than wide at hind. Penultimate joint of antenna 1.4-1.5(-1.6) times longer than broad. First 2-3 sternites brownish to brownish yellow. ♀♂: 2.5-3 mm. A member of the *glomeratus*-group. — Sporadic in Europe

[**A. abjectus** MARSHALL, 1885 (!)]

7 (2) Inner spur of hind tibia shorter than or at most as long as half basitarsus, and usually slightly longer than outer spur.

8 (9) Cheek unusually long, about as long as first flagellar joint. Ocelli not large, usual in size; distance between fore and hind ocelli as long as diameter of an ocellus. First tergite broadening posteriorly, somewhat longer than wide behind. A dark coloured species. Hind tibia brownish yellow, distally infuscate to blackish. ♀♂: 2-2.5 mm. A member of the *glomeratus*-group. — Europe

[**A. tenebrosus** (WESMAEL, 1837) (!)]

9 (8) Cheek not long, corresponding to the usual length, i.e. distinctly shorter than first flagellar joint. Ocelli large, distance between fore and a hind ocelli clearly shorter than diameter of an ocellus. First tergite slightly broadening posteriorly, distinctly longer than wide at hind. Also a dark coloured species. ♀♂: 2.5-2.8 mm. A member of the *glomeratus*-group. — England, Germany, Switzerland, supposedly much more widely distributed in Europe

[**A. lineola** (CURTIS, 1830) (!)]

10 (1) Propodeum smooth and shiny to polished excepting *A. parallelus*, *A. endemus* and *A. enephes*, at most uneven with radiating rugae-rugulae around lunule. Cristulae of propodeum absent.

11 (20) Fifth joint of fore tarsus without spinule on its outer side.

12 (17) First tergite with parallel (Figs. 88, 93) or with slightly subparallel sides (Fig. 92).

13 (14) Inner spur of hind tibia at most half as long as hind basitarsus (Fig. 89). Second tergite characteristically triangular, twice to almost twice wider behind than long medially (Fig. 88). *r1* and *cuqul* usually equal in length, exceptionally *r1* somewhat shorter (Fig. 90). Mesonotum with rather closely placed, regular and minute puncta-

tion-subpunctuation. Fifth joint of fore tarsus with a fine and rather hardly distinct spinule (Fig. 91). For further details see at couplet 29 (30)

A. triangulator (WESMAEL, 1837) (!!)

14 (13) Inner spur of hind tibia distinctly two-thirds (to three-fourths) as long as hind basitarsus (Fig. 95). Second tergite less transverse, about 1.5 times wider behind than long medially (Figs. 92, 93). *rl* always somewhat longer than *cuqul* (Fig. 94). Fifth joint of fore tarsus never with lateral spinule.

15 (16) Mesonotum with fine and rather superficial punctuation, shiny. Propodeum smooth and shiny, along its margin uneven. First tergite faintly subparallel sided (Fig. 92). *d2* 1.3–1.4 times longer than *dl*. Tegula brown. Tergites 2–3 laterally less reddish yellow. Distal third of hind tibia infuscate. ♀: (2.8–)3–3.2 mm, ♂: 2.5–3 mm. — Germany, Hungary

A. mandanis NIXON, 1965 (!)

— — Spinule of fifth joint of fore tarsus distinct and opposite of spinule side of tarsal joint emarginate (Fig. 105). Second tergite 1.4–1.5 times wider behind than long medially (Fig. 104). *d2* 1.6–1.7 times longer than *dl* (Fig. 106). For further details see at couplet 33 (28)

A. anchisiades NIXON, 1973 (!)

16 (15) Mesonotum with strong and sharp punctuation, interspaces shiny. Propodeum rugose-rugulose. First tergite parallel sided (Fig. 93). Tegula yellow. Tergites 2–3 laterally more reddish yellow. Hind tibia apically at most faintly infuscate. ♀♂: (2.5–)3–3.2 mm. See also couplets 3 (4) and 24 (23). — Sporadically in England, Germany, Hungary. (= *lylei* SHENEFELT, 1972 nec *parallelis* ASHMEAD, 1900)

A. parallelus LYLE, 1917 (!)

17 (12) First tergite posteriorly with either broadening or narrowing sides (Figs. 96, 97).

18 (19) Second tergite, in comparison to that of next species, less transverse, twice wider behind than long medially; first tergite weakly though evenly broadening posteriorly (Fig. 96). Mesonotum shrivelled-punctate. Ocelli small, distance between fore and hind ocelli somewhat longer than diameter of an ocellus; posterior imaginary tangent to fore ocellus before hind pair of ocelli. Cheek black. ♀♂: 2.5 mm. — Japan

A. neptisis WATANABE, 1934 (!)

19 (18) Second tergite, in comparison to that of fore species, more transverse, 2.5–2.6 times wider behind than long medially; first tergite weakly narrowing posteriorly (Fig. 97). Mesonotum antero-posteriorly subpunctate-uneven to almost smooth, shiny to glistening. Ocelli large, distance between fore and hind ocelli shorter than diameter of an ocellus; posterior imaginary tangent to fore ocellus transecting hind pair of ocelli. Cheek pale yellow. ♀♂: 2.5–2.8 mm. — U.S.A.

A. harrisinae MUESEBECK, 1953 (!)

20 (11) First joint of fore tarsus with a distinct spinule on its outer side; opposite of spinule side of tarsal joint usually more or less emarginate (Figs. 105, 112) except in two species (*A. iapetus* and *A. popularis*).

21 (34) First tergite either with parallel sides and rounded at its end (Figs. 88, 93, 101, 104), or narrowing posteriorly (Fig. 98).

22 (25) Mesonotum with strong to sharp punctuation. Propodeum rugose-rugulose.

23 (24) First tergite broad, 1.5 times longer than wide about middle; two sides of tergite subparallel, i.e. slightly though distinctly broadening to middle (cf. Fig. 114). Tegula black. For further details see at couplet 36 (37)

A. endemus NIXON, 1965 (!)

24 (23) First tergite narrow, almost twice to twice longer than wide at middle; two sides of tergite distinctly parallel (Fig. 93). Tegula yellow. For further details see at couplet 16 (15)

A. parallelus LYLE, 1917 (!)

- 25 (22) Mesonotum either dull to subshiny and with rather closely placed, regular and minute punctation (*A. armeniacus*, *A. triangulator*), or shiny and with fine punctulation (*A. anchisiades*, *A. popularis*). Propodeum smooth, along hind margin uneven.
- 26 (27) First tergite slightly though distinctly narrowing posteriorly, second tergite subtriangular (Fig. 98). Pterostigma wide, twice longer than wide, issuing radial vein from its middle; *r1* shorter than *cuqul* (Fig. 99). Hypopygium in lateral view apically blunt (Fig. 100). Legs dark, middle and hind femora black(ish). ♀: 2 mm. — Armenia (USSR) **A. armeniacus** TOBIAS, 1976
- 27 (26) First tergite parallel-sided, second tergite characteristically triangular (Fig. 88) to transverse (Fig. 124) and subquadrate (Figs. 101, 104). Pterostigma either wide (Figs. 90, 102, 123), or less wide (Fig. 106), *r1* at most just shorter than *cuqul*.
- 28 (33) Pterostigma wide, 2–2.2 times longer than wide, issuing radial vein either from its middle (Fig. 90), or somewhat to clearly distally from its middle (Figs. 102, 123). Spinule of fifth joint of fore tarsus either fine to very fine and rather hardly distinct (Figs. 91, 103), or distinct (Fig. 122).
- 29 (30) Body, in comparison to that of next two species, less strong. Second tergite characteristically triangular, almost twice to twice wider behind than long medially; first tergite parallel sided and rounded at its hind end (Fig. 88). Two spurs of hind tibia equal in length, inner spur at most half as long as basitarsus (Fig. 89). *r1* and *cuqul* meeting less angularly each other (Fig. 90). Mesonotum usually dull to subshiny and with crowded punctation. Pterostigma opaque brown. See also couplet 13 (14). ♀♂: (2–)2.2–2.5 mm. — England, France, Belgium, Germany, Czechoslovakia, Hungary, European USSR
- A. triangulator** (WESMAEL, 1837) (!)
- 30 (29) Body, in comparison to that of previous species, strong. Second tergite transverse (Fig. 124) to subquadrate (Fig. 101). Two spurs of hind tibia unequal in length, inner spur longer than and outer spur as long as half basitarsus (cf. Fig. 95). *r1* and *cuqul* meeting angularly each other (Figs. 102, 123). Pterostigma brown to blackish brown.
- 31 (32) First tergite apparently parallel sided, virtually very slightly broadening posteriorly, second tergite less transverse to subquadrate, 2–2.2 times wider behind than long medially (Fig. 101). Spinule of fifth joint of fore tarsus fine (Fig. 103). *r1* just shorter than *cuqul* (Fig. 102). Head in dorsal view slightly less transverse, 1.9 times broader than long. Penultimate joint of antenna subcubic, 1.2(–1.3) times as long as broad. Hind femur black. ♀♂: 2.8–3(–3.25) mm. — Ireland, England, France, Germany, European USSR
- A. popularis** (HALIDAY, 1834) (!)
- 32 (31) First tergite virtually parallel sided, second tergite transverse, 2.5–3 times wider behind than long medially (Fig. 124). Spinule of fifth joint of fore tarsus distinct (Fig. 122). *r1* as long as or somewhat longer than *cuqul* (Fig. 123). Head in dorsal view transverse, distinctly twice broader than long. Penultimate joint of antenna 1.3–1.4(–1.5) times as long as broad. Hind femur blackish to reddish yellow (♀) or black(ish) (♂). ♀♂: 3–3.5 mm. — Belgium, Nederland, Hungary
- A. delitutus** sp. n.
- 33 (28) Pterostigma less wide, 2.7–2.8(–2.9) times longer than wide, issuing radial vein far distally from its middle; *r1* always longer than *cuqul* and meeting each other angularly (Fig. 106). Spinule of fifth joint of fore tarsus distinct, margin of joint opposite to it emarginate (Fig. 105). Second tergite less transverse to subquadrate, 1.4–1.5 times wider behind than long medially (Fig. 104), third tergite only somewhat longer than second tergite. Mesonotum subpunctulate to almost smooth, shiny. Hypopygium in lateral view truncate (Fig. 107), apically sometimes blunt. *d2* usually

1.6–1.7 times longer than dI , D clearly wider than high (Fig. 106, see arrows). Legs reddish yellow, hind tibia apically infusate to dark. Tegula brown to black, rarely yellowish brown. ♀♂: 3–3.5 mm. — England, Sweden, Finland, Netherlands, Germany, Switzerland, Czechoslovakia, Hungary, Bulgaria, North Italy, Mongolia

A. anchisiades NIXON, 1973 (!)

34 (21) First tergite not parallel sided, usually more or less broadening posteriorly (Figs. 101, 110, 115).

35 (38) Propodeum rugose-rugulose, at least medially.

36 (37) Mesonotum with strong and dense punctation (notaulix indistinct), interspaces dull and just shorter than diameter of punctures. Propodeum with an indefinite transverse keel on its upper or anterior half laterally touching spiracles behind; propodeum postero-laterally with an almost smooth and shiny field. Head in dorsal view behind eyes (Fig. 108), i.e. temple rounded as usually; head as broad as width of mesonotum between tegulae. Ocelli relatively small, posterior imaginary tangent to fore ocellus at most touching hind pair of ocelli. Cheek and tegula black. ♀♂: 2.8–3.3 mm. See also couplet 23 (24). — Scotland, France

A. endemus NIXON, 1965 (!!)

— Fifth joint of fore tarsus on its outer side with a spinule, margin of joint opposite to it either straight (cf. Figs. 103, 122), or emarginate (cf. Figs. 112, 116). Propodeum always with a latero- and usually with a medio-longitudinal cristula (or carina). Species of the *glomeratus*-group with transitional features towards the *popularis*-group:

A (D) Inner spur of hind tibia longer than half hind basitarsus.

B (C) Head in dorsal view behind eyes rounded. First tergite relatively strongly broadening posteriorly, i.e. hardly longer medially than wide at hind. Opposite to spinule margin of joint emarginate (cf. Figs. 112, 116). Mesonotum with rather confluent punctation, shiny, notaulix less distinct by crowded punctation. Pterostigma at most thrice longer than wide. ♀♂: 2.5–3.5 mm. — Palaearctic Region

[A. spurius (WESMAEL, 1837) (!!)]

C (B) Head in dorsal view behind eyes moderately though clearly constricted similarly to *A. enephes*, see couplet 37 (36) (cf. Fig. 109). First tergite less strongly broadening posteriorly, i.e. one-fourth longer medially than wide at hind. Opposite to spinule margin of joint straight (cf. Fig. 122). Mesonotum with clearly confluent punctation, subshiny, notaulix distinct by crowded punctation. Pterostigma 3.3–3.5 times longer than wide. ♀♂: 2.5–3.2 mm. — Europe

[A. limbatus MARSHALL, 1885 (!!)]

D (A) Inner spur of hind tibia at least as long as, usually shorter than, half hind basitarsus.

E (F) Third tergite almost entirely rugose to rugulose. First tergite strongly broadening posteriorly, as long medially as wide behind. Legs reddish yellow. ♀♂: 2.8–3.2 mm. — Europe, U.S.A.

[A. melanoscelus (RATZEBURG, 1844) (!!)]

F (E) Third tergite smooth, shiny. First tergite less strongly broadening posteriorly, about one-fourth longer medially than wide behind. Spinule frequently hardly distinct.

G (H) Outer surface of hind coxa rugose-rugulose. Notaulix distinct by crowded rugo-punctation. Legs black to dark or more or less with reddish yellow pattern, hind tibia never yellowish. ♀♂: 2–3 mm. — Palaearctic Region. (= *congestus* Nees, 1834)

[A. tibialis (CURTIS, 1830) (!!)]

H (G) Outer surface of hind coxa smooth or at least partly uneven. Notaulix (almost) indistinct. Legs black, hind tibia yellowish to straw yellow. ♀♂: 2.7–3.5 mm. — Western Palaearctic Region

[A. jucundus MARSHALL, 1885 (!!)]

- 37 (36) Mesonotum with weak, less dense and posteriorly weakening punctation (notaullix indistinct), interspaces posteriorly somewhat increasing and shiny. Propodeum without transverse keel, medially rugo-rugulose, laterally rugulose to uneven and almost smooth. Head in dorsal view behind eyes (Fig. 109), i.e. temple moderately though clearly constricted; head somewhat less broad than width of mesonotum between tegulae. Ocelli relatively large, posterior imaginary tangent to fore ocellus transecting deeply hind pair of ocelli. Cheek bright yellow to rusty, tegula yellowish. ♀♂: 3–3.5 mm. — England, Sweden, Germany, Czechoslovakia, Hungary

A. enephes NIXON, 1965 (!)

- 38 (35) Propodeum smooth to polished, at most around lunule with short and radiating rugulae and (postero-)laterally uneven.

- 39 (42) Cheek with a pale to bright yellow spot extending usually to entire cheek.

- 40 (41) Pterostigma wide, only 2.1–2.2(–2.3) times longer than wide (Fig. 111). Second tergite less sculptured, uneven to coriaceous; usually somewhat less transverse, 2–2.2 times wider behind than long medially (cf. Fig. 110). Outer spur of hind tibia somewhat longer than half basitarsus. A dark legged species, hind and middle femora black(ish), distal half of hind tibia and entire tarsus infusate to blackish, proximal half of basitarsus yellow. ♀♂: 3–3.5 mm. — Germany (FRG), Czechoslovakia, Hungary (= *mihalyii* PAPP, 1973, partim: ♂ allotype and ♀ paratype, !!)

A. andromica NIXON, 1976 (!!)

- 41 (40) Pterostigma less wide, (2.4–)2.5–2.6 times longer than wide (Fig. 118). Second tergite sculptured, i.e. posteriorly longitudinally rugose-rugulose; usually somewhat more transverse, 2.3–2.5 times wider behind than long medially (Fig. 115). Outer spur of hind tibia at most as long as basitarsus. Legs usually reddish yellow (coxae black, hind femur variably infusate to dark). Yellow spot of cheek either distinct or more or less effacing, cheek usually black. For further details see at couplet 47 (48)

A. immunis (HALIDAY, 1834) (!)*

- — Cheek bright yellow, propodeum, however, rugo-rugulose. Head in dorsal view behind eyes moderately constricted. Outer spur of hind tibia just longer than half basitarsus. For further details see at couplet 37 (36)

A. enephes NIXON, 1965 (!)

- 42 (39) Cheek entirely black.

- 43 (44) First tergite somewhat longer than its greatest breadth, virtually very slightly broadening posteriorly (Fig. 101). Pterostigma wide, 2–2.2 times longer than wide and issuing radial vein (almost) from its middle; *r1* just shorter than *cuqul* (Fig. 102). Spinule of fifth joint of fore tarsus fine and less distinct (Fig. 103). A dark legged species, middle and hind femora black(ish), hind tibia distally infusate to dark, hind tarsus also dark, basitarsus basally yellowish to reddish. ♀♂: 2.8–3(–3.25) mm. See also couplet 31 (32). — Ireland, England, France, Germany, European USSR

A. popularis (HALIDAY, 1834) (!)

- 44 (43) First tergite 1.3–1.4 times longer than its greatest breadth before its hind end, distinctly broadening posteriorly (Figs. 114, 115). Pterostigma less wide, 2.3–2.5 times longer than wide and issuing radial vein distally from its middle; *r1* longer than *cuqul* (Figs. 113, 118). Spinule of fifth joint of fore tarsus strong and distinct, joint opposite to spinule emarginate (Figs. 112, 116) except *A. iapetus* (Fig. 119).

- 45 (46) Second tergite less transverse, usually twice wider behind than long medially (Fig. 114); its surface smooth, posteriorly more or less uneven and at most with a few rugulae-subrugulae, shiny to posteriorly subshiny or with satin-like sheen. First

* Cheek of *A. immunis* (HALIDAY) usually black, however, there are specimens with pale spot of variable extent and strength of colour on cheek. Especially its colour is very variable from rusty brown to yellowish, bright yellow.

- tergite smooth and glistening, postero-laterally rugose-punctate. Penultimate joint of antenna usually twice longer than broad. Body, in comparison to that of next two species, strong. Hind femur reddish yellow, at most apically darkening. Sternites usually 1-3(-4) pale yellow or yellow. ♀♂: (2.5-)3-3.5 mm. — Northern half of Europe as far eastwards as Ukraine in the USSR. (= *jugosus* LYLE, 1916; = *mihalyii* PAPP, 1973, partim: holotype ♀, **syn. n.** **A. caberae** MARSHALL, 1885 (!)
- 46 (45) Second tergite transverse, usually (2.2-)2.3-2.5 times wider behind than long medially (Fig. 115); its surface rather posteriorly and somewhat longitudinally rugose-rugulose, less usually uneven-rugulose with rugose elements, subshiny to dull. First tergite rather posteriorly rugose-punctate. Penultimate joint of antenna at most 1.5 times longer than broad. Body, in comparison to that of previous species, less strong. Hind femur variably infusate.
- 47 (48) Penultimate six joints of antenna distinctly, from 12th to 17th joints, 2.5 to 1.5 times longer than broad. Hypopygium in lateral view truncate and apically blunt (Fig. 117). Spinule of fifth joint of fore tarsus of usual size and joint opposite to spinule emarginate (Fig. 116). Cheek usually black, sometimes with a faint to distinct yellow(ish) or rusty spot. ♀♂: (2.2-)2.5-3 mm. — Europe as far eastwards in the USSR as West Siberia, Kazakhstan and Armenia **A. immunis** (HALIDAY, 1834) (!)
- 48 (47) Penultimate four (or 17th to 14th) joints of antenna cubic to subcubic, further joints gradually lengthening (Fig. 121). Hypopygium less truncate and apically pointed (Fig. 120). Spinule of fifth joint of fore tarsus usually fine and joint opposite to spinule not emarginate (Fig. 119). Cheek black. Otherwise quite similar to previous species. ♀: 2.5 mm. — Germany (FRG) **A. iapetus** NIXON, 1976 (!)

THE SPECIES OF THE *POPULARIS*-GROUP

(Synonyms are in italics, numbers refer to couplet-numbers)

- | | |
|-------------------------------------------|-----------------------------------------|
| anchisiades NIXON 15 (16), 33 (28) | <i>jugosus</i> LYLE 45 (46) |
| andromica NIXON 40 (41) | <i>lylei</i> SHENEFELT 16 (15) |
| armeniacus TOBIAS 26 (27) | mandanis NIXON 15 (16) |
| <i>caberae</i> MARSHALL 45 (46) | <i>mihalyii</i> PAPP 40 (41), 45 (46) |
| delitutus sp. n. 32 (31) | neptisis WATANABE 18 (19) |
| endemus NIXON 3 (4), 23 (24), 36 (37) | parallelis ASHMEAD 16 (15) |
| enephes NIXON 3 (4), 37 (36), 41 (40) | parallelus LYLE 3 (4), 16 (15), 24 (23) |
| <i>harrisinae</i> MUESEBECK 19 (18) | popularis (HALIDAY) 31 (32), 43 (44) |
| <i>iapetus</i> NIXON 48 (47) | triangulator (WESMAEL) 13 (14), 29 (30) |
| <i>immutis</i> (HALIDAY) 41 (40), 47 (48) | |

TRANSITIONAL SPECIES TOWARDS THE *POPULARIS*-GROUP

(Synonyms are in italics, respective species-group in parenthesis, numbers refer to couplet-numbers)

- | | |
|---------------------------------------------------------------------|-------------------------------------------------------------|
| abjectus MARSHALL 6 (5)
(glomeratus-group) | melanoscelus (RATZBURG) 36 (37) E (F)
(glomeratus-group) |
| <i>congestus</i> (NEES) 36 (37) G (H)
(glomeratus-group) | sibyllarum WILKINSON 5 (6)
(glomeratus-group) |
| ? <i>halisidotae</i> MUESEBECK 5 (6)
(glomeratus-group) | spurius (WESMAEL) 36 (37) B (C)
(glomeratus-group) |
| <i>jucundus</i> MARSHALL 36 (37) H (G)
(glomeratus-group) | tenebrosus (WESMAEL) 8 (9)
(glomeratus-group) |
| <i>limbatus</i> MARSHALL 3 (4), 36 (37) C (B)
(glomeratus-group) | tibialis (CURTIS) 36 (37) G (H)
(glomeratus-group) |
| <i>lineola</i> (CURTIS) 9 (8)
(glomeratus-group) | |

DESCRIPTION OF THE NEW SPECIES

Apanteles delitutus sp. n. ♀♂
(Figs. 122–125)

♀. Body 3–3.5 mm long. Head in dorsal view transverse, twice broader than long; eye about 1.5 times as long as temple, latter rather strongly rounded; occiput moderately excavated. Ocelli relatively large and forming a low triangle; posterior imaginary tangent to fore ocellus transecting hind pair of ocelli; distance between fore and a hind ocelli shorter than diameter of an ocellus; POL very slightly longer than OOL. Eye in lateral view twice higher than wide; temple one-fourth less wide than eye. Cheek about as long as or somewhat longer than basal width of mandible. Face subquadrate, somewhat wider than high; inner margin of eyes subparallel. Head uneven, dull. Antenna as long as body. First flagellar joint 2.5–3 times longer than broad, further joints gradually shortening and rather indistinctly attenuating so that penultimate joint 1.1–1.2 times longer than broad.

Mesosoma in lateral view 1.4–1.5 times as long as high. Mesonotum antero-posteriorly with obsolescent punctation to almost smooth, subshiny. Notaulix indistinct. Prescutellar furrow narrow, subcrenulated. Scutellum smooth and shiny. Polished field of postaxille reaching up about half scutellum. Propodeum smooth to uneven-subrugulose, shiny to subshiny. — Fifth joint of fore tarsus on its outer side with a spinule, joint opposite to spinule not emarginate (Fig. 122). Hind femur in lateral view 3.3–3.5 times as long as broad. Hind tarsus one-quarter longer than hind tibia. Two spurs of hind tibia unequal in length, outer spur half as long as, and inner spur somewhat longer than half basitarsus.

Fore wing about as long as body. Pterostigma 2–2.2 times longer than wide, issuing radial vein distal from its middle, metacarp longer than pterostigma. *r1* just not perpendicular to fore margin of pterostigma, somewhat longer than, or at least as long as, *cuqul*, distinctly shorter than width of pterostigma; *r1* and *cuqul* meeting each other angularly. *D* not wide, slightly wider than high (Fig. 123, see arrows), *d2* 1.5 times longer than *d1*. *R* reaching tip of wing. Nervellus (of hind wing) somewhat curved.

Metasoma in lateral view as long as mesosoma. First tergite (Fig. 124) 1.7–1.8 times longer than broad at base, parallel sided and narrowing at its hind third to fourth. Second tergite transverse, 2.5–3 times wider behind than long medially; third tergite 1.2–1.4 times longer than second tergite. Hind or horizontal part of first tergite and second tergite uneven to rugulose, further tergites smooth and shiny. Hypopygium in lateral view truncate, apically blunt. Ovipositor sheath short, about as long as third or fourth joint of hind tarsus (Fig. 125).

Body black. Palpi yellow to reddish yellow. Cheek either (straw) yellow (holotype + 1 ♀ paratype) or black (2 ♀ paratypes and all ♂ paratypes). Tegula black. Legs reddish yellow, coxae and first trochanters black. Base of fore femur blackish. Femora 2–3 with blackish suffusion of variable extent. Hind tibia apically blackish to infuscate. Sternites 1(–2) brown. Wings hyaline, pterostigma and *r1* + *cuqul* blackish, other veins opaque brown pigmented.

♂. Similar to female. Body 3–3.5 mm long and more shiny. Antenna longer than body. Femora 2–3 usually black, femur 2 apically yellow. Ground colour of body yellow, blackish suffusion more extended. Cheek black.

Host unknown.

Localities — Holotype ♀: Belgium, Bruxelles, coll. Wesmael; In Institut Royal des Sciences Naturelles de Belgique, Bruxelles (see also remark). — 1 ♀ paratype: Germany, Berlin, Treptow, leg. Finck; in Zoologisches Museum, Berlin. — 1 ♀ paratype: Czechoslovakia, Alacsony Tátra, Breznó, Zálomy, 600–700 m, 18 July 1976, leg. J. Papp; in the Hungarian Natural History Museum, Budapest, Hym. Typ. No. 5477. — Allotype ♂ and 5 ♂ paratypes: Netherland, Wijster (Dr.), opposite Biol. Stat., 15–21 June 1972 (allotype), 28 May — 4 June 1976 (1 ♂ paratype), 4–11 June 1976 (2 ♂ paratypes), 25 May — 10 June 1977 (1 ♂ paratype) and 10–17 June 1977 (1 ♂ paratype). Allotype and 4 ♂ paratypes in the Rijksmuseum van Natuurlijke Historie, Leiden, and 1 ♂ paratype in the Hungarian Natural History Museum, Budapest, Hym. Typ. No. 5478 — 1 ♂ paratype: Hungary, Órszentmiklós, 6 May 1916, leg. Sajó; in the Hungarian Natural History Museum, Budapest, Hym. Typ. No. 5479 — 1 ♂ paratype: Hungary, Budakeszi, Hársbokorhegy, 19 May 1954, leg. Bajári; in the Hungarian Natural History Museum, Budapest, Hym. Typ. No. 5480.

Remark — The holotype originates from the Wesmael Collection (deposited in Bruxelles) which was identified by Wesmael himself as “*Microgaster sessilis* Ne.?” and in his book (WESMAEL 1837: 48–49) he indicated its locality as “aux environs de Bruxelles”, and subsequent him I labelled this specimen so. — Besides this female specimen there are seven males (out of the nine males indicated by WESMAEL, l.c.) under the label *M. sessilis*, which were also identified by Wesmael similar to the holotype, however, they proved to represent the following species: 4 ♂: *A. brevicornis* WESMAEL; 2 ♂: sp? of *glomeratus*-group (or *Cotesia* CAMERON); 1 ♂: *A. anchisiades* NIXON.

The new species, *A. delitutus* sp. n., stands nearest to *A. anchisiades* NIXON, 1973 (Europe) and *A. armeniacus* TOBIAS, 1976 (Armenia), their specific distinction is given in a tabular form:

A. delitutus sp. n.

1. Head in dorsal view transverse, twice broader than long.
2. Pterostigma 2–2.2 times longer than wide (Fig. 123).
3. Second tergite 2.5–3 times wider behind than long medially (Fig. 124).
4. Penultimate joint of antenna of female 1.5–1.6 times longer than broad.
5. Hind femur blackish to reddish yellow with blackish suffusion (♀) or black(ish) (♂)

A. delitutus sp. n.

1. Pterostigma issuing radial vein distally from its middle, *rl* at least as long as *cuqul*, usually somewhat longer (Fig. 123).
2. First tergite parallel sided, narrowing behind; second tergite transverse, 2.5–3 times wider behind than long medially (Fig. 124).
3. Body 3–3.5 mm long.

Deceptively resembling *A. mandanis* NIXON, 1965 (Germany, Hungary), however, their separation is based on a solid though few specific features:

A. delitutus sp. n.

1. Fifth joint of fore tarsus with a latero-distal spinule (Fig. 122).
2. Second tergite transverse, 2.5–3 times wider behind than long medially (Fig. 124).
3. Propodeum smooth to uneven-subrugulose.
4. Head in dorsal view transverse, twice broader than long.
5. Hind femur blackish to reddish yellow with blackish suffusion (♀) or black(ish) (♂).

By its yellow cheek (of holotype and 1 ♀ paratype) the new species resembles *A. andromica* NIXON, 1965 (Germany, Czechoslovakia), however, the two species may be distinguished with the following features:

A. delitutus sp. n.

1. First tergite parallel sided and attenuating apically (Fig. 124).
2. *rl* shorter than width of pterostigma; *D* hardly wider than high, *d5* 1.5 times longer than *dl* (Fig. 123)
3. Propodeum smooth to uneven-subrugulose.

A. anchisiades NIXON

1. Head in dorsal view somewhat less transverse, 1.7–1.9 times broader than long.
2. Pterostigma 2.7–2.8(–2.9) times longer than wide (Fig. 106).
3. Second tergite at most 1.4–1.5 times wider behind than long medially (Fig. 104).
4. Penultimate joint of antenna of female distinctly twice longer than broad.
5. Hind femur usually reddish yellow with more or less blackish suffusion (♀♂), or rarely femur blackish (♂).

A. armeniacus TOB.

1. Pterostigma issuing radial vein from its middle, *rl* shorter than *cuqul* (Fig. 99).
2. First tergite slightly though distinctly narrowing from base to apex; second tergite subtriangular, about twice wider behind than long medially (Fig. 98).
3. Body 2 mm long.

A. mandanis NIXON

1. Fifth joint of fore tarsus latero-distally without spinule.
2. Second tergite less transverse, about 1.5 times wider behind than long medially (Fig. 92).
3. Propodeum smooth to polished.
4. Head in dorsal view less transverse, 1.8–1.9 times broader than long.
5. Hind femur reddish yellow (♀♂).

A. andromica NIXON

1. First tergite broadening posteriorly (cf. Fig. 115).
2. *rl* almost as long as width of pterostigma (Fig. 111); *D* one-sixth wider than high, *d5* slightly longer than *dl*.
3. Propodeum polished.

The *SUEVUS*-group

The following features characterize the species of the *suevus*-group (females): 1. First tergite strongly broadening posteriorly; second tergite conspicuously transverse, (3.5–)4 times wider behind than long medially, third tergite twice to almost twice as long as second tergite (Fig. 86). 2. Propodeum roughly rugose to scabrous. Tergites 1–2 densely rugose. Hypopygium laterally smooth, i.e. well sclerotized, medio-longitudinally not always and rather weakly infolded. 5. Pterostigma issuing radial vein clearly distally from its middle, metacarp at least somewhat shorter than pterostigma (Fig. 87, Fig. 190 in PAPP 1981: 291). Venation of wing deceptively resembling that of the species of the *butalidis*-group.

The hosts of the species of the *suevus*-group cover the lepidopterous family Psychidae.

The *suevus*-group comprises a single species in Europe:

- — ♀: Head in dorsal view (Fig. 85) behind eyes constricted, eye 1.6–1.8 times longer than temple; head distinctly broader than mesonotum between tegulae. Mesonotum and scutellum dull and with closely placed though never confluent punctation. First and second tergites rugose (less roughly than propodeum). First tergite clearly broadening posteriorly, second tergite conspicuously transverse (Fig. 86), usually distinctly four times wider behind than long medially. Ovipositor sheath in lateral view as long as hind tarsal joints 1–2, or one-fifth shorter than hind tibia. Penultimate 2–3 joints of antenna distinctly 1.5 times longer than broad. Pterostigma issuing radial vein distinctly distally from its middle; metacarp shorter than pterostigma; *r*1 directed somewhat outwards to distal end of wing; *d*2 twice to somewhat more than twice as long as *d*1 (Fig. 87). Black. Sternites 1–2(–3) yellowish to reddish yellow, second tergite laterally more or less reddish yellow. Legs, including coxae and trochanters too, reddish yellow to reddish, middle and hind femora with blackish suffusion to almost entirely black, hind tibia distally and hind tarsus almost entirely infuscate to blackish. Wings brownish fumous, pterostigma and veins brown. Length (2–)3–4 mm. — ♂: Deviating from female in several features. Head in dorsal view behind eyes less constricted to rather rounded, only somewhat broader than mesonotum between tegulae. Mesonotum subshiny to shiny, with somewhat less closely placed punctation, scutellum almost smooth and shiny with a few punctures. First tergite less broadening posteriorly; second tergite less transverse, usually 1.5–2.5(–3) times wider behind than long medially (Fig. 189 in PAPP 1981: 291). Body and legs black. Distal part of fore wing see Fig. 190 (l.c.). Hind tibia basally yellowish or reddish yellow. Length (2–)2.7–3.2 mm. The male sex is much more frequent than the female sex. — Sporadic to frequent in the western Palearctic Region. (= *brevisternis* TOBIAS, 1964, !!, **syn. n.**; = *dion* NIXON, 1965, !!, **syn. n.**; = *minutus* SZÉPLIGETI, 1896, !!, **syn. n.**; = *sesostris* NIXON, 1976, !, **syn. n.**; = *susplicax* TOBIAS, 1964, !!, **syn. n.**)

suevus REINHARD, 1880 (!!)

R e m a r k — Below I expound the synonymous names of *A. suevus* REINHARD:

Apanteles suevus REINHARD

Apanteles suevus REINHARD, 1880, Dt. ent. Z., 24: 364 (in key) and Dt. ent. Z., 25: 39 ♀ (description), locus typicus: Stuttgart (FRG). — “Type” in the Zoologisches Museum, Berlin.

Apanteles brevisternis TOBIAS, 1964, Trudy zool. Inst. (Leningrad), 34: 229, ♀, locus typicus: 10 km E. of Zhana-Arka, Karaganda obl., Kazakhstan (USSR); **syn. n.** — Holotype in the Zoological Institute, Leningrad.

- Apanteles dion* NIXON, 1965, Bull. Br. Mus. nat. Hist., Ent. Suppl., 2: 183, ♀, locus typicus: Mohelno, Czechoslovakia; **syn. n.** — Holotype in the Národní Múzeum, Entomologické oddeleni, Praha.
- Apanteles minutus* SZÉPLIGETI, 1896, Természetr. Füz., 19: 305 (in Hungarian), ♀, locus typicus: Budapest (Hungary); **syn. n.** — Holotype in the Hungarian Natural History Museum, Budapest, Hym. Typ. No. 465.
- Apanteles sesostris* NIXON, 1976, Bull. ent. Res., 65: 714, ♂, locus typicus: Lodge Hill, Chattenden, Kent (England); **syn. n.** — Holotype in the British Museum (Nat. Hist.), London.
- Apanteles suspicax* TOBIAS, 1964, Trudy zool. Inst. (Leningrad), 34: 230, ♀, locus typicus: Kokshe, tau, Tselinograd obl., Kazakhstan (USSR); **syn. n.** — Holotype in the Zoological Institute, Leningrad.

The above synonymization is based on my original type-examinations. I have already indicated the synonymy of the name *A. dion* NIXON with *A. suevus* REINHARD (PAPP 1974). — Though the form named as *A. sesostris* NIXON deviates in a few but conspicuous features from the form *A. suevus* REINHARD, I consider them as representing the same species and differences between them are only sexual characters, i.e. within the species *A. suevus* the sexual differences are, in comparison to the usual ones of the *Apanteles* species, much more pronounced. Implicitly it is understood that up to now *suevus* had been known only by the female sex and *sesostris* only by the male sex. Furthermore, this opinion is supported by a breeding experiment of Dr. L. Gozmány, who reared both sexes of "*suevus*" (2 ♀) and "*sesostris*" (1 ♂) from a single caterpillar of *Rebelia* sp. (locality Durmitor, Yugoslavia).

* * *

APPENDIX

After having completed my survey of the species of the *circumscriptus*-group (PAPP 1983) herewith I must append my most recent conclusions on the synonymy of a "classic" species-name within the genus *Apanteles* as *A. ruficornis* (NEES, 1834) sen. syn. and *A. hedymeles* NIXON, 1973 jun. syn. In my previous work (1. c.) I put in synonymy the name *ruficornis* NEES with *parasitellae* BOUCHÉ, accepting the opinions on their identity on one hand and lacking sufficient authentic material for examination on the other hand. (NEES, 1834)

Apanteles ruficornis (NEES, 1834)

Microgaster ruficornis NEES, 1834, Hym. Ichn. aff. Mon. 1: 179 ♂, 2: 402 ♀, locus typicus: Sickerhausen (Germany). — Type(s) destroyed and lost. Neotype designated here.

Apanteles hedymeles NIXON, 1973, Bull. ent. Res. 63: 194, ♀; locus typicus: Boxmoor, Herts (England), **syn. n.** — Holotype in the British Museum (Nat. Hist.), London.

Designation of the neotype of *Microgaster ruficornis* NEES:

First label: "Coll. Wesmael" (printed) — second label: "2014" (printed) — third label: "Microgaster ruficornis. N. V. Es." (handscript) "dét. C. Wesmael" (printed) — fourth label: "R. I. Sc. N. B., I. G." (printed) "3.317" (handscript) — fifth label with printed red frame: "Lectotypus" (printed red) "Microgaster ruficornis Nees 1834 ♀, Papp 1984" (my handscript) — sixth label: "Apanteles" (printed) "ruficornis Ns. ♀" (my handscript) "det. Papp J., 19" (printed) "84" (my handscript).

The neotype is deposited in the Institute Royal des Sciences Naturelles de Belgique, Bruxelles.

In Wesmael's Collection (Bruxelles) three specimens (1 ♀ + 2 ♂) are pinned under the name of *Microgaster ruficornis* NEES, of which the single female proved to be quite identical with a paratype female of the *Apanteles hedymeles* NIXON studied. The first reviser of *M. ruficornis* NEES was C. WESMAEL (1837) who gave a detailed description of it. On one hand, his redescription agrees perfectly with the single female indicated, and with the original description of *M. ruficornis* by NEES (1834) as well as with the description of *A. hedymeles* by NIXON (1973) on the other hand. The designation of the neotype for *M. ruficornis* NEES seemed necessary owing to its taxonomic status, its senior synonymy as well as its complicated

similarity with the closely related species (cf. Art. 75 in International Code of Zoological Nomenclature, 1961) as *Apanteles arene* NIXON, 1973, *A. parasitellae* (BOUCHÉ, 1834) and *A. tedellae* NIXON, 1961; further details see in PAPP 1981.

Of the 2 males in Wesmael's Collection indicated before the first specimen also represents *M. ruficornis* NEES, the second one was named by me with reservation, thus indicated by a question-mark on the label attached to the specimen.

Remark — Since 1862, when A. FÖRSTER erected the genus-name *Apanteles*, a long series of species described originally for the genus *Microgaster* have been transferred to the genus *Apanteles*. This taxonomic change also pertains *ruficornis* NEES and its related species.

Acknowledgement — I am much indebted to DR. P. DESSART (Institut Royal des Sciences Naturelles de Belgique, Bruxelles) who kindly loaned me the *Apanteles* material from Wesmael's Collection serving for the designation of the neotype and establishment of the new synonymy.

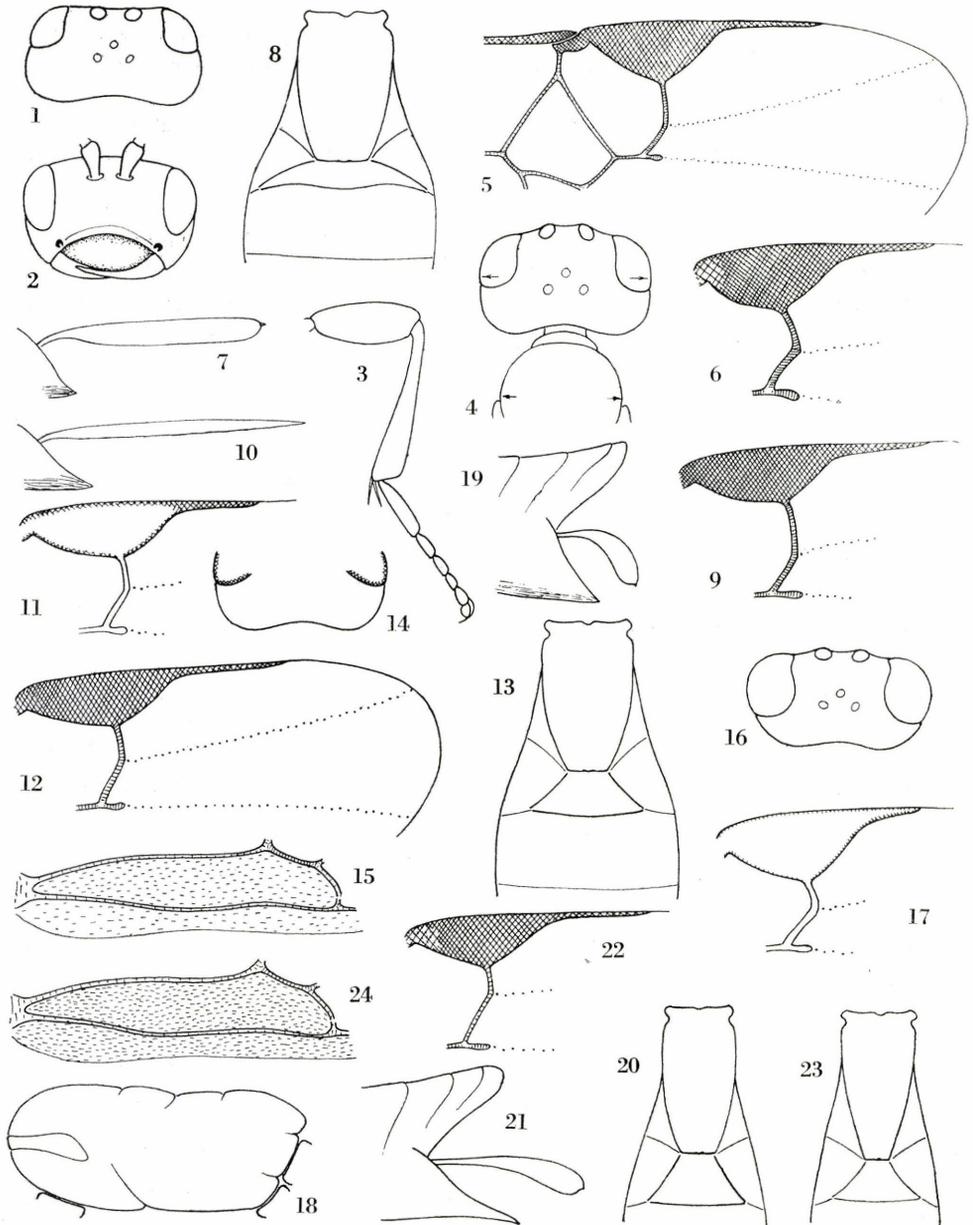
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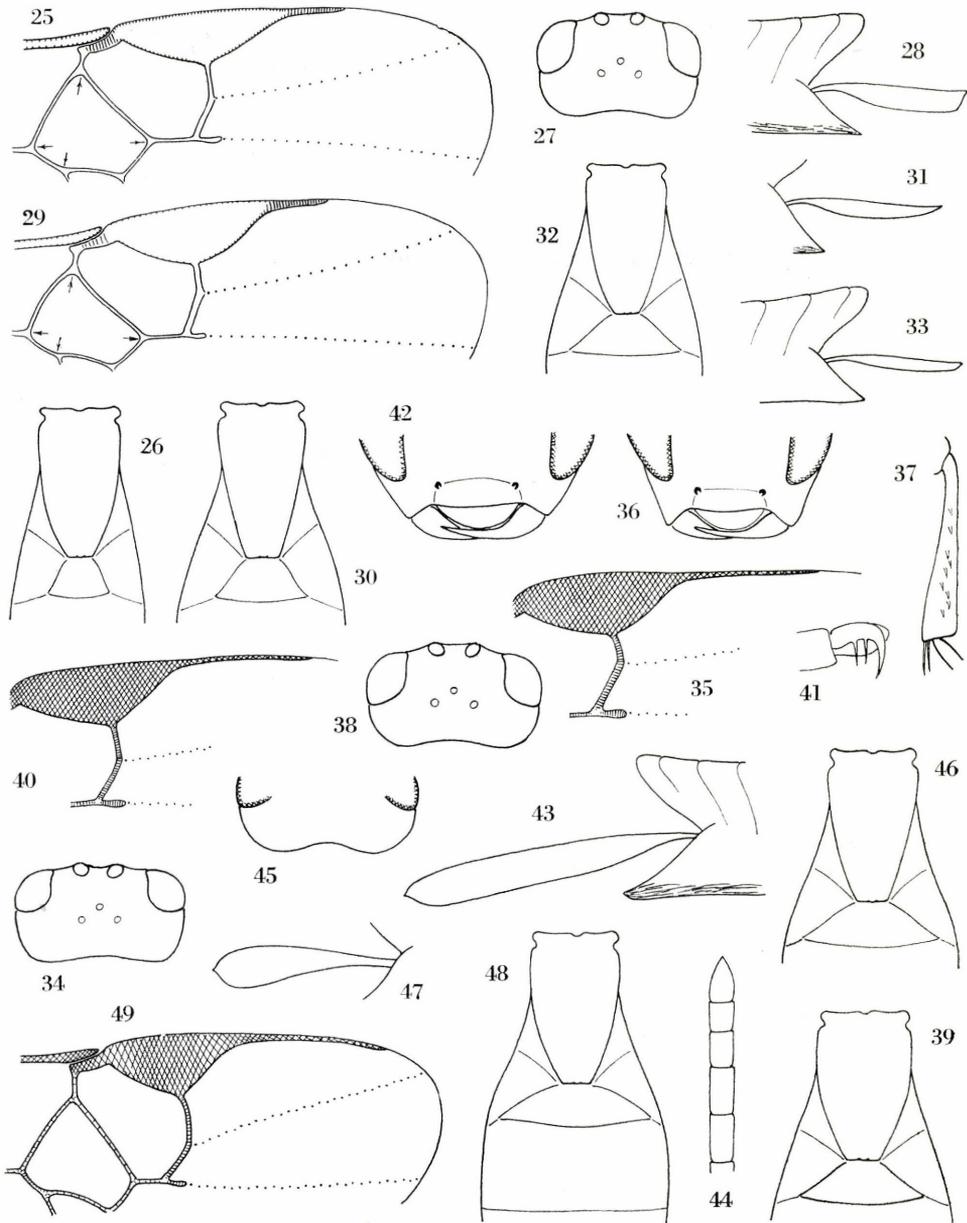
* For further references see the previous parts (VI–VII) of my survey (PAPP 1982, 1983).

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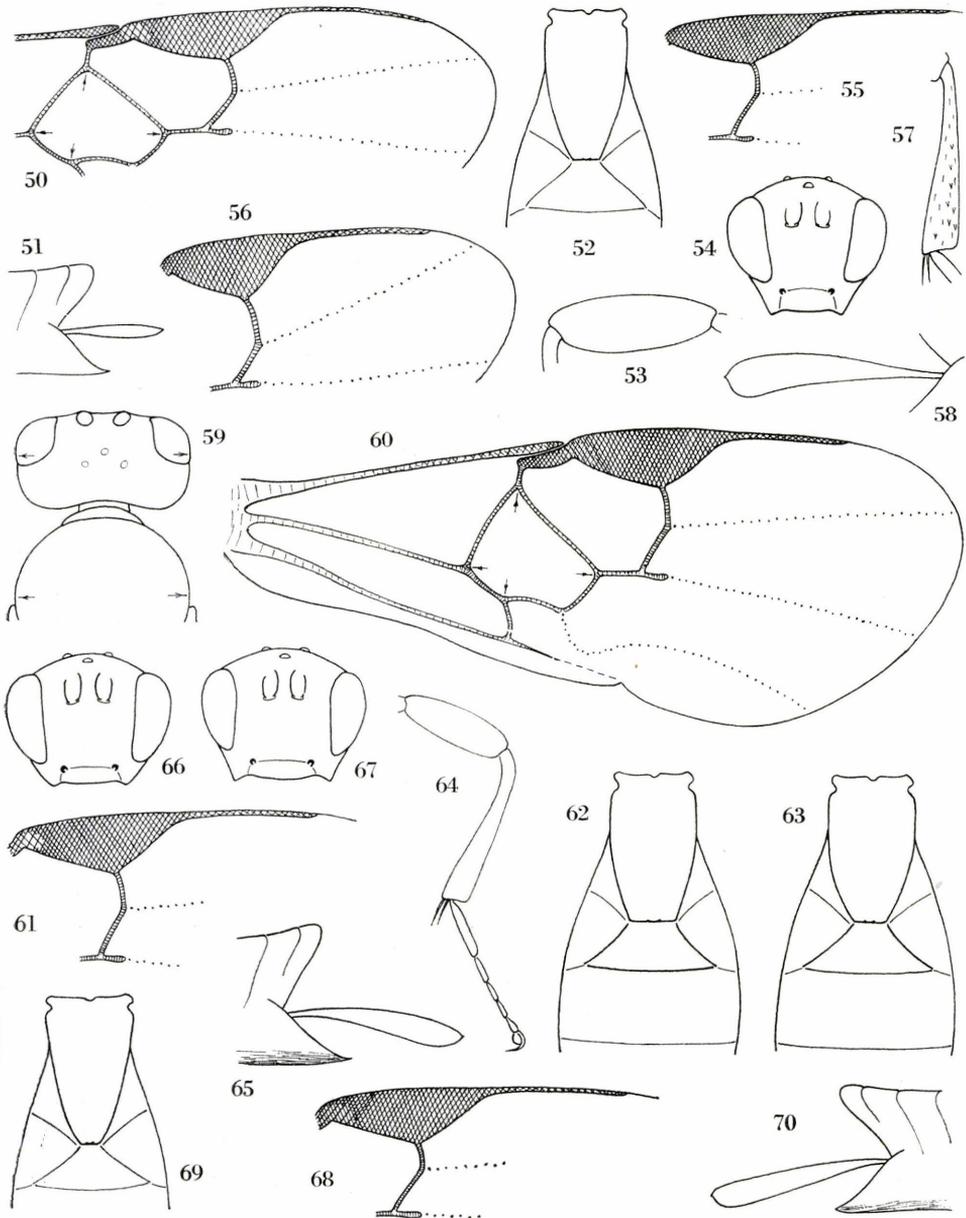
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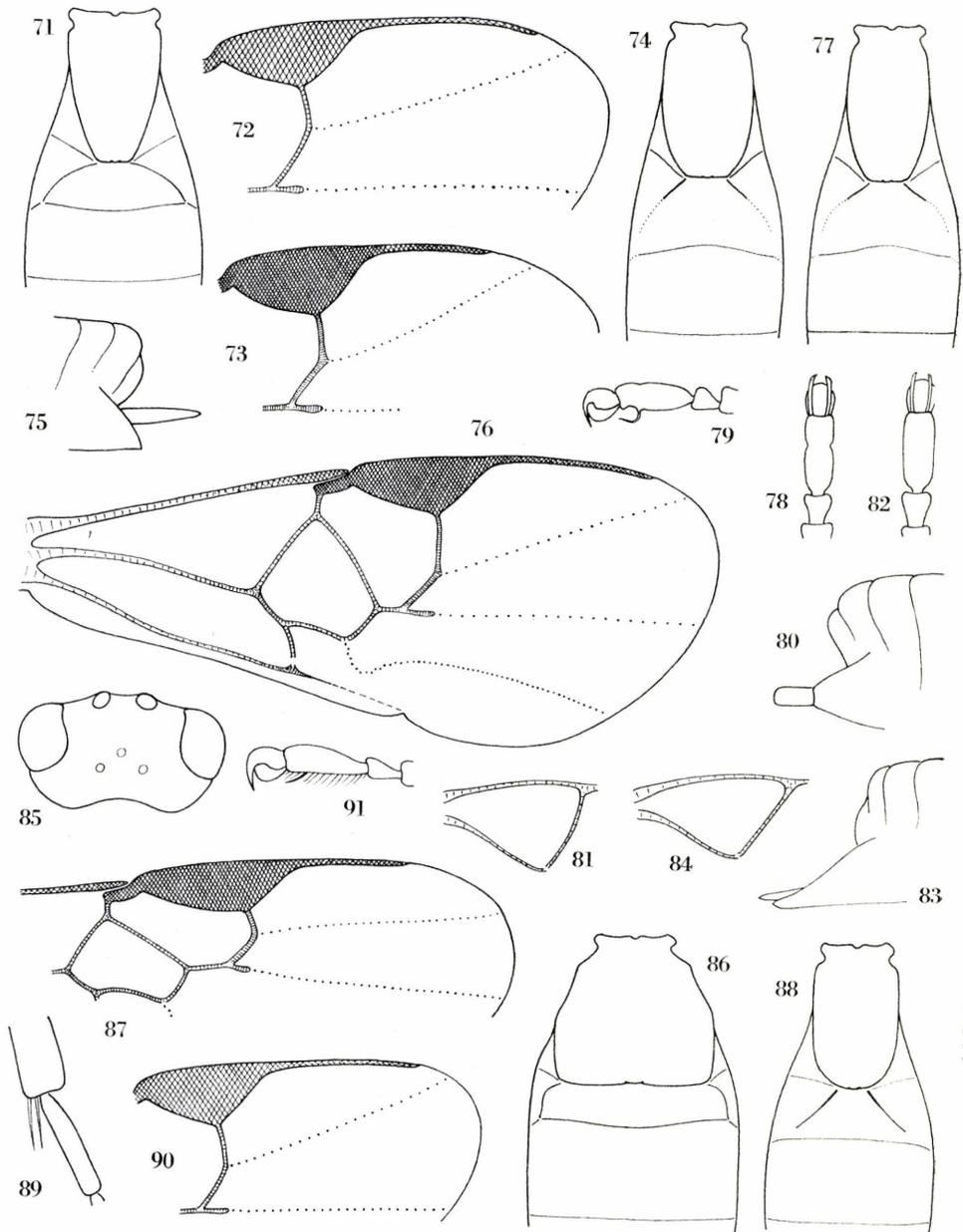
Figs. 1-3. *Apanteles prinoptus* sp. n.: 1 = head in dorsal view, 2 = head in frontal view with split between clypeus and mandible, 3 = right hind leg. — Figs. 4-5. *A. olivierellae* WILKINSON: 4 = head and mesonotum in dorsal view, arrows indicate breadth measurements, 5 = distal part of right fore wing. — Figs. 6-7. *A. floralis* TOBIAS: 6 = pterostigma, *r1+cuqul* and *cu3* of right fore wing, 7 = ovipositor sheath in lateral view. — Figs. 8-10. *A. znoikoi* TOBIAS: 8 = tergites 1-3, 9 = pterostigma, *r1+cuqul* and *cu3* of right fore wing, 10 = ovipositor sheath in lateral view. — Fig. 11. *A. pilosus* TELENGA: pterostigma, *r1+cuqul* and *cu3* of right fore wing. — Figs. 12-15. *A. firmus* TELENGA: 12 = distal part of right fore wing, 13 = tergites 1-3, 14 = head behind eyes in dorsal view, 15 = median cell of right fore wing with setae. — Figs. 16-17. *A. oculatus* TOBIAS: 16 = head in dorsal view, 17 = pterostigma, *r1+cuqul* and *cu3* of right fore wing. — Figs. 18-20. *A. extensus* PAPP: 18 = mesosoma in lateral view, 19 = posterior end of metasoma with hypopygium and ovipositor sheath, 20 = tergites 1-2. — Figs. 21-23. *A. acutus* PAPP: 21 = posterior end of metasoma with hypopygium and ovipositor sheath, 22 = pterostigma, *r1+cuqul* and *cu3* of right fore wing, 23 = tergites 1-2. — Fig. 24. *A. metacarpalis* THOMSON: median cell of right fore wing with setae



Figs. 25-28. *Apanteles pelopea* NIXON: 25 = distal part of right fore wing, 26 = tergites 1-2, 27 = head in dorsal view, 28 = posterior end of metasoma with hypopygium and ovipositor sheath. — Figs. 29-31. *A. gobicus* PAPP: 29 = distal part of right fore wing, 30 = tergites 1-2, 31 = ovipositor sheath with hypopygium. — Figs. 32-33. *A. ingenuus* TOBIAS: 32 = tergites 1-2, 33 = posterior end of metasoma with hypopygium and ovipositor sheath. — Figs. 34-37. *A. quadrifacies* PAPP: 34 = head in dorsal view, 35 = pterostigma, *r1+cuqul* and *cu3* of right fore wing, 36 = lower part of head, 37 = outer side of right hind tibia with spinules. — Figs. 38-41. *A. atreus* NIXON: 38 = head in dorsal view, 39 = tergites 1-2, 40 = pterostigma, *r1+cuqul* and *cu3* of right fore wing, 41 = claw of hind tarsus. — Fig. 42. *A. metacarpalis* THOMSON: lower part of head. — Fig. 43. *A. aragatzi* TOBIAS: posterior end of metasoma with hypopygium and ovipositor sheath. — Figs. 44-46. *A. chrysis* NIXON: 44 = distal end of antenna (or last five flagellar joints), 45 = head behind eyes in dorsal view, 46 = tergites 1-2. — Figs. 47-49. *A. laevissimus* (RATZEBURG): 47 = ovipositor sheath in lateral view, 48 = tergites 1-3, 49 = distal part of right fore wing



Figs. 50-52. *Apanteles szelenyii* PAPP: 50 = distal part of right fore wing, 51 = posterior end of metasoma with hypopygium and ovipositor sheath, 52 = tergites 1-2. — Figs. 53-55. *A. bajariae* PAPP: 53 = hind femur in lateral view, 54 = head in frontal view, 55 = pterostigma, *r1+cu1* and *cu3* of right fore wing. — Figs. 56-58. *A. myron* NIXON: 56 = distal part of right fore wing, 57 = outer side of right hind tibia with spinules, 58 = ovipositor seath in lateral view. — Figs. 59-66. *A. metacarpalis* THOMSON: 59 = head and mesonotum in dorsal view, arrows indicate breadth measurements, 60 = right fore wing, 61 = pterostigma, *r1+cu1* and *cu3* of right fore wing, 62-63 = tergites 1-3 64 = hind leg from femur, 65 = posterior end of metasoma with hypopygium and ovipositor sheath, 66 = head in frontal view. — Fig. 67. *A. quadrfacies* PAPP: head in frontal view. — Figs. 68-70. *A. ingenuoides* PAPP: 68 = pterostigma, *r1+cu1* and *cu3* of right fore wing, 69 = tergites 1-2, 70 = posterior end of metasoma with hypopygium and ovipositor sheath



Figs. 71-72. *Apanteles corvinus* REINHARD: 71 = tergites 1-3, 72 = distal part of right fore wing. — Figs. 73-75. *A. sancus* NIXON: 73 = distal part of right fore wing, 74 = tergites 1-3, 75 = posterior end of metasoma with hypopygium and ovipositor sheath. — Figs. 76-81. *A. formosus* (WESMAEL): 76 = right fore wing, 77 = tergites 1-3, 78 = fore tarsal joints (3-4-5) in dorsal view, 79 = fore tarsal joints (3-4-5) with spinule in lateral view, 80 = posterior end of metasoma with hypopygium and ovipositor sheath, 81 = nervellus (of hind wing). — Figs. 82-84. *A. pompon* NIXON: 82 = fore tarsal joints (3-4-5) in dorsal view, 83 = posterior end of metasoma with hypopygium and ovipositor sheath, 84 = nervellus (of hind wing). — Figs. 85-87. *A. suevus* REINHARD: 85 = head in dorsal view, 86 = tergites 1-3, 87 = distal part of right fore wing. — Figs. 88-91. *A. triangulator* (WESMAEL): 88 = tergites 1-3, 89 = distal end of hind tibia with two spurs, 90 = distal part of right fore wing, 91 = fore tarsal joints (3-4-5) with spinule in lateral view

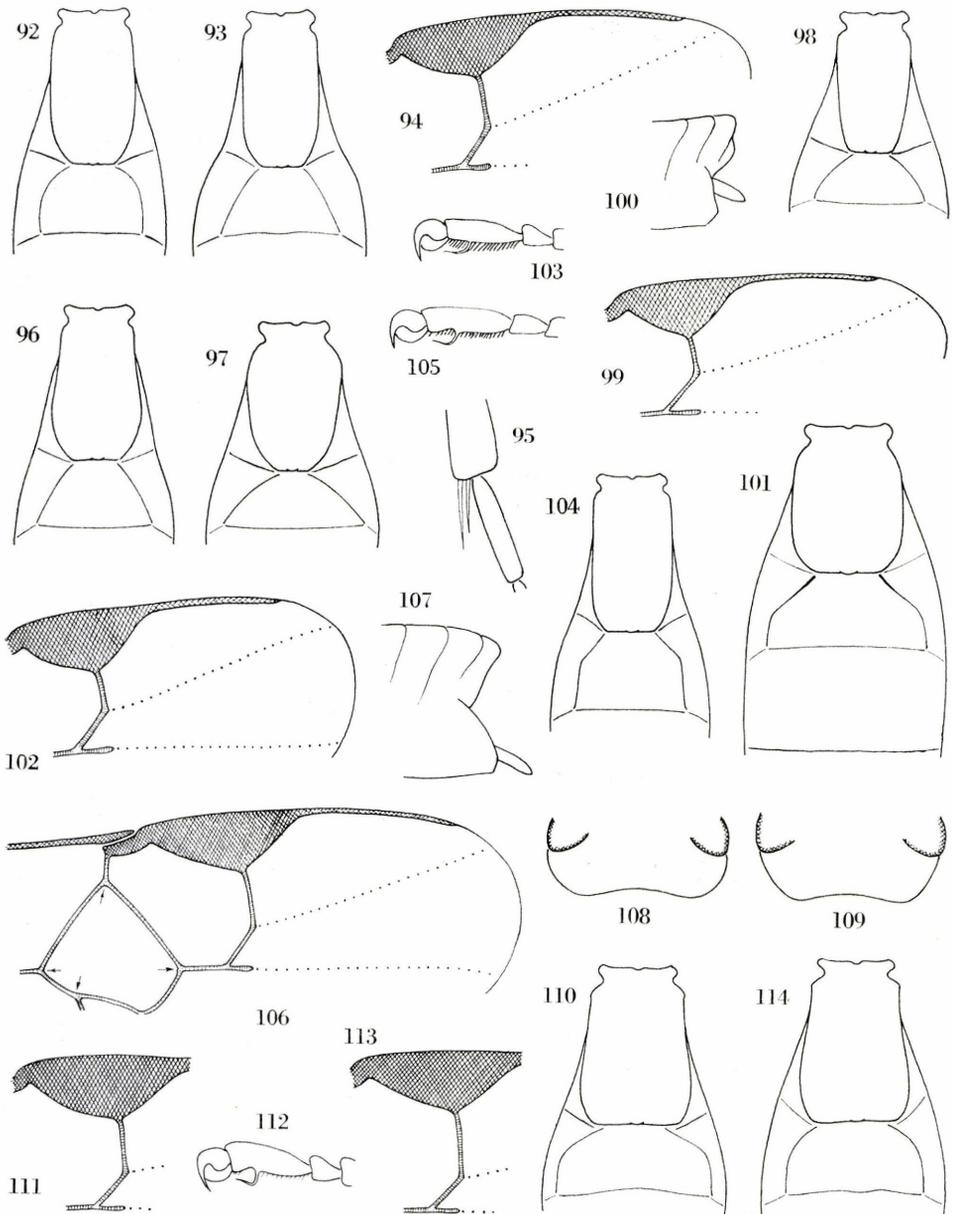
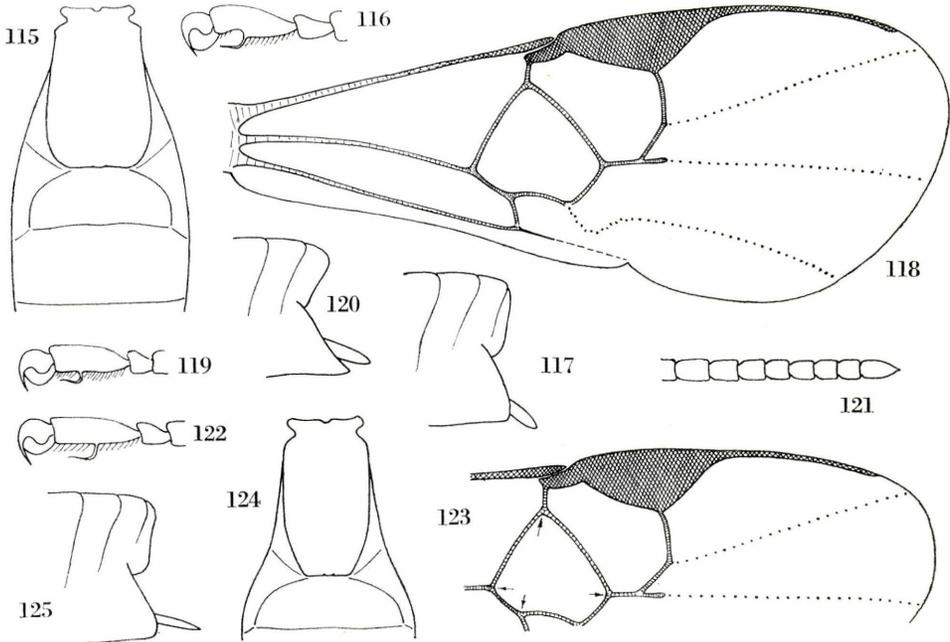


Fig. 92. *Apanteles mandanis* NIXON: tergites 1-2. — Figs. 93-95. *A. parallelus* LYLE: 93 = tergites 1-2, 94 = distal part of right fore wing, 95 = distal end of hind tibia with two spurs. — Fig. 96. *A. neptisis* WATANABE: tergites 1-2. — Fig. 97. *A. harrisinae* MUESEBECK: tergites 1-2. — Figs. 98-100. *A. armeniacus* TOBIAS: 98 = tergites 1-2, 99 = distal part of right fore wing, 100 = posterior end of metasoma with hypopygium and ovipositor sheath. — Figs. 101-103. *A. popularis* (HALIDAY): 101 = tergites 1-2, 102 = distal part of right fore wing, 103 = fore tarsal joints (3-4-5) with spinule in lateral view. — Figs. 104-107. *A. anchisiades* NIXON: 104 = tergites 1-2, 105 = fore tarsal joints (3-4-5) with spinule in lateral view, 106 = distal part of right fore wing, 107 = posterior end of metasoma with hypopygium and ovipositor sheath. — Fig. 108. *A. endemus* NIXON: head behind eyes in dorsal view. — Figs. 109-110. *A. enephes* NIXON: 109 = head behind eyes in dorsal view, 110 = tergites 1-2. — Fig. 111. *A. andromica* NIXON: pterostigma, *r1+cuqul* and *cu3* of right fore wing. — Figs. 112-114. *A. caberae* MARSHALL: 112 = fore tarsal joints (3-4-5) with spinule in lateral view, 113 = pterostigma, *r1+cuqul* and *cu3* of right fore wing, 114 = tergites 1-2.



Figs. 115-118. *Apanteles immunis* (HALIDAY): 115 = tergites 1-3, 116 = fore tarsal joints (3-4-5 with spinule in lateral view, 117 = posterior end of metasoma with hypopygium and ovipositor sheath, 118 = right fore wing. — Figs. 119-121. *A. iapetus* NIXON: 119 = fore tarsal joints (3-4-5 with spinule in lateral view, 120 = posterior end metasoma with hypopygium and ovipositor sheath, 121 = antennal joints (10-11-18). — Figs. 122-125. *A. delitutus* sp. n.: 122 = fore tarsal joints (3-4-5 with spinule in lateral view, 123 = distal part of right fore wing, 124 = tergites 1-2, 125 = posterior end of metasoma with hypopygium and ovipositor sheath.

