

**A survey of the European species of *Apanteles* Först.
(Hymenoptera, Braconidae: Microgastrinae),
V. The *lacteus*-, *longipalpis*-, *ultor*-, *butalidis*- and *vipio*-group**

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Abstract — Key to the *lacteus*-, *longipalpis*-, *ultor*-, *butalidis* and *vipio*-group comprising all European (29) and some extra-European (9 East Palaearctic and 3 North African), a total of 41 *Apanteles* species, is given. Recent type-examination revealed the following new synonymy: *A. naso* MARSHALL, 1885: = *A. contortus* TOBIAS, 1964, syn. n., = *A. evander* NIXON, 1965, syn. n. All species are enumerated in an alphabetic order within their respective species-group. With 195 figures (on 13 tables).

The *LACTEUS*-group

The following features characterize the species of the *lacteus*-group: 1. Malar space conspicuously long, i.e. twice as long as basal width of mandible (Fig. 2, 89–90). 2. Wings somewhat milky-hyaline. 3. Vannal lobe of hind wing concave to straight, beyond its widest point without a fringe of hairs (Fig. 91) 4. Hypopygium weakly sclerotized and with longitudinal creases.

The hosts of the species of the *lacteus*-group cover the following lepidopterous families: Phycitidae, Tineidae.

KEY TO THE SPECIES OF THE *LACTEUS*-GROUP

A (B) Females.

- 1 (4) Propodeum, at least medially, rugose to rugulose, laterally usually smooth and shiny.
- 2 (3) First tergite subquadrate (Fig. 92), i.e. broadest at its middle and nearly equally wide at its fore and hind end; third tergite twice longer than second tergite. Ovipositor sheath in lateral view one-and-a-half times as long as hind tibia. Stigma opaque yellow. Tegula yellow. Legs black, fore femur distally and tibiae 1–3 more or less with a yellowish pattern. Disc of mesonotum punctate, interspaces equal with diameter of punctures, notaulix indicated by crowded punctation (Fig. 1). Distance between fore and hind ocelli somewhat greater than diameter of an ocellus (6:5). Penultimate joint of antenna almost twice longer than broad (9–10:5). ♀♂: 3.5–4 mm. — Western Palaearctic Region, rather sporadic. (= *tadzhicus* TELENGA, 1949, ♂, non ♀, partim)
A. lacteus* (NEES, 1834) (!)
- 3 (2) First tergite one-and-a-half times as long as broad at hind, slightly broadening distally. Ovipositor sheath in lateral view distinctly shorter than hind tibia. Stigma light brown.

* (!) = I studied authentic specimen(s), i.e. specimen(s) named by MARSHALL, NIXON, REINHARD, TELENGA, TOBIAS, WILKINSON (Palaearctic species) and MARSH, MASON, MUESEBECK, WATANABE (East Palaearctic or Nearctic species).
(!!) = Either the holotype or the paratype(s) seen.

Legs yellow, coxae black, hind femur + tibia more or less and all tarsi entirely blackish fumous. Tegula blackish brown. Otherwise similar to *A. lacteus* (NEES). ♀: 2–3 mm. — Morocco

A. marokkanus FAHRINGER, 1936

- 4 (1) Propodeum smooth and shiny, with almost indistinct hair-punctures. First tergite almost one-and-a-half times as long as broad near to its base, evenly narrowing from base to apex, broadest before its base and here one-third wider than at its hind end; third tergite only somewhat longer than second tergite (Fig. 94). Disc of mesonotum with very fine punctation, interspaces twice-thrice longer than diameter of punctures, notaulix indistinct (Fig. 3). First tergite smooth to polished, only its hind two-fifths punctate to rugulo-punctate. Penultimate joint of antenna subcubic, i.e. one-fourth longer than broad (8:6). Metacarp one-fourth longer than stigma, and four times as long as distance between its distal end and tip of *R* (Fig. 93). Ovipositor sheath as long as hind tibia. Tegula black. Stigma dark brown with a small pale basal spot. ♀: 3.8 mm. — Mongolia

A. frustratus PAPP, 1975 (!)

- B (A) Males. — First tergite subquadrate (?slightly broader than long; see MARSHALL 1898, p. 180). Disc of mesonotum polished. Propodeum smooth, shiny. Second tergite as long as third tergite. ♂: 3.3 mm. Its proper arrangement in species-group is uncertain (see also in *vipio*-group, p. 277). — Spain.

A. rhamphus MARSHALL, 1898

THE SPECIES OF THE *LACTEUS*-GROUP

(Numbers refer to couplet-number)

frustratus PAPP 4 (1)
lacteus (NEES) 2 (3)
marokkanus FAHR. 3 (4)
rhamphus MARSHALL B (A)

Remarks — 1. The species *A. marokkanus* FAHR. and *A. rhamphus* MARSH. were included on the basis of the original description. They presented some difficulties since they have been described in the traditional way, consequently, lacking several features adopted in modern species descriptions and identification keys. Nevertheless, they fit in the *lacteus*-group, though a type-examination may put them in new light. Concerning *A. rhamphus* MARSH. it was placed here also on the basis of MARSHALL's indication "Elle est remarquable par le prolongement en museau des parties de la bouche, caractère qui signale chez certaines espèces leur parenté avec les *Agathis* typiques." (MARSHALL 1898, p. 180).

2. The type(s) of *A. marokkanus* FAHR. is not to be found in the Naturhistorisches Museum, Wien, as DR. M. FISCHER kindly informed me few years ago.

3. The location of the type(s) of *A. rhamphus* MARSH. is latent. Since its description, together with *A. marokkanus* FAHR., no other report has been published on them and no further specimens has come to light.

4. The males of *A. rhamphus* MARSH. and of *A. rostratus* TOBIAS, on the basis of their description (MARSHALL 1898: 180. TOBIAS 1976: 248), seem to be extremely close to each other; *A. rhamphus* was described on the basis of male specimen(s). An eventual female specimen perhaps will reveal the real specific differences between the two species.

The *LONGIPALPIS*-group

The following features characterize the species of the *longipalpis*-group: 1. Maxillar palp very long, as long as height of head in lateral view; malar space twice as long as basal width of mandible (Figs. 4, 95). 2. Vannal lobe of hind wing convex and with a fringe of hairs. 3. Hypopygium with a few longitudinal creases. 4. Mesonotum with very fine or superficial punctation.

The hosts of the species of the *longipalpis*-group cover the following lepidopterous family: Psychidae

KEY TO THE SPECIES OF THE *LONGIPALPIS*-GROUP

Females

- 1 (4) Malar space long, twice as long as basal width of mandible (Figs. 4, 95).
 2 (3) First tergite subquadrate, i.e. length only slightly greater than basal width (Fig. 96). Nervellus relatively more incurved (Fig. 97 ↑). Thorax in lateral view relatively stout, only about 1.3–1.4 times as long as high. Head in dorsal view more transverse, i.e. 2.4 times broader than long; imaginary hind tangent to anterior ocellus at most touching two posterior ocelli (Fig. 98). Scutellum broad, prescutellar furrow faintly bisinuate (Fig. 99). Inner spur of second tibia slightly longer than half basitarsus. ♀: 3.5–4 mm, ♂: 3–3.8 mm. — Sporadic to frequent in the Western Palaearctic Region (= *A. tadzhicus* TELENGA, 1949, ♀, non ♂, partim)

A. longipalpis REINHARD, 1880 (!)

- 3 (2) Length of first tergite greater than basal width (Fig. 100). Nervellus relatively less incurved (Fig. 101 ↑). Thorax in lateral view relatively elongated, about 1.6 times as long as high. Head in dorsal view less transverse, i.e. twice broader than long; imaginary hind tangent to anterior ocellus just transecting two posterior ocelli (Fig. 102). Scutellum less broad, prescutellar furrow faintly arched (Fig. 103). Inner spur of second tibia slightly shorter than half basitarsus. ♀: 3.6 mm. — Finland

A. glaber PAPP, 1978 (!)

- 4 (1) Malar space short, half as long as basal width of mandible. Members of the *laevigatus*-group, further details see in PAPP 1978: 273–274 at couplets 41 (44)—43 (42)

[**A. palpator** TOBIAS, 1960]

[**A. pulcher** TELENGA, 1955 (!)]

THE SPECIES OF *LONGIPALPIS*-GROUP

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

glaber PAPP 3 (2)
longipalpis REINHARD 2 (3)
tadzhicus TEL. ♀ 2 (3)

TRANSITIONAL SPECIES TOWARDS *LONGIPALPIS*-GROUP

(Respective species-group in parenthesis, numbers referring to couplet-number)

palpator TOBIAS 4 (1)
 (*laevigatus*-group)
pulcher TEL. 4 (1)
 (*laevigatus*-group)

The *ULTOR*-group

The following features characterize the species of the *ultor*-group: 1. Propodeum with a distinct median areola, usually pentagonal and bordered by carina; and with lateral carina emitting from areola and delimiting a postero-lateral field (Figs. 7, 11, 21, 27, 34) 2. Mesonotum with a more or less sharp and well defined, i.e. not confluent, punctuation. Notaulix usually not indicated by crowded punctuation. 3. Vannal lobe of hind wing convex, i.e. not straight or concave, fringed with short hairs. 4. *r*₁ usually longer than *cuq*₁. 5. Hypopygium weakly sclerotized and with longitudinal creases. 6. First tergite either parallel to subparallel sided or somewhat widening at hind half. Second tergite shorter than third tergite.

The hosts of the species of the *ultor*-group cover the following lepidopterous families: Arctiidae, Coleophoridae, Gelechiidae, Geometridae, Lasiocampidae, Lymantriidae, Noctuidae, Nolidae, Notodontidae, Tortricidae.

KEY TO THE SPECIES OF THE *ULTOR*-GROUP

Females

- 1 (14) Hind femur reddish yellow, or, less usually, reddish brown. Fore and middle femora also reddish yellow or reddish brown.
- 2 (3) Propodeum with a distinct median areola emitting a medio-lateral transverse carina (Fig. 90, in PAPP 1980), however, vannal lobe with straight (Fig. 211, 1.c.) to weakly concave edge and mesonotum rather with confluent punctuation (Figs. 86–87, 1.c.). Stigma wide, 2–2.1 times longer than wide, brown with a pale basal spot (Fig. 89 and 208, 1.c.). Hind corner of propodeum projecting (Fig. 209, 1.c.). First tergite widening behind (Fig. 207, 1.c.). ♀: 2.4–2.6 mm. A member of the *ater*-group with some transitional features towards the *ultor*-group. — Cosmopolitan

[*A. carpatus* (SAY, 1836) (!)]

- 3 (2) Propodeum with a median areola and with a transverse medio-lateral carina; (Figs. 7, 11, 21, 27, 34); vannal lobe convex; mesonotum with separate punctuation (Figs. 6, 12, 15, 19, 22, 26, 29, 36, 44) — features characteristic to species of the *ultor*-group.
- 4 (7) Second tergite rugose or rugulose (Fig. 8).
- 5 (6) Body less strong. First tergite 1.3–1.4 times longer than wide at hind; second tergite thrice wider behind than long medially (Fig. 104). Ovipositor sheath shorter than hind tibia, at most as long as hind basitarsus. Head behind eyes less contracted (Fig. 105). *r*₁ only slightly longer than *cuq*₁. Penultimate joint of antenna 1.3–1.4 times as long as broad. First two-three sternites of abdomen yellow to pale. Stigma rather opaque pale brown. Hind femur always reddish yellow. ♀♂: 2.4–2.5 mm. — Taiwan, Japan

A. asotae WATANABE, 1932 (!)

- 6 (5) Body strong. First tergite 1.1–1.2 times longer than wide at hind; second tergite four times wider behind than long medially (Fig. 106). Ovipositor sheath usually as long as, or slightly longer than, hind tibia. Head behind eyes more contracted (Fig. 107). *r*₁ distinctly longer than *cuq*₁ (Fig. 108). Penultimate joint of antenna subcubic, at most 1.1–1.2 times as long as broad. First two-three sternites brown to dark brown. Stigma opaque dark brown, and rather exceptionally with a pale basal spot. Hind femur usually brown to blackish brown, rather exceptionally reddish yellow. ♀♂: 2.5–2.7 mm. — Japan, Korea, Taiwan

A. molestae MUESEBECK, 1933 (!)

- 7 (4) Second tergite smooth to almost smooth (Figs. 9, 13).
 8 (9) Eye in lateral view unusually narrow, temple somewhat wider than width of eye (Fig. 109). Sternaulix impressed and crenulo-rugose (Fig. 10). Nervellus of hind wing oblique and straight (Fig. 194, in Papp 1980). First tergite twice longer than wide at hind, subparallel-sided, i.e. rather indistinctly widening posteriorly (Fig. 196, 1.c.). Ovipositor sheath as long as hind tibia, feebly arched. Three preapical joints of antenna cubic. Ocelli small, hind imaginary tangent to fore ocellus at most touching hind two ocelli. Stigma pale brown. Sternites 1-2 laterally vivid yellow. Hind tibia and tarsus infusate. ♀: 2.8-3 mm. — Great Britain, Hungary. (= *sevocatus* PAPP, 1975, !!)

A. trachalus NIXON, 1965 (!!)

- 9 (8) Eye in lateral view usual in size and wider than temple (Fig. 110). Sternaulix indistinct. Nervellus of hind wing incurved (Fig. 111). First tergite less than twice as long as its hind width (Figs. 112, 114).
 10 (11) Ovipositor sheath short, about half as long as hind tibia or hardly longer than hind basitarsus. Tegula black. Metacarp distinctly longer than stigma, latter emitting radial vein distal from its middle; *r*1 longer than *cuq*u1 and meeting each other angularly; *d*2 about one-fifth longer than *d*1 (Figs. 18, 113). Penultimate joint of antenna 1.5-1.6 times as long as broad. Mesonotum with discrete punctation, scutellum weakly punctate, shiny (Fig. 12). Postero-lateral field of propodeum smooth, shiny (Fig. 11). Nervellus of hind wing incurved (Fig. 111 ↓). Spurs of hind tibia equal in length, inner spur shorter than half basitarsus. First tergite relatively broad, (1.3)-1.5 times as long as wide at hind, slightly widening posteriorly, second tergite rectangular (Fig. 112), its surface with a medio-longitudinal feeble crest, otherwise punctate-rugose (Fig. 13). Legs reddish yellow except black coxae and brown first trochanter. Wings hyaline. ♀♂: 2.5-2.8 mm. — Europe as far eastwards as Georgia and Daghestan in the USSR. (= *Microgaster lacteipennis* RATZEBURG, 1852, nec CURTIS, 1830)

A. ultor REINHARD, 1881 (!!)

- 11 (10) Ovipositor sheath long, as long as hind tibia or longer. Tegula reddish yellow to brownish yellow.
 12 (13) Metacarp as long as stigma, usually slightly shorter, *r*1 indistinctly longer than *cuq*u1 and forming rather an arched vein (Fig. 115). Penultimate joint of antenna 1.4-1.5 times as long as broad. Fields of propodeum smooth to nearly smooth, i.e. with few rugulae. First tergite feebly though distinctly widening distally, one-fifth to one-fourth as long as wide at hind (Fig. 114), its hind surface rugulose, shiny Stigma opaque yellow, metacarp brownish (Fig. 115). Tegula vivid reddish yellow. ♀♂: 2.3-2.6 mm. — Kazakhstan, southern part of European USSR

A. pallidalatus TOBIAS, 1964 (!!)

- 13 (12) Metacarp distinctly longer than stigma (25:20), *r*1 longer than *cuq*u1 and meeting each other angularly. Penultimate joint of antenna cubic. Fields of propodeum rugose to almost rugose. First tergite parallel-sided, one-third to one-half longer than wide at hind, its hind surface rugose to strongly rugose. Stigma pale brownish with a yellow basal spot. Tegula rather brownish yellow. ♀: 2.3-2.7 mm. — Ukraine (Char'kov) and Armenia (Yerevan) in the USSR

A. jaroshevskyi TOBIAS, 1976*

- 14 (1) Hind femur blackish brown to black. Fore and middle femora more or less also dark.

* I know only the original description (TOBIAS 1976) of this species.

- 15 (18) Edge of vannal lobe straight or concave, without fringe of hairs
- 16 (17) Edge of vannal lobe concave. Outer surface of hind coxa rugose to rugulose (Fig. 73, in PAPP 1980). Scutellum rugose to rugulose (Fig. 72, 1.c.). A member of the *ater*-group, though its propodeal areolation resembling that of the *ultor*-group. Further details see in PAPP 1980
- [*A. hemara* NIXON, 1965, (!)]
- 17 (16) Edge of vannal lobe straight. Outer surface of hind coxa smooth, shiny. Scutellum polished with few scattered punctures. Members of the *obscurus*-group with transitional features towards the *ultor*-group. Further details see in PAPP 1980
- [*A. lenea* NIXON, 1976 (!)]
- [*A. obscurus* (NEES, 1834) (!)]
- 18 (15) Edge of vannal lobe convex and with fringe of hairs.
- 19 (26) Second tergite rugulose to rugose, i.e. its sculpture only somewhat (not conspicuously) weaker than that of first tergite (Figs. 8, 14, 23–24, 28).
- 20 (21) Scutellum evenly punctate, interspaces shiny and about as long as punctures (Figs. 16–17). Second tergite laterally unusually narrowing, third tergite 1.5 times longer than second tergite (Figs. 116). Mesonotum dull and with closely placed punctation, interspaces much shorter than punctures (Figs. 15, 19). Nervellus of hind wing nearly straight (Fig. 117). Head behind eyes rounded, contracted (Fig. 118). Penultimate joint of antenna (1.5–)1.6 times longer than broad. Inner spur of hind tibia as long as or slightly longer than half basitarsus. First tergite on its horizontal hind half densely rugo-rugulose (Fig. 14). *r*1 and *cuq*1 forming rather an arched vein, i.e. not meeting each other angularly (Figs. 20, 119). *d*1 shorter than *d*2. Tarsi 1–2 straw yellow. Stigma opaque yellow. ♀♂: 2.5–3 mm. — France, Italy, Hungary, Rumania, USSR (European part, Georgia, Azerbaïdzhane)
- A. anarsiae* (FAURE et ALABOUVETTE, 1924) (!)
- 21 (20) Scutellum smooth or polished. Second tergite laterally not narrowing, third tergite 1.2–1.3 times longer than second tergite (Figs. 8, 23–24, 28, 124). Mesonotum with discrete and not closely placed punctures (Figs. 6, 22, 26), interspaces smaller. Nervellus of hind wing incurved (Figs. 122, 127).
- 22 (23) Head in dorsal view behind eyes more contracted (Fig. 107). First tergite rather quadrate, i.e. 1.1–1.2 times longer than wide at hind, feebly broadening posteriorly and widest at its hind end (Fig. 106). Inner (or longer) spur of hind tibia slightly though distinctly longer than half length of hind basitarsus. Penultimate joint of antenna subcubic, at most 1.1–1.2 times as long as broad. *r*1 issuing clearly distally from middle of stigma and longer than *cuq*1 (Fig. 108). Ovipositor sheath at most somewhat longer than, usually as long as, hind tibia. Punctures of mesonotum discrete, interspaces usually shiny and distinctly shorter than diameter of punctures (Fig. 6). Stigma opaque brown, exceptionally with a pale basal spot (Fig. 108). Hind femur brown to blackish brown, exceptionally reddish yellow to a variable degree. See also couplet 6 (5). ♀♂: 2.5–2.7 mm. — Japan, Korea, Taiwan
- A. molestae* MUESEBECK, 1933 (!)
- 23 (22) Head in dorsal view behind eyes less contracted, rather rounded (Fig. 123). First tergite rather elongated, at least 1.3 times longer than wide at hind end, widest before its hind end (Fig. 124). Inner (or longer) spur of hind tibia more or less shorter than, and at most as long as, half length of hind basitarsus.
- 24 (25) Stigma pellucid yellow with dark margin, *r*1 issuing more distally from its middle and distinctly longer than *cuq*1 (Fig. 120). Ovipositor sheath as long as hind tibia. Hind femur less thick, 3.8–4 times as long as its greatest breadth (Fig. 121). Nervellus

of hind wing incurved (Fig. 122↓). Interspaces of mesonotum dull. Otherwise together with colour of body agreeing with the next species. ♀♂: 2.5–3 mm. — Japan

A. kurosawai WATANABE, 1940 (!)

- 25 (24) Stigma brown or dark brown, *r*1 issuing usually less distally, and rather exceptionally clearly distally, from its middle, and usually slightly longer than *cu*q₁ (Figs. 25, 125). Ovipositor sheath as long as two-thirds of hind tibia. Hind femur more thick, 3.1–3.3 times as long as its greatest breadth (Fig. 126). Nervellus of hind wing incurved below (Fig. 127 ↓). Interspaces of mesonotum shiny (Fig. 22). Penultimate joint of antenna 1.1–1.3 times longer than broad. Hind imaginary tangent to anterior ocellus touching, or indistinctly transecting, posterior pair of ocelli. Postero-lateral field of propodeum polished. Fore femur, except its brown base, and tibia, apex of middle femur+base of middle and hind tibiae yellow, otherwise legs black to blackish brown. Head, antenna, thorax and abdomen black. Wings hyaline to subhyaline, venation with a pigmentation variable in colour, *r*1+*cu*q₁ usually more or less brownish. ♀♂: 2.5–3 mm. — Sporadic to frequent in the Palaearctic Region, introduced and naturalized in the Nearctic Region

A. lacticolor VIERECK, 1911 (!)

- 26 (19) Second tergite smooth to uneven or alutaceous, i.e. its sculpture distinctly weaker than that of first tergite (Figs. 32–33, 35, 40–41, 43).
27 (28) First tergite almost entirely smooth, 1.3–1.5 times as long as wide at hind. Penultimate joint of antenna distinctly longer than broad. Ovipositor sheath clearly shorter than hind tibia. Upper half of propodeum punctate to rugulose, its lower half smooth and shiny. Stigma brown with a pale basal spot. ♀♂: 2.2–2.3 mm. — Armenia (Yerevan)

A. erevanicus TOBIAS, 1976*

- 28 (27) First tergite rugose to rugulose, i.e. never smooth.
29 (32) Scutellum more or less punctate, i.e. its disc never smooth, dull (Figs. 30–31).
30 (31) Third tergite 1.1–1.2 times longer than second tergite (Fig. 128). Penultimate joint of antenna 1.4–1.5 times as long as broad. Distance between posterior two ocelli 2.2–2.6 times as long as diameter of an ocellus. Disc of mesonotum dull, with dense and almost even punctation, interspaces shorter than punctures, notaulix faintly indicated by crowded punctation (Fig. 29). Propodeum carinated, rather exceptionally poorly carinated; its surface smooth to uneven, shiny; above areola middle and sometimes areola itself rugulose. Inner spur of hind tibia distinctly longer than outer spur, though shorter than half basitarsus. First tergite broadening posteriorly, 1.1–1.2 times as long as wide at hind (Fig. 128), its hind horizontal surface ruguloscabriculous, dull. Second tergite usually smooth, shiny, sometimes alutaceous. Ovipositor sheath short, about half as long as basitarsus. Stigma 2.6 times longer than wide, issuing radial vein close distally from its middle; *r*1 about one-third longer than *cu*q₁ (Fig. 129). *d*2 one-fourth longer than *d*1. Stigma brown with a faint to indistinct pale basal spot. ♀: 2.7–2.8 mm. — North Italy, Hungary, Israel

A. cerialis NIXON, 1976 (!!)

- 31 (30) Third tergite almost twice longer than second tergite. Penultimate joint of antenna 1.2 times as long as broad. Distance between posterior two ocelli thrice as long as diameter of an ocellus. In the other features quite similar to the previous species. ♀: 2.3–2.5 mm. — Bulgaria

A. areolaris BALEVSKI et TOBIAS, 1980**

* I know only the original description (TOBIAS 1976) of this species.

** I know only the original description (BALEVSKI & TOBIAS 1980) of this species, which, except three features expounded in the key, may refer also to *A. cerialis* NIXON. A comparison of the types of *A. areolaris* BAL. et TOB. and *A. cerialis* NIXON will perhaps prove the identity of the two forms, i.e. the junior synonymy of *A. areolaris*.

- 32 (29) Scutellum smooth, at least on its disc, shiny (Figs. 37, 39).
 33 (38) First tergite relatively long, 1.5–1.7 times longer than wide at hind, with subparallel sides (Figs. 130, 136, 138).
 34 (35) *D1* wide, almost 1.3 times wider than high (Figs. 38, 131). Eye and temple in dorsal view equal in length, temple evenly rounded (Fig. 132). Stigma almost thrice to thrice as long as wide, *r1* slightly shorter than *cuq1* (Fig. 131). Disc of mesonotum with separated punctures, interspaces shiny and about as long as diameter of punctures. Penultimate joint of antenna 1.5 times as long as broad. First tergite 1.7 times longer than wide at hind (Fig. 130), its hind horizontal half rugulose and shiny (Fig. 35). Ovipositor sheath usually as long as, or slightly longer than, hind tibia. Stigma opaque brownish pale, ♀♂: 1.75–2.3 mm. — Oriental Region, distributed northwards as far as China and Japan. (= *parnarae* WATANABE, 1935; = *paranae* WATANABE, 1967. misspelling)

A. baoris WILKINSON, 1930 (!)

- 35 (34) *D1* less wide, 1.1–1.15 times wider than high (Figs. 42, 133). Eye in dorsal view 1.3–1.6 times longer than temple, latter less evenly rounded (Fig. 134). Stigma 2.3–2.5 times as long as wide, *r1* more or less longer than *cuq1* (Figs. 42, 133).
 36 (37) Body rather gracile. Head in dorsal view as broad as mesonotum between tegulae. Punctuation of mesonotal disc weak to obsolescent (Fig. 39), usually shiny, sometimes feebly dull. Ovipositor sheath at most as long as three-fourths of hind tibia. Nervellus of hind wing incurved (Fig. 135 ↓). Hind horizontal half of first tergite rugulose, with more or less longitudinal elements, shiny (Figs. 40–41). Ocelli small, hind imaginary tangent to anterior ocellus before posterior two ocelli; distance between fore and a hind ocelli greater than diameter of hind ocellus (Fig. 134). Penultimate joint of antenna 1.1–1.5 times longer than broad. Areolation of male propodeum frequently obsolescent. Stigma of female opaque brownish yellowish, usually with a faint basal spot; stigma of male opaque yellow. ♀♂: 2.2–2.7 mm. — England, Finland, Switzerland, Austria, Czechoslovakia, USSR (European part, Azerbaidzhan, Soviet Middle Asia)

A. coleophorae WILKINSON, 1938 (!!)

- 37 (36) Body rather strong. Head in dorsal view somewhat less broad than mesonotum between tegulae. Punctuation of mesonotal disc distinct and more or less confluent (Fig. 44), dull. Ovipositor sheath as long as hind tibia. Nervellus of hind wing less incurved (Fig. 137 ↓). Hind horizontal half of first tergite rugose, dull (Fig. 43). Ocelli large, hind imaginary tangent to anterior ocellus usually before, and at most touching, posterior two ocelli; distance between fore and a hind ocelli shorter than diameter of hind ocellus. Penultimate joint of antenna twice as long as broad. Stigma brown to light brown without pale basal spot. ♀: 2.8–3 mm. — Japan, Taiwan, Mongolia

A. conspersae FISKE, 1911 (!)*

- 38 (33) First tergite relatively less long, 1.2–1.3 times longer than its greatest width behind, with less subparallel sides (Fig. 139). Penultimate joint about 1.5 times as long as broad. Disc of mesonotum subshiny to shiny, antero-posteriorly densely rugulose, rugulose to punctate; punctuation obsolescent before prescutellar furrow (Fig. 44, in PAPP 1979: 240). Ovipositor sheath as long as two-thirds of hind tibia. Spurs of hind tibia subequal, inner spur shorter than half basitarsus. Fore left wing see on Fig. 43, l.c. Stigma opaque brownish yellow with a rather indistinct pale basal spot (?fading, see footnote in PAPP 1979: 246). ♀♂: 2.8–3 mm. — Italy

A. benevolens PAPP, 1973 (!!)

* My knowledge of this species is based on a female from Japan named by CH. WATANABE.

THE SPECIES OF THE *ULTOR*-GROUP

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

anarsiae (F. et AL.) 20 (19)	kurosawai WAT. 24 (25)
areolaris BAL. et TOB. 31 (30)	lacteicolor VIER. 25 (24)
asotae WAT. 5 (6)	<i>lacteipennis</i> RATZ. 10 (11)
baoris WILK. 34 (35)	molestae MUES. 6 (5), 22 (23)
benevolens PAPP 38 (33)	pallidalatus TOBIAS 12 (13)
cerialis NIXON 30 (31)	<i>paranae</i> WAT. 34 (35)
coleophorae WILK. 36 (37)	<i>parnae</i> WAT. 34 (35)
conspersae FISKE 37 (36)	<i>sevocatus</i> PAPP 8 (9)
erevanicus TOBIAS 27 (28)	trachalus NIXON 8 (9)
jaroshevskiyi TOBIAS 13 (12)	ultor REINH. 10 (11)

TRANSITIONAL SPECIES TOWARDS *ULTOR*-GROUP

(Respective species-group in parenthesis, numbers referring to couplet number)

carpatus (SAY) 2 (3)
(ater-group)
hemara NIXON 16 (17)
(ater-group)
lenea NIXON 17 (16)
(obscurus-group)
obscurus (NEES) 17 (16)
(obscurus-group)

The *BUTALIDIS*-group

The following features characterize the species of the *butalidis*-group: 1. Metacarp short, shorter or, usually, as long as stigma, and about as long as distance between distal end of metacarp and tip of *R*; *r*₁ oblique to longitudinal axis of stigma and directed outwards (Figs. e.g. 151, 154, 176). 2. First tergite either narrowing posteriorly (Figs. e.g. 141, 150, 167), or broadening medially (Figs. 173, 182, 183). 3. Hypopygium weakly sclerotized and with longitudinal creases. 4. Ovipositor sheath usually about the length of hind tibia. 5. Head in dorsal view usually distinctly broader than mesonotum between tegulae, behind eye usually strongly rounded to contracted (Figs. 143, 146, 158, 163).

The hosts of the species of the *butalidis*-group cover the following lepidopterous families: Gelechiidae, Scythrididae.

KEY TO THE SPECIES OF THE *BUTALIDIS*-GROUP

- 1 (41) Females.
- 2 (5) First tergite distinctly widening posteriorly (Fig. 51, in PAPP 1976: 260 and Fig. 60, in PAPP 1978: 275). Two species of other species-groups with alar venation similar to that of the species of the *butalidis*-group.

- 3 (4) Propodeum and tergites 1–2 rugose. Hind coxa and trochanter reddish yellow. Head behind eye contracted. ♀: (2–)3 mm. Representing *suevus*-group. — Sporadic in the western Palaearctic Region
[*A. suevus* REINHARD, 1880 (!)]
- 4 (3) Propodeum smooth, shiny, exceptionally at most uneven; tergite 1 on its hind half uneven to rugulose, tergite 2 smooth. Hind coxa and trochanter never reddish yellow. Head behind eye rounded. A member of *laevigatus*-group, see PAPP 1978: 271–273, couplets 29 (28)–31 (30)
[*A. seriphia* NIXON, 1972 (!)]
- 5 (2) First tergite either subparallel to parallel sided and narrowing behind to various degrees (Figs. e.g. 147, 150, 153), or with more or less arched sides and broadest at about its middle (Figs. e.g. 173, 182).
- 6 (7) *r*1 not directing towards tip of wing, i.e. rather perpendicular to longitudinal axis of stigma. First tergite narrowing distinctly at its hind half. ♀♂: 2.5–3 mm. A member of the *metacarpalis*-group, though some features resembling those of the *butalidis*-group. — USSR: Armenia
[*A. znoikoi* TOBIAS, 1976 (!)]
- 7 (6) *r*1 directing towards tip of wing, i.e. emitting obliquely from, or not perpendicular to longitudinal axis of, stigma (Figs. e.g. 151, 154, 176). First tergite subparallel-sided and more or less narrowing at its hind third to fourth (Figs. e.g. 147, 150, 153), or with arched sides (Figs. e.g. 173, 182, 183).
- 8 (25) Propodeum smooth to uneven (Figs. 45, 48, 49), at most rugulose close above lunule or on its side.
- 9 (16) Inner margin of eyes distinctly converging towards oral part, i.e. face one-fifth wider close below scape than close above clypeus (Figs. 46, 47, 50, 142, 145, 149, 152).
- 10 (21) Head in frontal view, in comparison to next three species, appearing rather elongated i.e. as broad between eyes as high medially (Figs. 46, 142). Glossa long, about half as long as basitarsus of fore leg. Ocelli small, forming a very low triangle: hind imaginary tangent to anterior ocellus transecting posterior pair of ocelli (Fig. 143). Penultimate joint of antenna 1.2–1.4 times as long as broad. *r*1 more or less longer than *cu*_{qu}1, stigma usually thrice, exceptionally 2.3–2.4 times, longer than wide (Fig. 140). Ovipositor sheath about as long as hind tibia, hypopygium surpassing end of abdomen (Fig. 144). First tergite narrowing posteriorly, second tergite conspicuously transverse (Fig. 141). Tegula yellow. ♂♀: 2.5–2.8 mm. — Hungary, Austria, Bulgaria
A. szaboi PAPP, 1972 (!)
- 11 (10) Head in frontal view, in comparison to previous species, appearing rather transverse, i.e. distinctly broader between eyes than high medially (Figs. 47, 50, 145, 149, 152). Glossa short, much shorter than half basitarsus of fore leg. Ocelli small, though forming a less low triangle: hind imaginary tangent to anterior ocellus before, and at most touching, posterior pair of ocelli (Fig. 146).
- 12 (13) Second tergite less narrow and less strongly pointed laterally; third tergite at most one-and-a-half, usually 1.2–1.3, times as long as second tergite; first tergite rather rounded apically (Fig. 147). Ovipositor sheath as long as hind tibia, relatively thickened (Fig. 148). Disc of mesonotum shiny and with an extremely faint punctuation. Coxae and trochanters either yellow or reddish to rusty brown, i.e. never black. ♀♂: 2.3–2.7 mm. — Crete, Hungary, Azerbaidzhan (USSR), Mongolia
A. urgo NIXON, 1965 (!)
- 13 (12) Second tergite narrow and more strongly pointed laterally; third tergite nearly twice to twice as long as second tergite, first tergite rather narrowing apically (Figs. 150,

153). Ovipositor sheath at most three-fourths as long as hind tibia, less thickened (Fig. 155). Disc of mesonotum dull and with somewhat rougher punctation.

- 14 (15) First tergite relatively broad, 1.5–1.6 times longer than wide at middle, second tergite less narrow, thrice to four times wider than long medially, (Fig. 150). Stigma wide, 2.3–2.4 times as long as wide and emitting radial vein near distally from its middle (Fig. 151). Head in frontal view less broad, only somewhat broader than high (Fig. 149). Stigma yellow to brownish yellow. ♀♂: 2.3–2.5 mm. — USSR (European part, Kazakhstan), Hungary

A. mutabilis TELENGA, 1955 (!)

- 15 (14) First tergite relatively less broad, (1.7–)1.8 times longer than wide at middle, second tergite more narrow, four to five times wider than long medially (Fig. 153). Stigma less wide, 2.7–2.8 times as long as wide and emitting radial vein clearly distally from its middle (Fig. 154). Head in frontal view broad, distinctly broader than high (Figs. 50, 152). Stigma yellowish brown to brown with a pale basal spot. ♀♂: 2–2.5 mm. — Kazakhstan (USSR), Hungary, Yugoslavia (Korčula island)

A. electilis TOBIAS, 1964 (!!)

- 16 (9) Inner margin of eyes subparallel to parallel, i.e. face at most slightly wider below scape than above clypeus (Figs. 51, 53, 162, 168).
- 17 (20) Disc of mesonotum dull and densely coriaceous to rugulose with argenteous pubescence (Fig. 56). Scutellum subshiny, with weak punctation. *r1* rather perpendicular (i.e. less obliquely) joining stigma (Fig. 156). First tergite moderately narrowing posteriorly, second tergite strongly pointed laterally (Figs. 157, 160). Ovipositor sheath as long as hind tibia + half basitarsus. Two spurs of hind tibia subequal, inner spur distinctly shorter than half basitarsus.
- 18 (19) Head behind eye rather contracted (Fig. 158). First tergite relatively broad, 1.5 times longer than wide at base (Fig. 157). *D1* minutely wider than high in comparison to next species (29:21, $\times 100$, Fig. 156). Ocelli forming a slightly higher triangle, hind imaginary tangent to anterior ocellus close before posterior two ocelli. Tegula yellow. ♀: 2.3 mm, ♂: 2–2.3 mm. — Cape Verde Islands

A. brevimetacarpus HEDQVIST, 1965 (!!)*

- 19 (18) Head behind eyes rather rounded (Fig. 159). First tergite relatively less broad, 1.7 times longer than wide at base (Fig. 160). *D1* minutely less wider than high in comparison to previous species (31:24, $\times 100$, Fig. 161). Ocelli forming a slightly lower triangle, hind imaginary tangent to anterior ocellus transecting to touching posterior two ocelli. Tegula brown to blackish. ♀: 2.5 mm, ♂: 2–2.5 mm. — Cape Verde Islands

A. lindbergi HEDQVIST, 1965 (!!)*

- 20 (17) Disc of mesonotum shiny and with shallow to extremely fine punctation; scutellum polished and at most with few disperse punctures (Figs. 52, 54–55, 58). *r1* obliquely joining stigma (Figs. 164, 166).
- 21 (24) Body relatively strong. Head behind eyes contracted (Fig. 163). Ovipositor sheath in lateral view as long as hind tibia. Antennal joints 14–17 distinctly, usually one-and-a-half times, longer than broad. First tergite narrowing near from its base (Figs. 165, 167). Hind two spurs subequal, outer spur slightly longer than inner spur.
- 22 (23) Metacarp distinctly longer than half stigma, or distance between distal end of metacarp and tip of *R* nearly equal with length of metacarp itself; stigma broad, *r1*

* The two species, *A. brevimetacarpus* HEDQV. and *A. lindbergi* HEDQV., are extremely similar to each other. A future examination of long series of each species originating from several localities may prove the two names to be synonyms. On the basis of the holotype seen they represent two species in statu nascendi. See also my remark in footnote (PAPP 1980: 257).

somewhat longer than *cuqul* (Fig. 164). Flagellum thick, first flagellar joint twice as long as broad (15:7, $\times 100$). First tergite relatively long, 1.65 times longer than broad at base, and 2.6 times longer than broad behind (Fig. 165). Outer spur of hind tibia only somewhat shorter than half basitarsus. Hind femur dark brown. Stigma proximally brownish yellow, distally brown, metacarp dark brown. Tegula yellow. ♀: 3 mm. — Mongolia

A. perseveratus PAPP, 1977 (!)

- 23 (22) Metacarp half as long as length of stigma, or distance between distal end of metacarp and tip of *R* nearly thrice longer than length of metacarp; stigma less broad, *r1* shorter than *cuqul* (Fig. 166). Flagellum thin, first flagellar joint thrice longer than broad (12–14:4, $\times 100$). First tergite relatively less long, 1.5 times longer than broad at base, and 2.2 times longer than broad behind (Fig. 167). Outer spur of hind tibia one-third as long as basitarsus. Hind femur reddish yellow. Stigma bright yellow, metacarp, and margin of stigma dark (Fig. 166). Tegula blackish brown. ♀: 2–2.2 mm. — Mongolia

A. bellicosus PAPP, 1977 (!)

- 24 (21) Body relatively less strong. Head behind eyes evenly rounded (Fig. 169). Ovipositor sheath in lateral view at most half as long as hind tibia. Antennal joints 14–17 cubic, i.e. as long as broad. Posterior half of first tergite evenly narrowing, its anterior half parallel-sided (Fig. 170). Hind two spurs subequal, inner spur slightly longer than outer spur and almost half as long as basitarsus. Disc of mesonotum of female shiny and almost smooth, with hardly perceptible fine punctation; mesonotum of male with rougher punctation. Metacarp shorter than stigma, *r1* and *cuqul* almost equal in length and meeting each other angularly (Fig. 171). Legs brown to blackish brown with a yellowish pattern. Stigma light brown. ♀♂: 2.1–2.3 mm. — Hungary

A. biroicus PAPP, 1973 (!)

- 25 (8) Propodeum sculptured, rugose to rugulose, at least medially distinctly roughened (Figs. 63, 69, 74).
26 (27) Propodeum uneven to subrugulose, i.e. not smooth, dull to subshiny. Inner margin of eyes parallel-subparallel. Disc of mesonotum dull and densely coriaceous to rugulose with argenteous pubescence (Fig. 56). Further details see at couplet 18 (19)

A. brevimetacarpus HEDQVIST, 1965 (!)

- 27 (30) Inner margin of eyes distinctly converging towards oral part, i.e. face one-fifth to one-fourth wider close below scape than close above clypeus (Figs. 57, 172, 174).
28 (29) First tergite 1.2–1.3 times as long as its greatest width before hind end; second tergite transverse, half as long as third tergite (Fig. 173). Sternaulix indicated only by a short linear and smooth depression. Head in frontal view slightly, i.e. one-fourth, broader than high (Fig. 172). Disc of mesonotum subshiny, with fine and almost confluent punctation; scutellum shiny, with fine and rather disperse punctation. Alar venation very similar to that of *A. butalidis* MARSH. (Fig. 64, 176). Hind coxa laterally smooth, above roughened. Hind two spurs equal in length, inner spur as long as half basitarsus. Colour of body similar to that of *A. butalidis* MARSH. ♀: 3 mm. — Hungary

A. splendidus PAPP, 1974 (!)

- 29 (28) First tergite almost twice as long as its greatest width before hind end; second tergite subquadrate, third tergite at most 1.5 times longer than second tergite (Figs. 59–61, 175). Sternaulix linearly depressed and crenulo-rugulose. Head in frontal view round, indistinctly broader than high (40:35, $\times 100$) (Figs. 57, 174). Disc of mesonotum dull, with dense rugose-punctation; scutellum somewhat less dull, punctate. Alar venation see in Figs. 64, 176. Hind coxa laterally and above roughened. Hind two spurs subequal, inner spur shorter than half basitarsus. Legs brownish red, coxae and

usually hind femur darker. Wings subhyaline to faintly fuscous. ♀: 2.1–3 mm, ♂: 1.9–2.8 mm. — England, Sweden, Germany, Slovakia, Hungary, Yugoslavia, Bulgaria, Tunisia

A. butalidis MARSHALL, 1888 (!)

30 (27) Inner margin of eyes subparallel to parallel, i.e. face at most slightly wider below scape than above clypeus (Figs. 75, cf. 162).

31 (38)* Second tergite rugose to rugulose, i.e. its sculpture only somewhat weaker than that of first tergite behind (Figs. 65–66, 72, 77).

32 (33) Third femur reddish yellow. Second tergite rather subrugulose to shagreened. Further details see at couplet 39 (40)

A. assimilis PAPP, 1976 (!!)

33 (32) Third femur black.

34 (35) Eye in lateral view large, its width distinctly twice greater than width of temple (Fig. 177). First tergite 1.3–1.4 times longer than wide, broadest at about middle (Fig. 178). Head in dorsal view distinctly broader than mesonotum. Disc of mesonotum with fine to very fine and even punctation (Figs. 67–68). Ovipositor sheath straight and as long as hind tibia. Fore and middle tibia black with a variable reddish yellow pattern. Stigma evenly brown to blackish brown. ♀♂: 2.8–3 mm. — Italy, Hungary, Bulgaria

A. sophrosine NIXON, 1976 (!)

35 (34) Eye in lateral view less large, its width slightly though less than twice as great as width of temple (Fig. 179).

36 (37) First tergite anteriorly parallel- (to subparallel-) sided, its posterior third distinctly narrowing; third tergite one-and-a-half to nearly twice as long as second tergite (Figs. 180–181.) Disc of mesonotum subshiny and with fine to obsolescent punctation (Fig. 73). Ovipositor sheath usually as long as hind tibia, rather exceptionally somewhat shorter or longer, straight to feebly arched. Galea about twice as long as broad. A dark-coloured species, tibiae more or less reddish to fumous reddish. ♀♂: 2.5–3(–3.3) mm. — Western half of the USSR, Mongolia, Korea, Turkey, Crete, Yugoslavia, Bulgaria, Hungary, Sweden. (= *contortus* TOBIAS, 1964, !!, **syn. n.**; = *crantor* NIXON, 1965, !!; = *evander* NIXON, 1965, !!, **syn. n.**)

A. naso MARSHALL, 1885 (!!)*

37 (36) First tergite with more or less arched sides and broadest at its middle; third tergite 1.6 to twice as long as second tergite (Figs. 76, 182). Disc of mesonotum subshiny and with fine, shallow, more or less confluent punctation, (Fig. 78). Ovipositor sheath two-thirds to three-fourths, usually three-fourths, as long as hind tibia, straight to feebly arched. Galea distinctly less than twice as long as broad. Also a dark-coloured species, tibiae rather dark fumous. ♀♂: 2.2–2.8 mm. — Switzerland, Austria, Yugoslavia, Hungary

A. cloelia NIXON, 1965 (!!)

38 (31) Second tergite uneven to shagreened, i.e. its sculpture distinctly weaker than that of first tergite behind (Fig. 79).

39 (40) First tergite with arched sides, broadest at about its middle, 1.8–1.7 times as long as wide at hind (Fig. 183). Ovipositor sheath narrow, as long as hind tibia (Fig. 184). Disc of mesonotum shiny to subshiny with fine to very fine punctation. Hind femur 3.9–4 times longer than broad (Fig. 185). Hind femur usually reddish yellow (♀), sometimes black (♀), or always black (♂). Stigma brown to dark brown. ♀: 2.8–3.1 mm, ♂: 2.5 mm. — Mongolia

A. assimilis PAPP, 1976 (!!)

* The species between couplets 31 (38) and 40 (39) are extremely difficult to indentify owing to the variability of the specific features.

** See my remark on p. 278.

- 40 (39) First tergite anteriorly with parallel-subparallel sides, its posterior half to third distinctly narrowing, thrice as long as wide at hind (Figs 79, 186). Ovipositor sheath broad, and as long as two-thirds to three-fourths of hind tibia (Fig. 187). Disc of mesonotum dull, with dense and fine punctation (Fig. 80). Hind femur 3.3–3.5 times longer than broad (Fig. 188). Hind femur black ♀♂. Stigma brownish yellow to light brown. ♀: 2.6–2.8 mm, ♂: 2–2.5 mm. — U.S.A. Introduced and dispersed into several countries (Bulgaria, Hungary, Cyprus, India, Hawaii, Australia, New Zealand)

A. scutellaris MUESEBECK, 1920 (!)

- 41 (1) *Males*. — Propodeum rugose to roughly rugose (Fig. 81). First tergite rugose, second tergite rugulose to uneven (Figs. 82–83). Disc of mesonotum with dense punctation, scutellum punctated (Fig. 84). Metacarp as long as to somewhat shorter than stigma, latter issuing radial vein clearly distally (Figs. 85, 190). *d1* distinctly shorter than, i.e. half as long as, *d2*. Legs very dark, black to blackish. ♂: 2.7–3.2 mm. — England, Germany, Czechoslovakia, Hungary, Bulgaria

A. sesostris NIXON, 1976 (!)

Remark — *A. contortus* TOBIAS, 1964, is a junior synonym of *A. naso* MARSHALL, 1885. The holotype ("Type") of the latter was kindly lent to me by MR. T. HUDDLESTON (British Museum, Nat. Hist., London) for examination. *A. naso* was described on the basis of a single male specimen. It is a relatively small and gracile representative of the species identified since 1964 as *A. contortus*. This single male was compared to a female paratype of *A. contortus* (housed in the Hungarian Natural History Museum, Budapest) together with a long series of this species of both sexes from various countries as indicated in the key. I could not establish any specific difference between them. Furthermore, my findings suggests that *A. naso* (= *A. contortus*) is a highly variable species viewing its corporal sizes.

THE SPECIES OF THE *BUTALIDIS*-GROUP

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

<i>assimilis</i> PAPP 32 (33), 39 (40)	<i>lindbergi</i> HEDQVIST 19 (18)
<i>bellicosus</i> PAPP 23 (22)	<i>mutabilis</i> TELENGA 14 (15)
<i>biroicus</i> PAPP 24 (21)	<i>naso</i> MARSHALL 36 (37)
<i>brevimetacarpus</i> HEDQVIST 18 (19), 26 (27)	<i>perseveratus</i> PAPP 22 (23)
<i>butalidis</i> MARSHALL 29 (28)	<i>scutellaris</i> MUESEBECK 40 (39)
<i>cloelia</i> NIXON 37 (36)	<i>sesostris</i> NIXON 41 (1)
<i>contortus</i> TOBIAS 36 (37)	<i>sophrosine</i> NIXON 34 (35)
<i>crantor</i> NIXON 36 (37)	<i>splendidus</i> PAPP 28 (29)
<i>electilis</i> TOBIAS 15 (14)	<i>szaboi</i> PAPP 10 (11)
<i>evander</i> NIXON 36 (37)	<i>urgo</i> NIXON 12 (13)

TRANSITIONAL SPECIES TOWARDS THE *BUTALIDIS*-GROUP

(Respective species-group in parenthesis, numbers referring to couplet-number)

<i>seriphia</i> NIXON 4 (3)
(<i>laevigatus</i> -group)
<i>suevus</i> REINHARD 3 (4)
(<i>suevus</i> -group)
<i>znoikoi</i> TOBIAS 6 (7)
(<i>metacarpalis</i> -group)

The *VIPIO*-group

The following features characterize the species of the *vipio*-group: 1. Galea rostriform (Fig. 191). 2. Metacarp short, shorter than length of stigma (Figs. 86, 192). 3. Two spurs of hind tibia conspicuously unequal in length, inner spur three-fourths to four-fifths as long as, outer spur at most half as long as basitarsus (Figs. 87, 193).

The hosts of the species of the *vipio*-group cover the following lepidopterous family: Scythrididae.

- 1 (2) Propodeum medially rugose, with medio-longitudinal carina. First tergite (Fig. 194) 2.5 times as long as broad at hind, anteriorly parallel-sided and narrowing at its posterior third; smooth to polished, at least laterally uneven. Mesonotum polished (Fig. 88). Antenna thick. Stigma issuing radial vein distinctly distally, *r*1 and *cu*₁ forming a strongly arched vein (Figs. 86, 192). Nervellus of hind wing incurved (Fig. 195). Ovipositor sheath somewhat longer than half hind tibia. A very dark coloured species. Body black, legs black to blackish, wings brownish fumous, stigma and veins blackish brown. ♀♂: 3–3.5 mm. — Sporadically in Europe, a rare species

A. *vipio* REINHARD, 1880 (!)

- 2 (1) Propodeum polished and without a carina. First tergite subquadrate (?slightly broader than long; see MARSHALL 1898, p. 180) and weakly rounded behind, finely striated. Maxillar palp testaceous except basal and apical joints. Otherwise similar to the previous species. ♂: 3.3 mm, ♀ unknown. Its proper arrangement in species-group is uncertain (see also in *lacteus*-group, p. 266). — Spain

A. *rhamphus* MARSHALL, 1898

THE SPECIES OF THE *VIPIO*-GROUP

(Numbers refer to couplet-number)

rhamphus MARSHALL 2 (1)
vipio REINHARD 1 (2)

Remarks — 1. The species *A. rhamphus* MARSH. was included merely on the basis of the original description, and by MARSHALL's indication (1898, p. 180) "parties buccales prolongées en rostre comme chez *A. vipio*, REINH." Its arrangement in the proper species-group presented some difficulties since it have been described in the traditional way, consequently, lacking several features adopted in modern species descriptions and identification keys.

2. See remarks 1. and 3–4. too at *lacteus*-group, p. 266.

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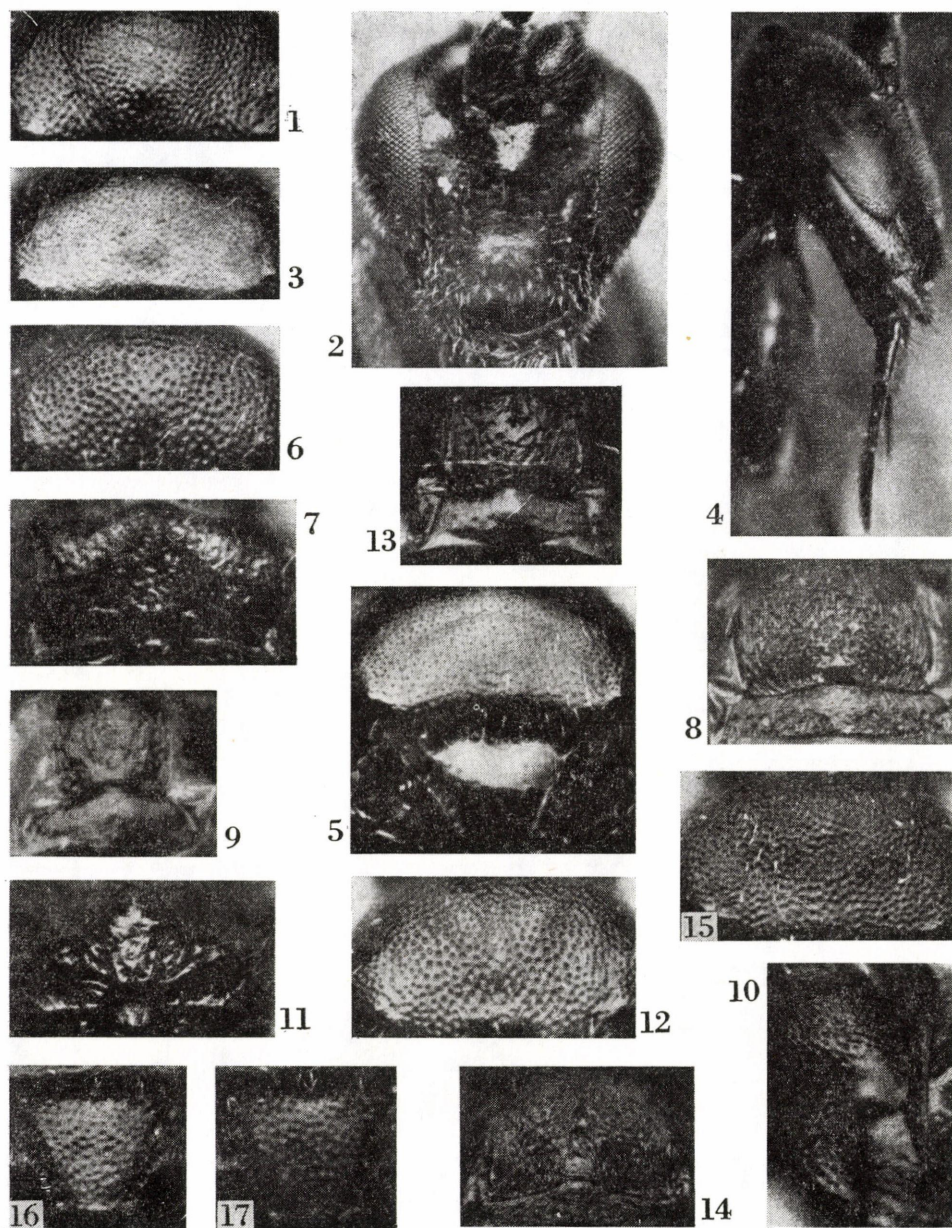


Fig. 1. *Apanteles lacteus* (NEES): mesonotum. — Figs. 2-3. *A. frustratus* PAPP: 2 = head in front, 3 = mesonotum. — Figs. 4-5. *A. longipalpis* REINHARD: 4 = head in lateral view with long maxillary palp, 5 = mesonotum and scutellum. — Figs. 6-8. *A. molestae* MUESEBECK: 6 = mesonotum, 7 = propodeum, 8 = tergites 1-2. — Figs. 9-10. *A. trachalus* NIXON: 9 = tergites 1-2, 10 = mesopleuron with crenulo-rugose sternalia. — Figs. 11-13. *A. ultor* REINHARD: 11 = propodeum, 12 = mesonotum, 13 = tergites 1-2. — Figs. 14-17. *A. anarsiae* FAURE et ALABOUVETTE: 14 = tergites 1-2, 15 = mesonotum, 16-17 = scutellum

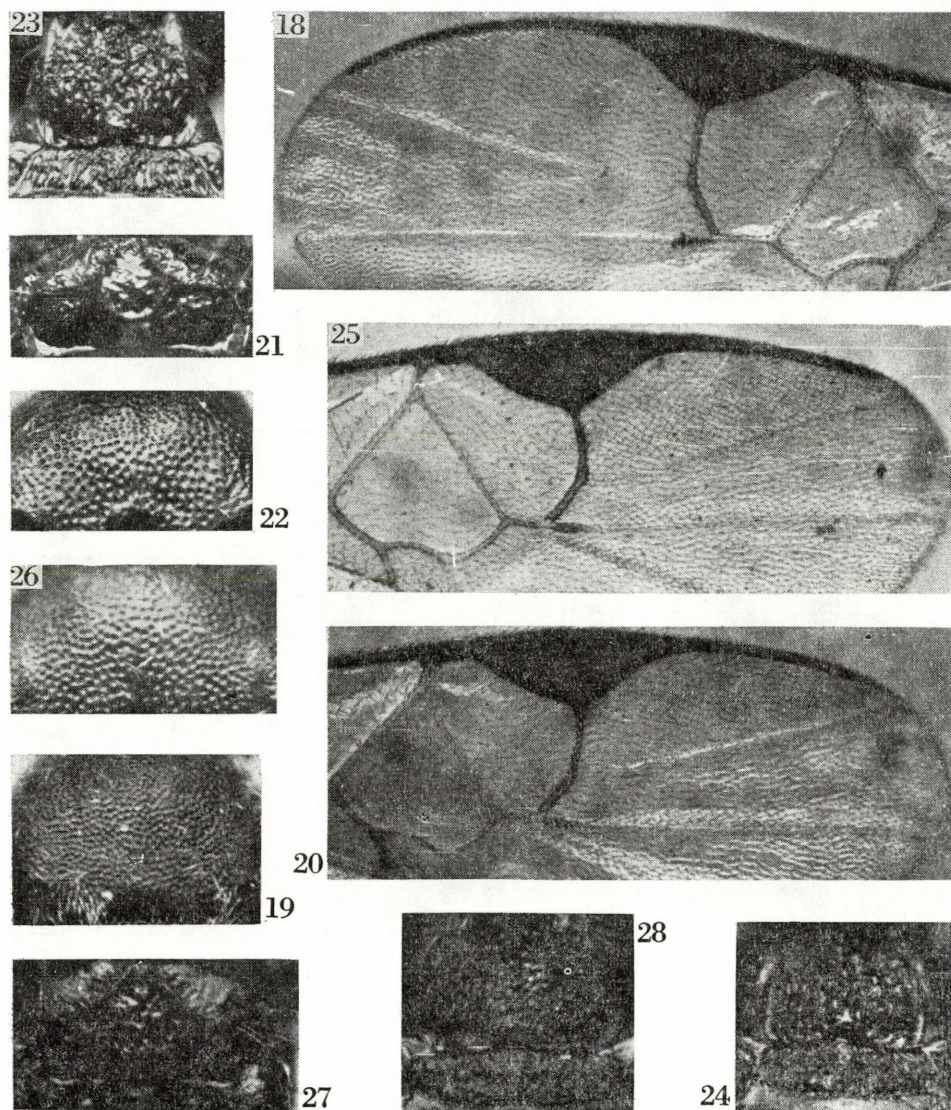
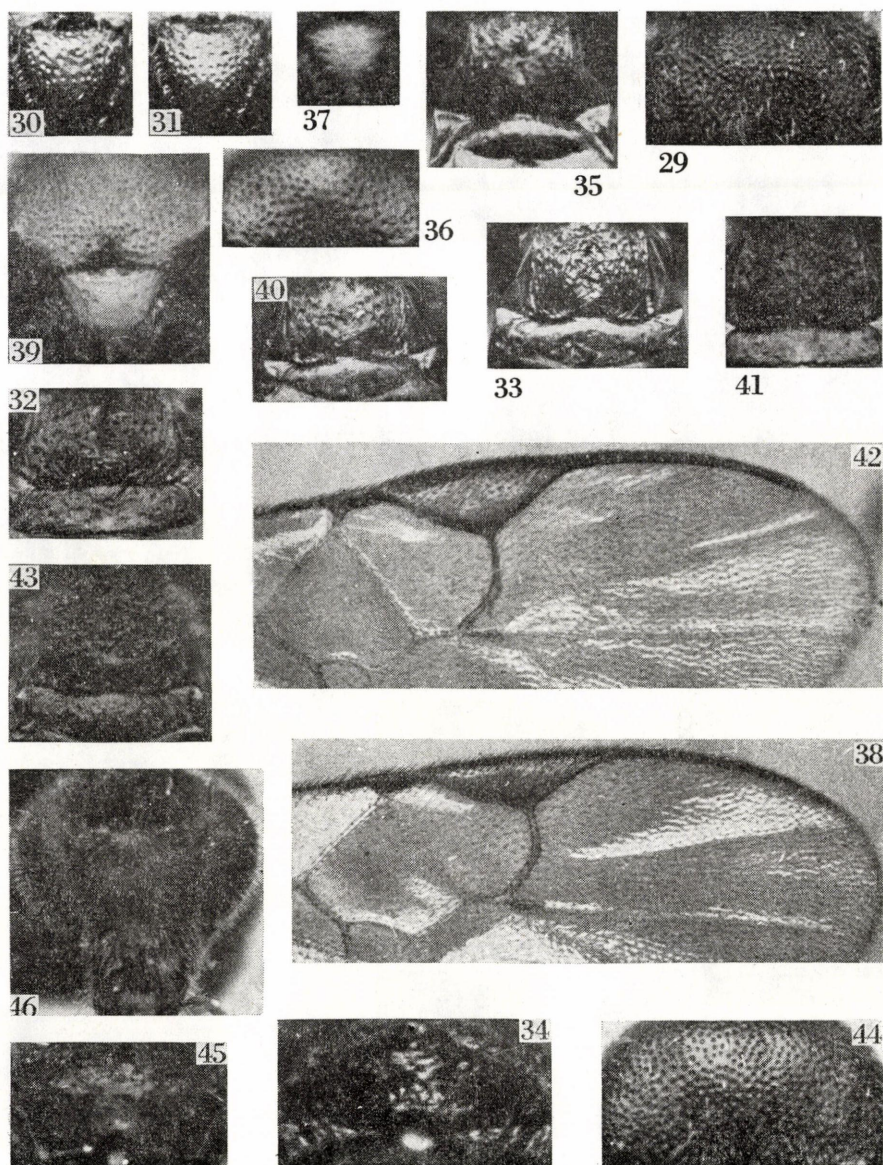
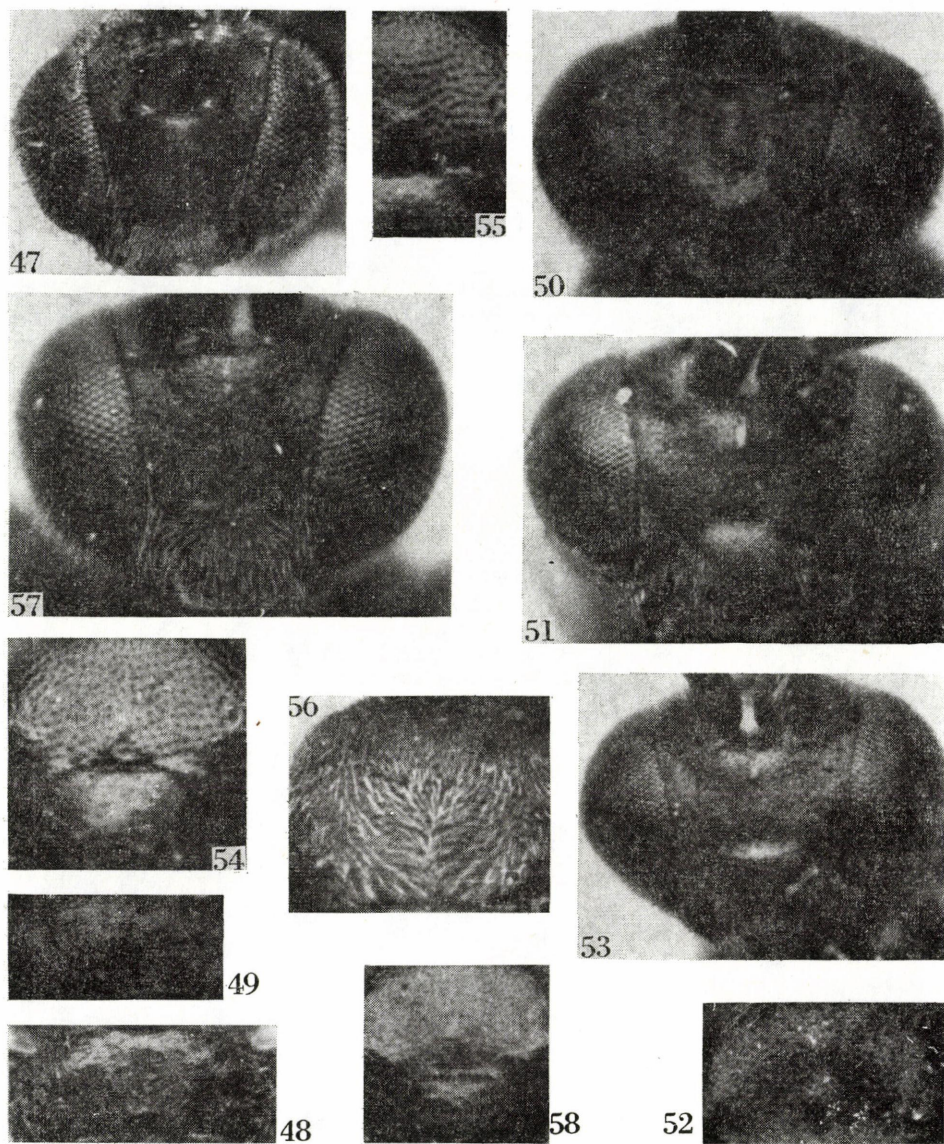


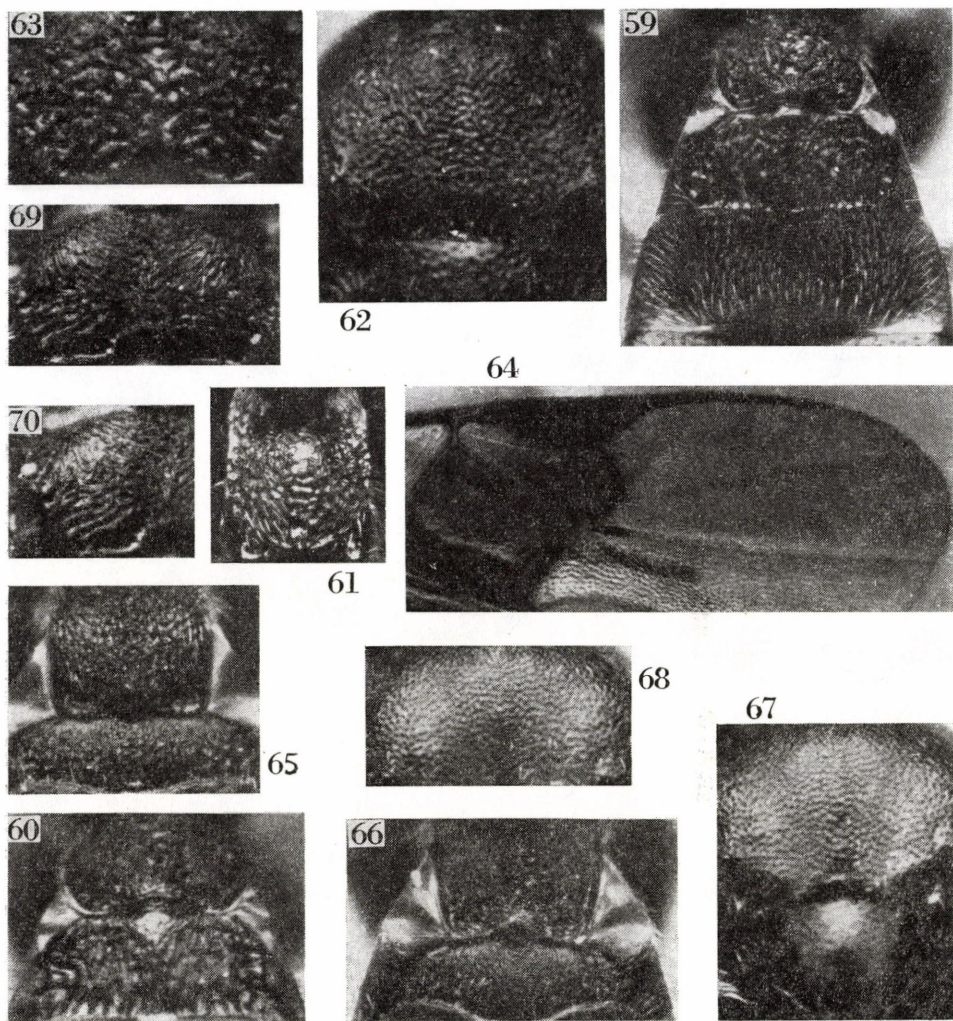
Fig. 18. *Apanteles ultor* REIHNARD: distal part of left fore wing. — Figs. 19–20. *A. anarsiae* FAURE et ALABOUVETTE: 19 = mesonotum, 20 = distal part of right fore wing. — Figs. 21–25. *A. lacteicolor* VIERECK: 21 = propodeum, 22 = mesonotum, 23–24 = tergites 1–2, 25 = distal part of right fore wing. — Figs. 26–28. *A. kurosawai* WATANABE: 26 = mesonotum, 27 = propodeum, 28 = tergites 1–2



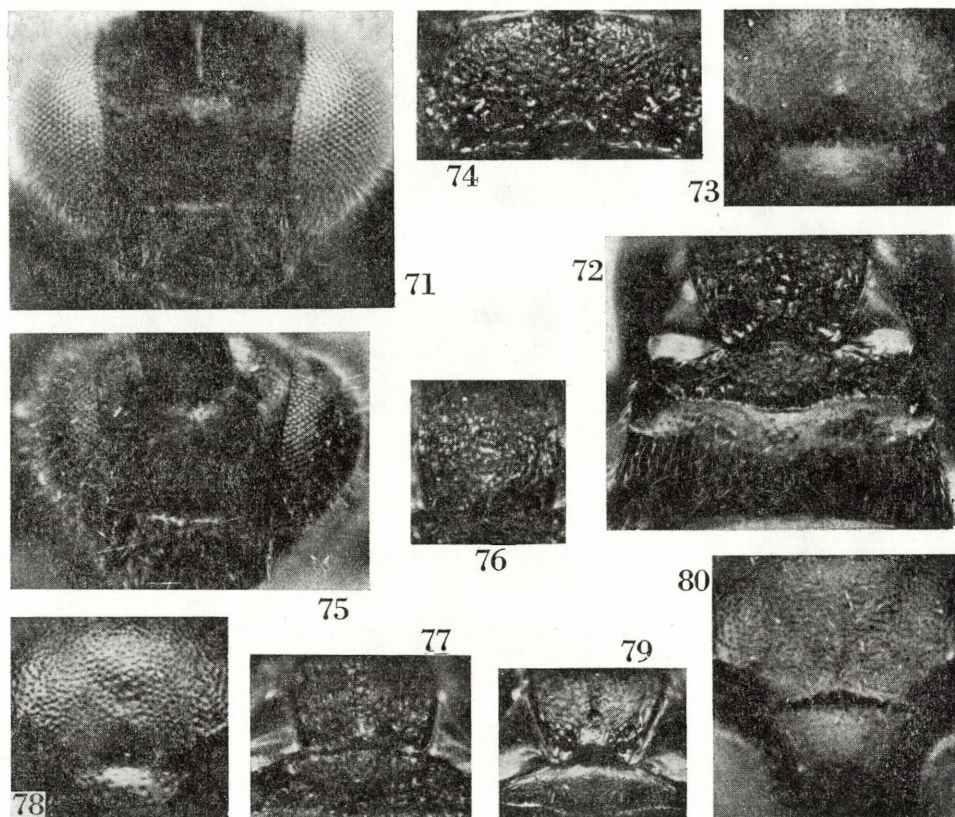
Figs. 29-33. *Apanteles cerialis* NIXON: 29 = mesonotum, 30-31 = scutellum, 32-33 = tergites 1-2. — Figs. 34-38. *A. baoris* WILKINSON: 34 = propodeum, 35 = tergites 1-2, 36 = mesonotum, 37 = scutellum, 38 = distal part of right fore wing. — Figs. 39-42. *A. coleophorae* WILKINSON: 39 = mesonotum and scutellum, 40-41 = tergites 1-2, 42 = distal part of right fore wing. — Figs. 43-44. *A. conspersae* FISKE: 43 = tergites 1-2, 44 = mesonotum. — Figs. 45-46. *A. szaboi* PAPP: 45 = propodeum, 46 = head in front



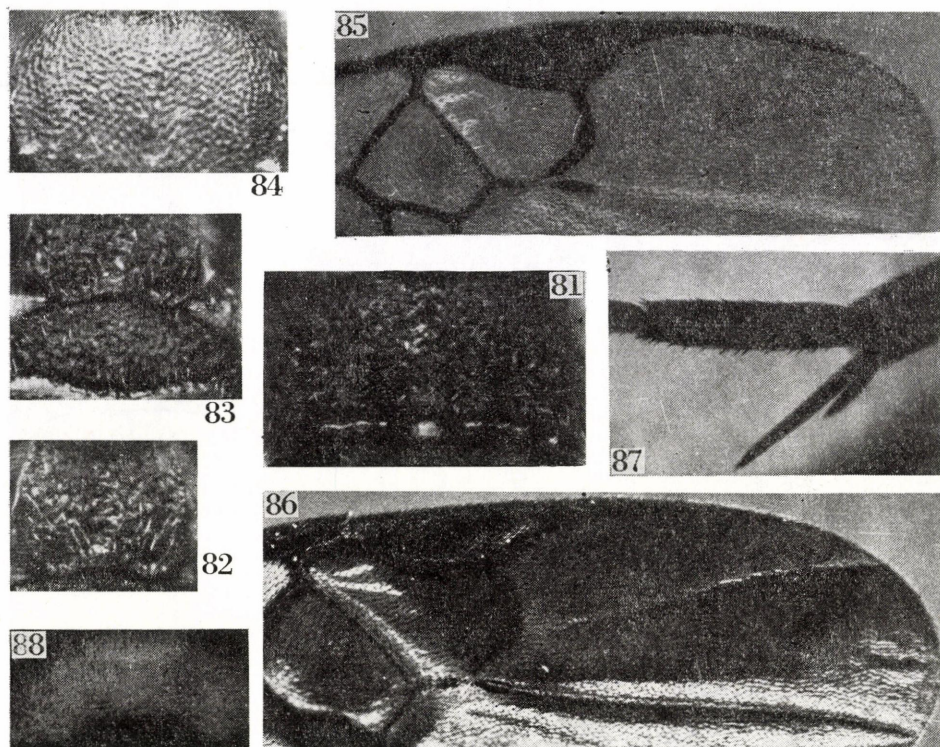
Figs. 47-49. *Apanteles urgo* NIXON: 47 = head in front, 48 = propodeum, 49 = left part of propodeum. — Fig. 50. *A. electilis* TOBIAS: head in front. — Figs. 51-52. *A. perseveratus* PAPP: 51 = head in front, 52 = mesonotum. — Figs. 53-55. *A. bellicosus* PAPP: 53 = head in front, 54 = mesonotum and scutellum, 55 = right half of mesonotum and scutellum. — Fig. 56. *A. brevimetacarpus* HEDQVIST: mesonotum. — Fig. 57. *A. butalidis* MARSHALL: head in front. — Fig. 58. *A. biroicus* PAPP: mesonotum and scutellum



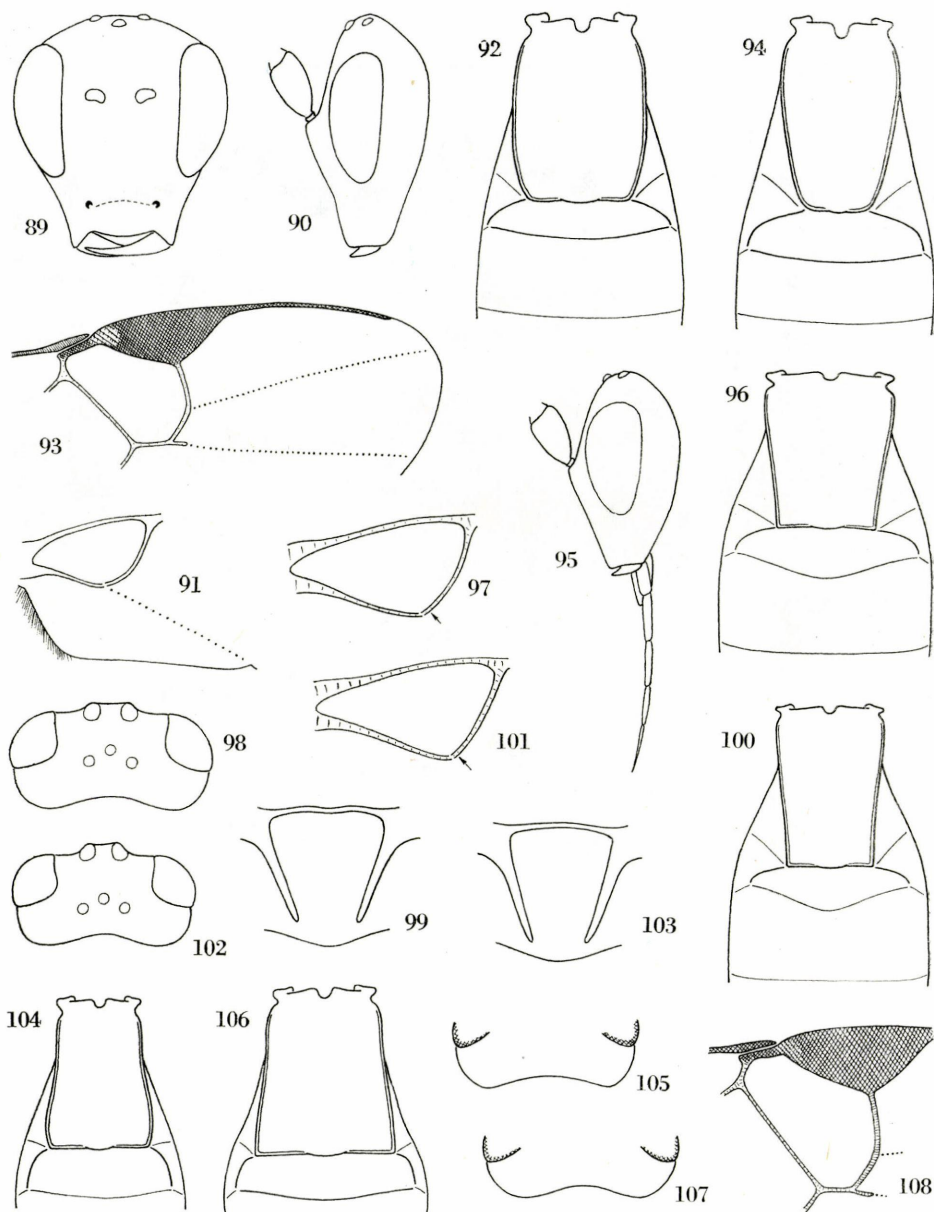
Figs. 59-64. *Apanteles butalidis* MARSHALL: 59 = tergites 1-3, 60 = tergites 1-2, 61 = tergite 1, 62 = mesonotum and scutellum, 63 = propodeum, 64 = distal part of right fore wing. — Figs. 65-70. *A. sophrosine* NIXON: 65-66 = tergites 1-2, 67 = mesonotum and scutellum, 68 = mesonotum, 69 = propodeum, 70 = left half of propodeum



Figs. 71-74. *Apanteles naso* MARSHALL: 71 = head in front, 72 = tergites 1-3, 73 = mesonotum and scutellum, 74 = propodeum. — Figs. 75-78. *A. cloelia* NIXON: 75 = head in front, 76 = tergite 1, 77 = tergites 1-2, 78 = mesonotum and scutellum. — Figs. 79-80. *A. scutellaris* MUESEBECK: 79 = tergites 1-2, 80 = mesonotum and scutellum



Figs. 81-85. *Apanteles sesostris* NIXON: 81 = propodeum, 82 = tergite 1, 83 = tergites 1-2, 84 = mesonotum, 85 = distal part of right fore wing. — Figs. 86-88. *A. vipio* REINHARD: 86 = distal part of right fore wing, 87 = spurs of hind tibia, 88 = mesonotum



Figs. 89-92. *Apanteles lacteus* (NEES): 89 = head in frontal view, 90 = head in lateral view, 91 = nervellus and vannal lobe of right hind wing, 92 = tergites 1-3. — Figs. 93-94. *A. frustratus* PAPP: 93 = distal part of right fore wing, 94 = tergites 1-3. — Figs. 95-99. *A. longipalpis* REINHARD: 95 = head in lateral view with long maxillar palp, 96 = tergites 1-3, 97 = relatively more incurved nervellus (†) of right hind wing, 98 = head in dorsal view, 99 = scutellum. — Figs. 100-103. *A. glaber* PAPP: 100 = tergites 1-3, 101 = relatively less incurved nervellus (†) of right hind wing, 102 = head in dorsal view, 103 = scutellum. — Figs. 104-105. *A. asotae* WATANABE: 104 = tergites 1-2, 105 = head behind eyes. — Figs. 106-108. *A. molestae* MUESEBECK: 106 = tergites 1-2, 107 = head behind eyes, 108 = stigma, $r1 + cuqu1$, $cu1-2$ of right fore wing

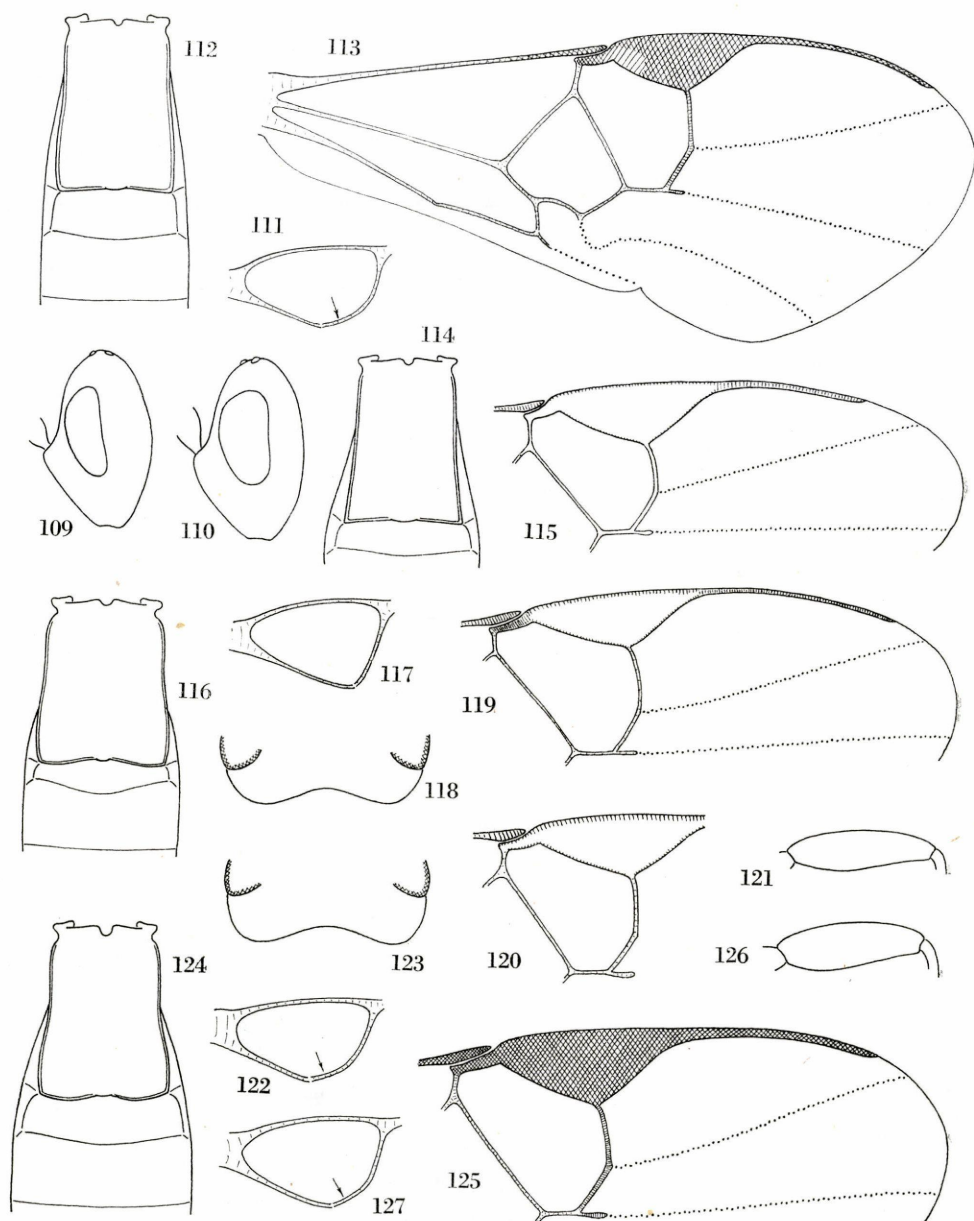
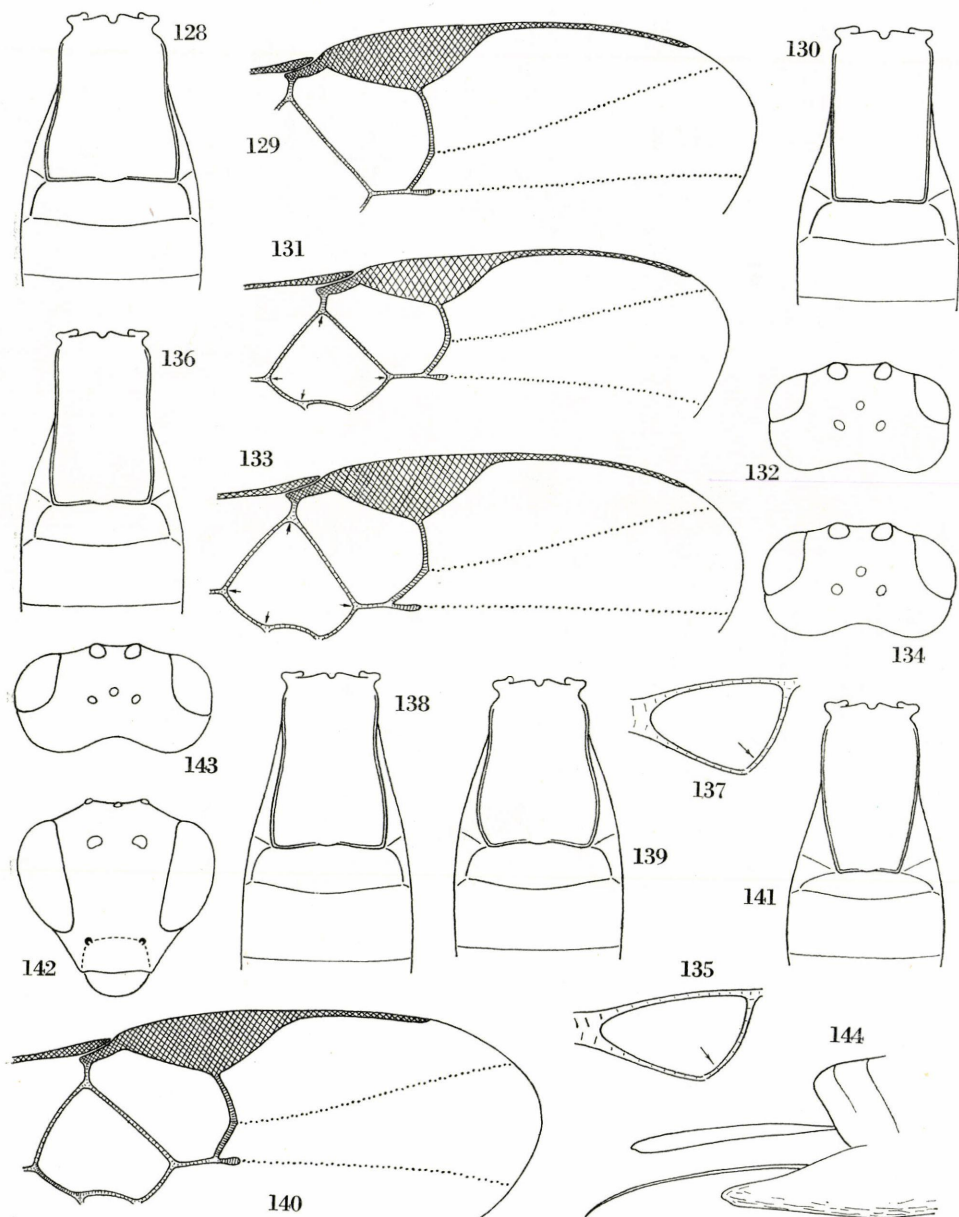
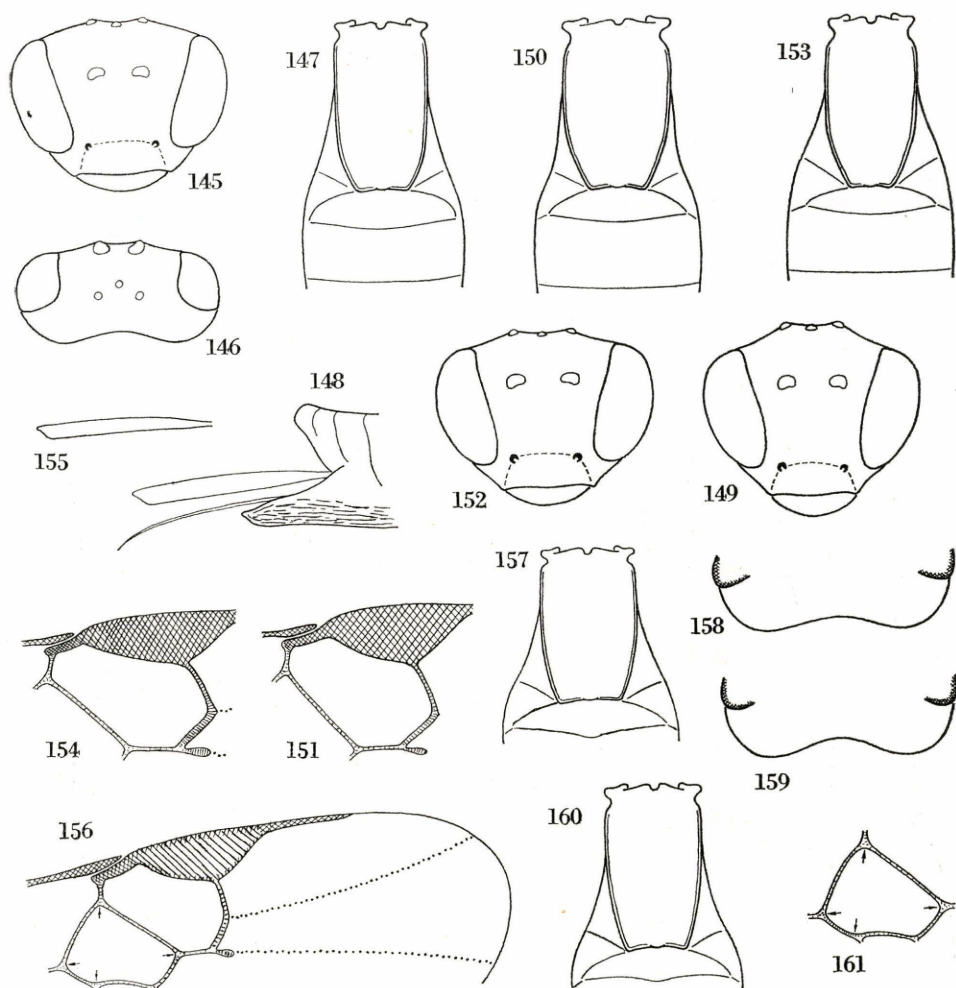


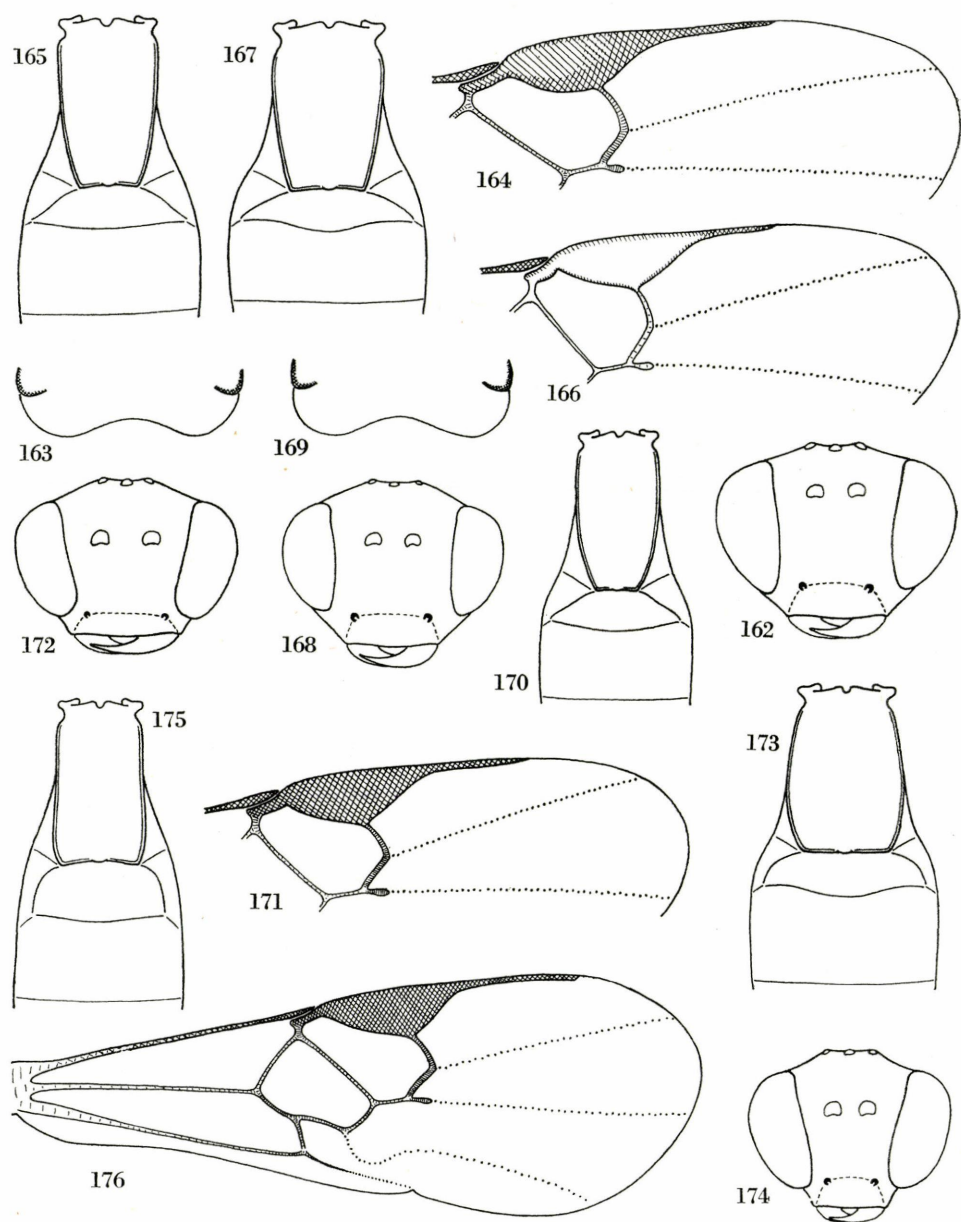
Fig. 109. *Apanteles trachalus* NIXON: head in lateral view with small eye. — Figs. 110–113. *A. ultor* REINHARD: 110 = head in lateral view with usual size, 111 = nervellus of right hind wing (↓), 112 = tergites 1–3, 113 = right fore wing. — Figs. 114–115. *A. pallidalatus* TOBIAS: 114 = tergites 1–2, 115 = distal part of right fore wing. — Figs. 116–119. *A. anarsiae* (FAURE et ALABOUVETTE): 116 = tergites 1–3, 117 = nervellus of right hind wing, 118 = head behind eyes, 119 = distal part right fore wing. — Figs. 120–122. *A. kurosawai* WATANABE: 120 = stigma, $r_1 + cu_{1-2}$, 121 = third femur, 122 = nervellus of right hind wing (↓). — Figs. 123–127. *A. lacteicolor* VIERECK: 123 = head behind eyes, 124 = tergites 1–3, 125 = distal part of right fore wing, 126 = third femur, 127 = nervellus of right hind wing (↓)



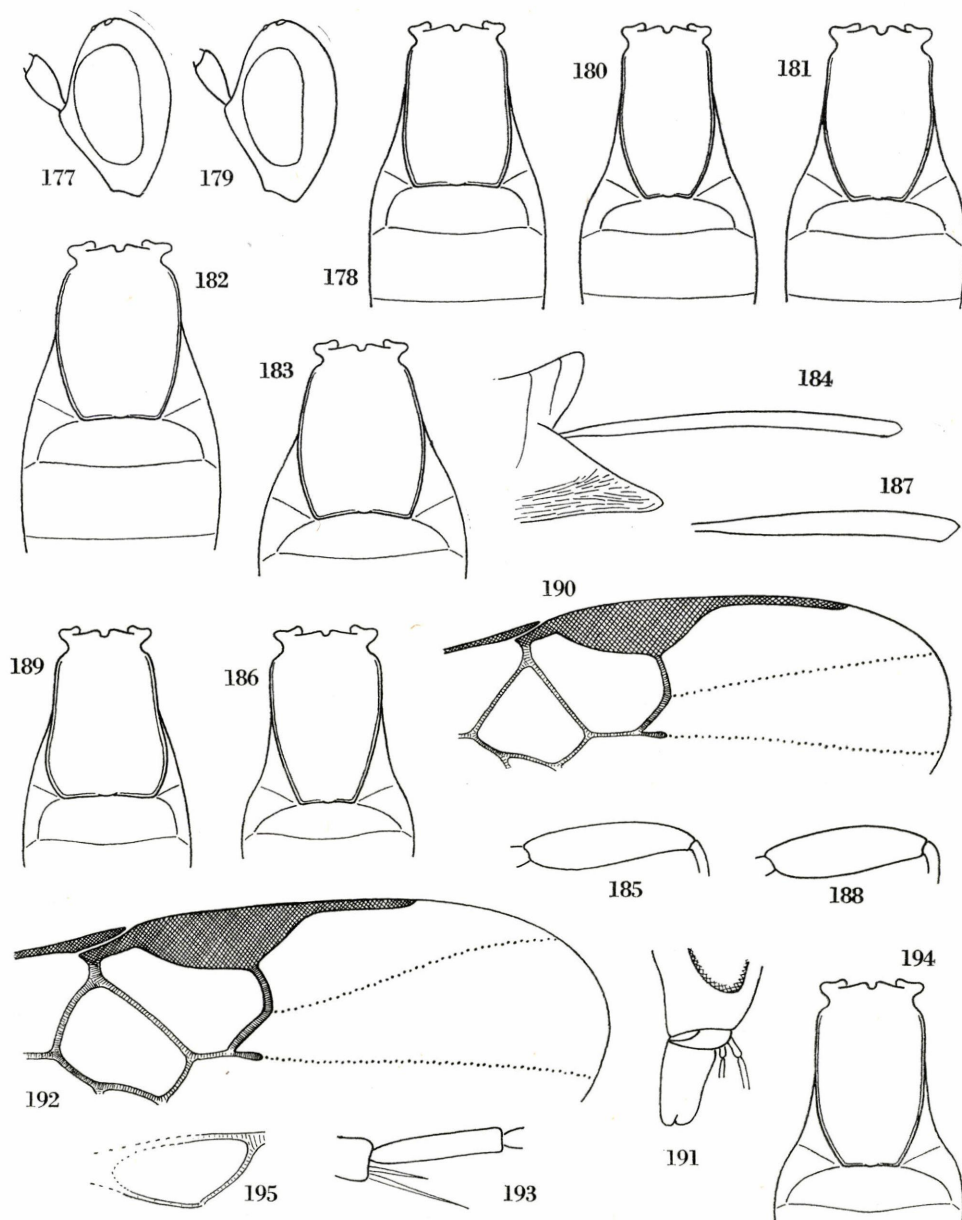
Figs. 128-129. *Apanteles cerialis* NIXON: 128 = tergites 1-3, 129 = distal part of right fore wing. — Figs. 130-132. *A. baoris* WILKINSON: 130 = tergites 1-3, 131 = distal part of right fore wing with wide *D*1 (see arrows), 132 = head in dorsal view. — Figs. 133-136. *A. coleophorae* WILKINSON: 133 = distal part of right fore wing with less wide *D*1 (see arrows), 134 = head in dorsal view, 135 = nervellus of hind wing (↓), 136 = tergites 1-3. — Figs. 137-138. *A. conspersae* FISKE: 137 = nervellus of hind wing (↓), 138 = tergites 1-3. — Fig. 139. *A. benevolens* PAPP: tergites 1-3. — Figs. 140-144. *A. szaboi* PAPP: 140 = distal part of right fore wing, 141 = tergites 1-3, 142 = head in frontal view, 143 = head in dorsal view, 144 = posterior end of abdomen with hypopygium and ovipositor sheath



Figs. 145-148. *Apanteles urgo* NIXON: 145 = head in frontal view, 146 = head in dorsal view, 147 = tergites 1-3, 148 = posterior end of abdomen with hypopygium and ovipositor sheath. — Figs. 149-151. *A. mutabilis* TELENGA: 149 = head in frontal view, 150 = tergites 1-3, 151 = stigma, $r1 + cu1$, $cu1-2$ of right fore wing. — Figs. 152-155. *A. electilis* TOBIAS: 152 = head in frontal view, 153 = tergites 1-3, 154 = stigma, $r1 + cu1$, $cu1-2$ of right fore wing, 155 = ovipositor sheath. — Figs. 156-158. *A. brevimetacarpus* HEDQVIST: 156 = distal part of right fore wing with relatively wide D1 (see arrows), 157 = tergites 1-2, 158 = head behind eyes. — Figs. 159-161. *A. lindbergi* HEDQVIST: 159 = head behind eyes, 160 = tergites 1-2, 161 = relatively less wide D1 (see arrows)



Figs. 162–165. *Apanteles perseveratus* PAPP: 162 = head in frontal view, 163 = head behind eyes, 164 = distal part of right fore wing, 165 = tergites 1–3. — Figs. 166–167. *A. bellicosus* PAPP: 166 = distal part of right fore wing, 167 = tergites 1–3. — Figs. 168–171. *A. biroicus* PAPP: 168 = head in frontal view, 169 = head behind eyes, 170 = tergites 1–3, 171 = distal part of right fore wing. — Figs. 172–173. *A. splendidus* PAPP: 172 = head in frontal view, 173 = tergites 1–3. — Figs. 174–176. *A. butalidis* MARSHALL: 174 = head in frontal view, 175 = tergites 1–3, 176 = right fore wing



Figs. 177-178. *Apanteles sophrosine* NIXON: 177 = head in lateral view, 178 = tergites 1-3. — Figs. 179-181. *A. naso* MARSHALL: 179 = head in lateral view, 180 = relatively long first tergite and 181 = relatively broad first tergite with tergites 2-3. — Fig. 182. *A. cloelia* NIXON: tergites 1-3. — Figs. 183-185. *A. assimilis* PAPP: 183 = tergites 1-2, 184 = posterior end of abdomen with hypopygium and ovipositor sheath, 185 = third femur. — Figs. 186-188. *A. scutellaris* MUESEBECK: 186 = tergites 1-2, 187 = ovipositor sheath, 188 = third femur. — Figs. 189-190. *A. sesostris* NIXON: 189 = tergites 1-2, 190 = distal part of right fore wing. — Figs. 191-195. *A. vipio* REINHARD: 191 = lower part of head with galea, 192 = distal part of right fore wing. 193 = spurs of hind tibia, 194 = tergites 1-2, 195 = nervellus of right hind wing

