THE GENERA OF THE *ASPILOTA*-GROUP AND SOME DESCRIPTIONS OF FUNGICOLOUS ALYSIINI FROM THE NETHERLANDS (HYMENOPTERA: BRACONIDAE: ALYSIINAE)

by

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Key words: Braconidae; Alysiinae; Alysiini; *Aspilota*-group; *Phaenocarpa; Orthostigma; Leptotrema; Aspilota* s.s.; *Alitha; Carinthilota; Pterusa; Panerema; Dinotrema; Eudinostigma; Dinostigma;* phylogeny; biology; distribution; fungicolous Alysiini; Netherlands; keys.

The genera of the *Aspilota*-group are redefined and keyed. One new genus is described: *Leptotrema* gen. nov.; type-species: *Aspilota dentifemur* Stelfox, 1943.The genus *Dinotrema* Foerster, 1862 is given generic status to include the majority of the species of *Aspilota* auct.; the genus *Pterusa* Fischer, 1958 is included in the Alysiini. The genus *Eusynaldis* Zaykov & Fischer, 1982 is synonymized with *Aspilota* Foerster, 1862 s.s.; *Coloboma* Foerster, 1862, *Prosapha* Foerster, 1862 and *Synaldis* Foerster, 1862 are new synonyms of *Dinotrema* Foerster, 1862. *Synaldis* auct. is divided among *Aspilota* s.s., *Eudinostigma* Tobias, 1986 and *Dinotrema. Aspilota pneumatica* Fischer, 1973 is synonymized with *Alysia efoveolata* Thomson, 1895. Eight new species from Europe are described: *Aspilota louiseae* spec. nov., *Carinthilota vechti* spec. nov., *Dinotrema mesocaudatum* spec. nov., *D. multiarticulatum* spec. nov., *D. pratense* spec. nov., *D. sessile* spec. nov., *D. tuberculatum* spec. nov., *Eudinostigma stenosoma* spec. nov., and *E. alox* spec. nov. Neotypes are designated for *Alysia ruficornis* Nees, 1834 and *Aphidius flavipes* Ratzeburg, 1844. Lectotypes are designated for *Alysia lineola* Thomson, 1895, *A. speculum* Haliday, 1838, and *A. venusta* Haliday, 1838.

The fungicolous Alysiini found in The Netherlands are keyed, partly described and their biology is summarized.

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INTRODUCTION

As a precursor to my generic revision I will give here a new and tentative division of the genera of one of the most difficult groups in the Alysiini (Braconidae, Alysiinae), viz. the *Aspilota*-group. One reason for publishing this section is the very interesting collection of Alysiini reared by Dr. L.E.M. Vet (formerly State University at Leiden) from mushrooms in The Netherlands. Secondly Mr. T. Munk (Aarhus) is working on a revision of the *Aspilota*-group from the European region, and it may be useful therefore to have this part of my generic revision available. Specimens in the *Aspilota*-group are small, usually with a body length of 1-2 mm, less frequently about 3 mm, a body colour predominantly dark brown, and are commonly collected where decaying organic matter is abundant.

For the terminology used in this paper, see Van Achterberg (1979: 242-249).

DIAGNOSIS OF THE *ASPILOTA*-GROUP

Antennal segments 13-32, third antennal segment longer than fourth segment (figs. 28, 95), exceptionally subequal or shorter (figs. 83, 219); apex of antenna obtuse (fig. 145), exceptionally with a short spine (fig. 96); eye glabrous, but the problematical *Orthostigma macrops* Stelfox & Graham, 1951 has setose eyes; anterior tentorial pits usually large to very large (figs. 47, 125), but small (fig. 13) in *Orthostigma;* maxillary and labial palp usually with six and

four segments, respectively, but fewer segments occur (*Eudinostigma*), up to three and two, respectively; mandibles with three teeth, lateral teeth medium-sized to large (figs. 11, 19, 34, 61), exceptionally small; pronope absent; precoxal sulcus usually present; anterior part of propodeum shorter than posterior part (figs. 95, 154, 204), or not differentiated (fig. 180); vein r-m of fore wing present, except in brachypterous females (figs. 85, 94) and aberrantly winged males; vein m-cu of fore wing distinctly postfurcal (figs. 16, 29, 44), exceptionally interstitial or antefurcal (fig. 88); vein CU1b of fore wing present, resulting in a closed first subdiscal cell (fig. 122), but absent in *Dinostigma* and *Pterusa* (more or less: fig. 85); vein 1-SR of fore wing short to medium-sized (figs. 16, 29, 44, 70); vein r distinctly oblique (figs. 3, 206) to (sub)vertical (figs. 85, 132, 156); pterostigma normally (sub)linear (figs. 3, 16), except in some species of *Dinotrema* (figs. 55, 70, 82), *Pterusa* (fig. 85) and *Eudinostigma* (fig. 194); vein M+CU of hind wing longer than vein 1-M (figs. 3, 108), but sometimes shorter (some *Dinotrema* species); tarsal claws medium-sized and slender to rather robust (figs. 5, 37, 63, 78); dorsope deep and rather large (figs. 65, 76), exceptionally smaller (fig. 91); second metasomal tergite smooth; second metasomal suture absent or nearly so; metasoma of ♀ more or less compressed posteriorly (figs. 2, 15, 42, 95, 118); one row of setae per tergite (fig. 54); apical third of ovipositor sheath (sub)glabrous and its apex obtuse (fig. 118); ovipositor somewhat upcurved (figs. 95, 106, 118, 180).

PHYLOGENY

The monophyly of the *Aspilota*-group is quite obvious, considering such aberrant synapomorphies as the nearly glabrous apical third of the ovipositor sheath, with its obtuse apex, the shortened vein 1-SR of fore wing, and the aberrant host-spectrum (nearly exclusively parasites of Phoridae). The best candidate for the sister-group is *Dapsilarthra* s.l., because of the reasons given in fig. 1, and this group is used for the outgroup comparison. Within the *Aspilota*-group two groups can be discerned viz. the *Orthostigma*-section (*Aspilota, Leptotrema* and *Orthostigma* (fig. 1)) and the *Dinotrema*-section (with the remainder of the genera). The position of the genera within the *Orthostigma*-section is not problematical. A grouping of *Leptotrema* with *Aspilota* is not acceptable because there are no synapomorphies, and the grouping as shown in fig. 1 has some support in apomorphies of the mandible.

Within the *Dinotrema*-section two subgroups are obvious: *Carinthilota,* probably with *Alitha,* and *Dinostigma* with *Eudinostigma* (fig. 1). With reference to *Pterusa* and *Panerema,* their placing is uncertain since they lack

synapomorphies with the remaining of the group and their position in the cladogram is therefore arbitrary. *Panerema* is placed more basally solely because of its large set of apomorphous character-states when compared with *Pterusa*. It is likely therefore that *Panerema* separated earlier unless the evolutionary change was faster in *Panerema*. The position of *Alitha* is uncertain because no specimens are at present available for study. The relative position of *Carinthilota/Alitha* and *Dinostigma/Eudinostigma* is arbitrary too because of lack of synapomorphies of one of these subgroups with the genus *Dinotrema*. I have chosen to place *Dinostigma/Eudinostigma* lower in the cladogram because of less overall similarity of this subgroup with the genus *Dinotrema* than *Carinthilota* with *Dinotrema*.

BIOLOGY

The genera of the *Aspilota*-group are nearly exclusively endoparasites of the larvae of Phoridae occurring in decaying, organic matter. Platypezidae in mushrooms are also attacked. The host records of Anthomyiidae, and Drosophilidae are probably erroneous because they result from mass rearings, and these Diptera occur commonly in some of the same substrates as the Phoridae. The biology of the genera *Leptotrema, Pterusa, Dinotrema, Eudinostigma, Carinthilota* and *Alitha* is unknown, but these comprise only a small number of the species in the group. To-date, the laboratory rearing of the Phoridae and their parasites has hardly been successful and this explains the lack of precise biological data concerning these sometimes very common parasites.

KEY TO THE GENERA OF THE *ASPILOTA*-GROUP

1. Mandible with a complete transverse, curved carina (figs. 8, 11); third mandibular tooth wide and lobe-shaped (figs. 1, 11); anterior tentorial pits usually inconspicuous (figs. 11, 13); a narrow, curved groove present between the eye and antennal socket (figs. 1, 13) *Orthostigma* Ratzeburg
– Mandible without complete transverse, curved carina (figs. 19, 34); third tooth of mandible variable (figs. 25, 34, 61, 113); anterior tentorial pits medium-sized to very large (figs. 25, 33); between the eye and antennal socket at most a rather narrow, transverse depression, but this is usually absent (figs. 47, 176) 2
2. Anterior tentorial pits enormously enlarged, touching eyes or nearly so (figs. 33, 38, 47); vein m-cu of fore wing postfurcal (fig. 29); malar suture

short, subvertical (figs. 38, 47), or absent ..... *Aspilota* Foerster

– Anterior tentorial pits normal, distant from the eyes (figs. 66, 69, 103); if rather large than vein m-cu of fore wing antefurcal; malar suture (nearly) absent (figs. 87, 103) or with a long, oblique subocular depression (figs. 136, 150, 174, 185), exceptionally malar suture subvertical (figs. 19, 22) 3

3. Lower outer orbits with pair of stout keels, separated by a furrow; notauli complete; vein r of fore wing very short; (Afrotropical region) .... *Alitha* Cameron

– Lower orbits without keels (figs. 106, 123); notauli variable; vein r of fore wing usually medium-sized (figs. 119, 171) 4

4. Fore femur with large obtuse tooth (flange) ventrally (fig. 18); malar suture present, subvertical (figs. 19, 22); anterior part of propodeum comparatively long (fig. 15); anterior tentorial pits comparatively small (fig. 19); vein 1-SR of fore wing short (fig. 16) . * *Leptotrema* gen. nov.

– Fore femur normal, without ventral tooth or flange; malar suture (nearly) absent (figs. 66, 103), except for the subocular depression (figs. 125, 136); anterior part of propodeum comparatively short (fig. 130) or not differentiated; anterior tentorial pits often medium-sized (figs. 136, 150), if rather small, then vein 1-SR of fore wing medium-sized 5

5. Scutellum with a transverse crenulate depression subposteriorly (figs. 101, 105); ♀ macropterous or brachypterous, if brachypterous, then the fore wing lacks a distinct fringe apically, and veins r, 2-SR and SR1 are absent (fig. 94); length of third antennal segment 1.5 times fourth segment (fig. 95) or longer; frons of type-species with a deep, short groove (fig. 104), but absent in *fulvicornis*; face with a double row of long orbital bristles pointing foreward, different from medial setae; propleuron strongly to moderately convex and rugose (type-species: fig. 95) or rugulose; precoxal sulcus of ♀ widely crenulate anteriorly and complete (fig. 95) ..... *Panerema* Foerster

– Scutellum without a transverse depression subposteriorly (figs. 67, 178); ♀ macropterous, if exceptionally brachypterous, then fore wing with a fringe apically, and veins r, 2-SR and SR1 present (fig. 85); length of third antennal segment less than 1.5 times fourth segment (figs. 54, 68, 83, 106); frons without groove (figs. 59, 92), or with a round medial pit (figs. 109, 125); face normally setose, without long, orbital bristles, evenly setose or nearly so or at most with single row of long orbital bristles; propleuron less convex, usually smooth (fig. 142), at most rugulose (fig. 54); precoxal sulcus of ♀ narrow anteriorly and smooth, usually partly absent (figs. 54, 142, 154) or completely absent (fig. 193) 6

* A related new genus from the Nearctic region will be described in a forthcoming paper.

6. An oblique subocular depression between mandibular base and ventro-posterior margin of eye present (figs. 107, 158); if absent, then vein 1-SR of fore wing almost absent, resulting in a (sub)sessile first discal cell (fig. 85); if intermediate, then vein m-cu of hind wing absent (fig. 108) and first subdiscal cell of fore wing distinctly widened (fig. 132); vein CU1b of fore wing usually subequal to vein 3-CU1 or longer (figs. 122, 132, 159); vein m-cu of fore wing usually strongly converging to vein 1-M posteriorly (figs. 156, 182) or brachypterous (fig. 85); apical third of ovipositor sheath (virtually) glabrous (figs. 106, 118, 130) 7

– No oblique depression between mandibular base and eye; vein 1-SR of fore wing distinct, resulting in a petiolate first discal cell; if exceptionally vein 1-SR rather short, then vein m-cu of hind wing present and vein CU1b of fore wing much shorter than vein 3-CU1 vein m-cu of hind wing present and vein CU1b of fore wing much shorter than vein 3-CU1; vein m-cu of fore wing less converging, usually (sub)parallel-sided or nearly so; both sexes macropterous; apical third of ovipositor sheath distinctly setose ..... [*Dapsilarthra* Foerster s.l.]

7. Notauli present posteriorly, complete (figs. 116, 128); frons with a round medial pit (figs. 109, 125) ..... *Carinthilota* Fischer

– Notauli absent posteriorly (figs. 141, 203); frons without a medial pit (figs. 148, 201) 8

8. Vertex strongly flattened (figs. 193, 204); antennal sockets near upper level of vertex (figs. 198, 215); maximum width of head in dorsal view 1.6-2.4 times maximum width of mesoscutum (cf. figs. 201 and 203, 212 and 214); vein 2-SR of fore wing obsolescent or completely absent (figs. 194, 204); maximum width of temple in lateral view 1.1-2.5 times maximum width of eye (figs. 193, 204) 9

– Vertex convex (figs. 130, 154, 167); antennal sockets below upper level of vertex (figs. 159, 176); maximum width of head in dorsal view 1.8 times maximum width of mesoscutum or less (figs. 139 and 141, 177 and 178); vein 2-SR of fore wing usually present (fig. 182); maximum width of temple in lateral view 1.7 times maximum width of eye or less (figs. 130, 154, 167) 10

9. First subdiscal cell of fore wing open posteriorly and apically due to the absence of veins 2-1A and CU1b; spiracle of propodeum extremely enlarged, its diameter about equal to half the length of the propodeum ..... *Dinostigma* Fischer

– First subdiscal cell of fore wing closed (figs. 194, 204), veins 2-1A and CU1b present; spiracle of propodeum (rather) small (figs. 103, 204) ..... *Eudinostigma* Tobias

10. First metasomal tergite robust, and with rather small dorsope (fig. 91); the type-species is brachypterous and has veins extremely widened (fig. 85); vein m-cu of fore wing antefurcal (as far as is visible in some specimens) or interstitial ..... *Pterusa* Fischer
- First tergite slender, and dorsope large to medium-sized (figs. 76, 166, 179, 192); macropterous, and veins normal (figs. 156, 168); vein m-cu of fore wing more or less postfurcal (figs. 156, 168) .. *Dinotrema* Foerster

Alitha Cameron

Alitha Cameron, 1906: 28; Shenefelt, 1974: 938. Type-species, and only known species: *Alitha longipennis* Cameron, 1906 (by monotypy).

The type (from S. Africa) is lost and the interpretation of the genus is problematic. Because of the complete notauli it may be related to *Carinthilota,* but *Alitha* has a very short vein r of fore wing and the lower orbits possess a pair of keels. The biology is unknown. In the cladogram it can be placed near *Carinthilota* (because of the complete notauli), but it may well be closer to *Dinotrema,* in which vein r may be short (fig. 70).

Aspilota Foerster s.s.
(figs. 28-53, 216-222, 229-234)

Aspilota Foerster, 1862: 268; Shenefelt, 1974: 966; Fischer, 1976: 345-346 (only sections B & D); Wharton, 1985: 227 (p.p.). Type-species: *Alysia ruficornis* Nees, 1834 (by monotypy); designation of neotype below.
Dipiesta Foerster, 1862 (type-species: *Alysia compressa* Haliday, 1838; lectotype examined).
Eusynaldis Zaykov & Fischer, 1982 (syn. nov.; type-species: *Eusynaldis varinervis* Zaykov & Fischer, 1982; holotype examined).
Synaldis auct. p.p.

Diagnosis. — Antennal segments 13-30; frons without pit (fig. 51) or pit more or less developed (figs. 32); no distinct groove between the antennal socket and eye (fig. 33), at most faintly impressed; anterior tentorial pits enormously enlarged, touching eyes or nearly so (figs. 33, 38, 47); malar suture vertical or absent because of the extension of the tentorial pit; mandible without a transverse carina, with an acute middle tooth, and two lateral teeth, which are usually lobe-shaped (figs. 34, 46), but in some spp. acute (figs. 222, 233); sometimes first (= dorsal) tooth reduced (= *fasciatae*-group of Fischer, 1976); precoxal sulcus at least medially developed (fig. 53); notauli largely

absent (figs. 40, 52, 234); propodeum with medial area more or less developed (fig. 53) or reticulate-rugose (fig. 40); pterostigma linear (figs. 29, 44, 216, 235); vein 1-SR of fore wing medium-sized (fig. 29) or short (figs. 216, 235); if vein 1-SR+M is present, then vein m-cu of fore wing is distinctly postfurcal (fig. 29); vein 1-SR+M of fore wing usually present, but absent in some spp. (*Synaldis* p.p.; figs. 216, 235); vein CU1b of fore wing usually somewhat shorter than vein 3-CU1 (fig. 29); vein M+CU of hind wing longer than vein 1-M (fig. 29); tarsal claws slender (figs. 37, 49); first metasomal tergite (rather) slender (figs. 41, 53); ovipositor sheath usually as long as the first tergite (fig. 42), exceptionally about as long as the body (*A. jaculans* (Haliday, 1838)).

This is a large genus, containing parasites of the Phoridae and Platypezidae (in mushrooms). The host records of Anthomyiidae and Drosophilidae are probably erroneous. Keys for the Palaearctic species are given by Fischer (1970b: 25-26, for species with vein 1-SR+M of fore wing absent (fig. 235, *globipes*-group) and 1976: 345, 346, 353-357, for species with vein 1-SR+M present, which may be unsclerotized (fig. 44)). For keys to Nearctic species, see Fischer (1969d, 1968e, 1970a and (if vein 2-SR of fore wing is absent) 1967b: 472).

Distribution. — Cosmopolitan; common in the Holarctic region.

Note. — The genus *Eusynaldis* Zaykov & Fischer, 1982 is only based on one male, with an aberrant wing venation observed also in other males of the *Aspilota*-group, the females have in such cases vein r-m normally developed. The second submarginal cell of the fore wing is strongly constricted distally, resulting in the loss of vein r-m. Because of the enlarged anterior tentorial pits and the absence of vein 2-SR of the fore wing, the type-species of *Eusynaldis* is included in the *Aspilota globipes* group.

Aspilota ruficornis (Nees)
(figs. 28-41)

Alysia ruficornis Nees, 1834: 248.
Aspilota ruficornis; Fischer, 1972; 438-440; Shenefelt, 1974: 979.

Neotype in Rijksmuseum van Natuurlijke Historie, Leiden: '.'Salzburg, Parsch, 12 Sept. 1960, P.P. Babiy leg.", "*Aspilota ruficornis* (Ns), ♀, det. Fischer, "compared and conspecific with Haliday specimen of *A. ruficornis* Nees, Van Achterberg, 1981". Additional specimens examined from West and East Germany, and The Netherlands (Asperen, Ede, Nunspeet, Putten). Mostly collected in September and October, less frequently in July.

Because the type-series is lost and this species is the type-species of *Aspilota* Foerster, 1862, I designate here as a neotype a female from Austria (Salzburg) which agrees with the redescription by Fischer (1972).

Neotype, ♀, length of body, and of fore wing both 2.9 mm.

Head. – Antennal segments 21 (variation: ♀: 20-23, ♂: 23-25), length of third segment 1.4 times fourth segment, length of third, fourth and penultimate segments 3.1, 2.0 and 1.6 times their width, respectively; length of eye in dorsal view 1.6 times temple (fig. 32); frons with shallow pit (fig. 32); length of malar space 0.4 times basal width of mandible; malar suture distinct (fig. 38); medial length of mandible about 1.4 times its maximum width, both its lateral teeth lobe-shaped, ventral tooth distinctly protruding downwards (fig. 34) and middle tooth longer than lateral teeth (fig. 35).

Mesosoma. — Length of mesosoma 1.3 times its height; pronotal side finely crenulate medially (fig. 28); precoxal sulcus widely crenulate, but absent posteriorly (fig. 28); pleural sulcus distinctly crenulate (fig. 28); mesoscutum without a medio-posterior impression; scutellar sulcus with five, rather weak longitudinal carinae; metanotum with a rather long medial carina (fig. 40), slightly protruding (fig. 28); surface of propodeum coarsely reticulate, its medial carina short, and medial area absent (fig. 40); propodeal spiracle round, medium-sized and about twice its diameter distant from the anterior margin of propodeum.

Wings. — Fore wing: r:3-SR:SR1 = 11:44:90; 1-SR+M distinctly sclerotized, and distinctly narrower than 3-SR (fig. 29); 3-CU1 slender and longer than CU1b; 2-SR:3-SR:r-m = 9:22:6. Hind wing: M+CU:1-M = 18:8; trace of m-cu present (fig. 29).

Legs. — Length of femur, tibia and basitarsus of hind leg 4.0, 9.7 and 9.0 times their width, respectively; apex of hind tibia with white comb at inner side.

Metasoma. — Length of first tergite 1.7 times its apical width, its surface longitudinally rugose, dorsal carinae distinct in basal half and dorsope large (fig. 41); length of ovipositor sheath 0.14 times fore wing.

Colour. — Dark brown or blackish; basal three antennal segments, mandible, legs and tegulae, yellowish; clypeus, fourth-eleventh antennal segments, scutellum, metasoma (except first tergite), temple ventrally, upper corner of pronotum and of mesopleuron near tegulae, more or less chestnut-bown; remainder of antenna dark brown; pterostigma and wing veins light brown; wing membrane hyaline.

Note. An easily recognizable species due to its robust third antennal segment, the coarsely reticulate propodeum with the medium-sized, somewhat protruding spiracle, the widened first tergite, the size of the body, and the

chestnut-brown second and third tergites of ♀.

It may be confused with *A. efoveolata* (Thomson, 1895) (lectotype examined, = *A. pneumatica* Fischer, 1973 (holotype examined) syn. nov.), but *A. efoveolata* has a more slender third antennal segment in the ♀ (its length about 4.5 times its width) and basal half of antenna largely dark brown(except for the three yellowish basal segments). The holotype of *A. pneumatica* differs from *A. efoveolata* by its smaller (probably worn) mandibular teeth.

In the Thomson Collection (Lund) only one female remains of the type-series ("Båst"; from type-locality Båstad in Sweden, Skåne), and this specimen is designated lectotype.

KEY TO EUROPEAN SPECIES OF THE *ASPILOTA GLOBIPES* GROUP

1. Vein 2-SR of fore wing absent (fig. 216) or as an unsclerotized vein (fig. 44); fungicolous; (*globipes* group) 2
– Vein 2-SR of fore wing sclerotized (fig. 29); usually not fungicolous ..... *ruficornis* and *fasciatae* groups
2. Pleural sulcus smooth; length of hind tibia 4-5 times its maximum width; antennal segment of ♀ about 18 (unknown in *varinervis*) 3
– Pleural sulcus crenulate dorsally (fig. 42); length of hind tibia 2.5-3.2 times its maximum width (fig. 50); antennal segments of ♀ 13-18 ... 4
3. First mandibular tooth about as long as second tooth and rather acute; first and second tergites blackish ..... *acutidentata* (Fischer)
Note. If the first metasomal tergite is yellowish and the antennal segments 15-16, cf. *parvicornis* sensu Fischer.
– First mandibular tooth distinctly shorter than the second tooth and lobe-shaped; first and second tergites more or less yellowish ..... *varinervis* (Zaykov & Fischer)
4. Third antennal segment rather slender (fig. 48), its length 2.8-3.3 times its maximum width; third tooth of mandible lobe-shaped, rather robust, and similar to first tooth (fig. 45); vein 2-SR of fore wing present as an unsclerotized and unpigmented trace (fig. 44); maximum width of eye in lateral view about equal to medial width of the temple (fig. 42); antennal segments of ♀ 15-18 5
– Third antennal segment r[illegible]st (figs. 217, 219, 230), its length 1.5-1.6 times its maximum width; third tooth of mandible acute, dissimilar to first tooth (figs. 222, 232, 233); vein 2-SR of fore wing completely absent (figs. 216, 235); maximum width of eye in lateral view distinctly less than medial

width of the temple (fig. 229); antennal segments of ♀ 13-15 6

5. Pterostigma basally wider than vein 1-R1 (metacarp; fig. 44); antennal segments of ♀ about 15; antenna of ♀ narrowed basally (fig. 42); third and fourth antennal segments unusually shiny ..... *louiseae* spec. nov.
– Width of pterostigma basally equal to vein 1-R1 (fig. 228); antennal segments of ♀ 17-18; antenna of ♀ slightly narrowed basally (figs. 225, 226); third and fourth antennal segments normal, moderately shiny ..... *intermediana* Fischer

6. Third antennal segment of ♀ short, its length 0.8-0.9 times the length of fourth segment (figs. 217, 219); antenna of ♀ distinctly moniliform (fig. 218) ..... *globipes* (Fischer)
– Third antennal segment of ♀ longer, its length about 1.2 times the length of fourth segment (fig. 230); antenna of ♀ less moniliform (fig. 230) ..... *parvicornis* (Thomson)

Aspilota acutidentata (Fischer) comb. nov.

Synaldis acutidentata Fischer, 1970b: 26-28; Shenefelt, 1974: 1021.

Only recorded from Austria, its biology is unknown.

Aspilota globipes (Fischer) comb. nov.
(figs. 216-222)

Synaldis globipes Fischer, 1962: 11; Shenefelt, 1974: 1022.

Holotype from Italy (Triest) examined; additional specimens examined from Sweden (Särö-Hamra, 26.VI.1977, H.J. Vlug) and The Netherlands (Putten, 15-20.VIII.1973, J. v.d. Vecht; Nyemirdum, ex *Xerocomus badius* (Fries), L.E.M. Vet; id., ex *Amanita rubescens* (Persoon ex Fries); Voorschoten, id.; Voorschoten, ex *Oudemansiella platyphylla* (Persoon ex Fries), L.E.M. Vet).

Variation. Antennal segments of ♀ 13 (1), 14 (4), 15 (2), and of ♂ 19 (1), length of third antennal segment 0.8-0.9 times fourth segment and length of third segment 1.5-1.6 times its maximum width; length of hind femur of ♀ 2.5-2.7 times its width.

Aspilota intermediana Fischer
(figs. 225, 226, 228)

Aspilota intermediana Fischer, 1975: 304-306.

Holotype from Austria (Kärnten) examined; additional specimens from The Netherlands (Oudemirdum, ex *Agaricus nivescens* (Moell.) Moell., L.E.M. Vet; Hellevoetsluis, ex *Agaricus campester*. The presence of an unsclerotized vein 1-SR+M in the fore wing indicates its intermediate position in the traditional generic classification. The absence or presence of this vein was decisive to place a taxon in the genera *Synaldis* or *Aspilota* s.l., respectively. This results in a clearly polyphyletic group: one group (the *globipes* group) fits well in *Aspilota* s.s. and another group (including the type-species) agrees with *Dinotrema* Foerster; in both groups intermediate venation occurs.

Variation. Antennal segments of ♀ 17 (3) or 18 (2); first metasomal tergite finely or rather coarsely striate and slightly widened apically, its length about 1.5 times its apical width.

Aspilota louiseae spec. nov.
(figs. 42-53)

Holotype in the Rijksmuseum van Natuurlijke Historie, Leiden: "Museum Leiden, Netherlands, Voorschoten (Rozenburg [= cemetery])", "ex *Polyporus* sp., coll. 8.VII.1980, em. 25.VIII.1980, L. Vet".

Holotype, ♀, length of body 1.5 mm, of fore wing 1.8 mm.

Head. — Antennal segments 15, antenna distinctly narrowed basally (fig. 42), length of third segment 1.3 times fourth segment (fig. 48), length of third, fourth, and penultimate segments 2.8, 2.1 and 1.7 times their width, respectively; length of eye in dorsal view equal to length of temple (fig. 51); frons without pit (fig. 51); length of malar space 0.2 times basal width of mandible; malar suture slightly impressed (fig. 47); medial length of mandible about 1.2 times its maximum width, both lateral teeth lobe-shaped and similar, distinctly shorter than acute middle tooth (figs. 45, 46).

Mesosoma. — Length of mesosoma 1.2 times its height; pronotal side largely smooth (fig. 42); precoxal sulcus only present medially and narrowly crenulate (fig. 42); pleural sulcus only dorsally finely crenulate; mesoscutum without medio-posterior impression (fig. 52); scutellar sulcus with one longitudinal carina; metanotum without medial carina (fig. 52); surface of propodeum mainly smooth medially, and finely rugose laterally, its medial carina

short and weak (fig. 53), and with a wide medial area; propodeal spiracle medium-sized (fig. 53).

Wings. — Fore wing: r:3-SR:SR1 = 4:17:47; 1-SR+M present, but unsclerotized and unpigmented (fig. 44); 3-CU1 slender and somewhat longer than CU1b (fig. 44); 2-SR:3-SR:r-m = 9:17:6. Hind wing: M+CU:1-M = 9:4; m-cu absent.

Legs. — Length of femur, tibia and basitarsus of hind leg 3.2, 7.6 and 5 times their width, respectively.

Metasoma. — Length of first tergite 1.5 times its apical width, its surface rather coarsely and irregularly rugose, but basally smooth (fig. 53), dorsal carinae not distinctly developed and dorsope medium-sized (fig. 53); length of ovipositor sheath 0.17 times fore wing.

Colour. — Blackish; scapus, pedicellus, annellus, palpi, most of the mandible, legs (but telotarsi and apex of hind tibia infuscated, hind coxa and all tibiae more brownish than remainder of legs), yellowish; the remainder of the antenna dark brown; pterostigma and veins brown.

Note. It is a great pleasure to me to name this species after its collector, Dr. Louise E.M. Vet (Wageningen), who reared many interesting Braconidae.

Aspilota parvicornis (Thomson) comb. nov.
(figs. 229-235)

Alysia (Synaldis) parvicornis Thomson, 1895: 2308.
Synaldis parvicornis; Fischer, 1962: 18-19; 1967a: 106-108 (redescriptions); Shenefelt, 1974: 1023.

Known from Sweden, Austria and West Germany. Fischer (1962: 18) mentioned a female (from Palsjö, Skåne; the type-locality) labelled as the lectotype by Dr. M.V.R. de Vere Graham. Dr. R. Danielsson kindly informed me that specimens with four MS-names are present under *parvicornis* but none of these are *parvicornis*. In addition, no specimen has a label showing that it is from the type-locality. However, one ♀ bears the label "A. parvicornis Ths., Lectotypus, M. de V.G.". I based my interpretation on this female from Mölle (Sweden), placed by Thomson under *parvicornis*. This specimen cannot be the type (as was overlooked by Drs. de Vere Graham and Fischer), but it may be selected as neotype, since the type is probably lost.

This specimen disagrees in some aspects with the redescriptions by Fischer; the species as interpreted by Fischer could key out to *A. acutidentata* and *A. varinervis,* but it differs by the low number of antennal segments (♀♂: 15-16). The biology of both taxa is unknown.

Aspilota varinervis (Zaykov & Fischer) comb. nov.

Eusynaldis varinervis Zaykov & Fischer, 1982: 70.

Only known from the Bulgarian holotype. The biology is unknown.

Carinthilota Fischer
(figs. 106-129)

Carinthilota Fischer, 1975: 310-311. Type-species: *Carinthilota parapsidalis* Fischer, 1975 (by monotypy).

Diagnosis. — Antennal segments 21-22, length of the third segment 1.4-1.7 times fourth segment (figs. 106, 118); frons with round medial pit (figs 109, 125); without groove between the antennal socket and eye (figs. 107, 125); lower orbits without keels; anterior tentorial pits large (figs. 107, 125); malar suture absent, instead with an oblique subocular depression (figs. 113, 123); mandible smooth, without carinae (figs. 113, 123); pronotal side distinctly crenulate medially (figs. 106, 118); propleuron largely smooth (figs. 106, 118); lateral carina of mesoscutum (in front of tegulae) absent or obsolescent, instead with row of punctures (fig. 118) or of microcrenulae (fig. 106); notauli complete (figs. 116, 128); mesoscutum with medio-posterior depression (fig. 116); scutellum without a transverse depression; metanotum not or weakly protruding and without a medial carina (figs. 106, 118); posterior part of propodeum rather differentiated from anterior part (figs. 106, 118), without a medial area; pterostigma linear (figs. 108, 119); vein CU1b of fore wing shorter than or subequal to (slender) vein 3-CU1 (figs. 115, 122); vein r of fore wing long (fig. 118); vein 1-SR medium-sized to rather short (figs. 108, 119); ♀ normally winged; vein M+CU of hind wing longer than vein 1-M (fig. 108); tarsal claws rather robust (figs. 117, 124); fore femur normal; first metasomal tergite rather slender (fig. 126); ovipositor sheath somewhat longer than the first tergite (figs. 106, 118).

A small genus, containing the type-species and some undescribed species, of which one is described below. The biology is unknown.

Distribution. Palaearctic (European).

Note. In the Afrotropical and Oriental regions occur *Dinotrema* species with notauli more developed than normal in *Dinotrema* (not reaching medio-posterior depression of mesoscutum), but these spp. can be separated easily from *Carinthilota* by the absence of a medial pit on the frons.

KEY TO SPECIES OF THE GENUS *CARINTHILOTA**

1. Apical two-fifths of antenna black; middle lobe of mesoscutum glabrous medially and with less conspicuous setae along the notauli (fig. 106); vein 1-SR of fore wing about as wide as vein 1-M (fig. 108); metasoma dark brown or blackish; third tooth of mandible distinctly protruding apically (fig. 113); hind femur largely smooth; dorsal carinae of the first tergite separate (fig. 114); precoxal sulcus nearly complete (fig. 106) ..... *parapsidalis* Fischer

– Apical two-fifths of antenna brownish-yellow; middle lobe of mesoscutum setose medially and with numerous long setae along the notauli (fig. 118); vein 1-SR of fore wing wider than vein 1-M (fig. 119); metasoma (except first tergite) reddish-brown; third tooth of mandible less protruding (fig. 123); hind femur distinctly sculptured (fig. 127); dorsal carinae of first tergite united (fig. 127); dorsal carinae of first tergite united (fig. 126); precoxal sulcus absent posteriorly (fig. 118) ..... *vechti* spec. nov.

* A third species from Western Europe will be described by Mr. T. Munk (Aarhus).

Carinthilota parapsidalis Fischer
(figs. 106-117)

Carinthilota parapsidalis Fischer, 1975: 311-313. Holotype in the Naturhistorisches Museum Wien: "Austria, Kärnten (88), 1 km 0. Heft b(ei) Hüttenberg, 1000-1100 m, 25.8.73, leg. Fischer", "Carinthilota parapsidalis n. sp., ♀, det. Fischer", "Holotype".

Holotype, ♀, length of body 3.1 mm, of fore wing 3 mm.

Head. — Antennal segments 21, length of third segment 1.7 times the fourth segment, length of third, fourth, and penultimate segments 4.1, 2.1 and 1.4 times their width, respectively (figs. 106, 110); length of eye in dorsal view 1.1 times length of temple (fig. 109); anterior tentorial pits large, largest diameter somewhat less than distance between pit and eye (figs. 107, 113); length of malar space 0.5 times basal width of mandible; medial length of mandible about 1.6 times its maximum width, both lateral teeth lobe-shaped and shorter than acute middle tooth, third tooth distinctly protruding (figs. 111, 113).

Mesosoma. — Length of mesosoma 1.2 times its height; precoxal sulcus nearly complete, obsolescent anteriorly and posteriorly (fig. 106); pleural sulcus smooth; medio-posterior pit of mesoscutum distinct and triangular (fig.

116); scutellar sulcus with one longitudinal carina and some rugae (fig. 116); surface of propodeum coarsely reticulate-rugose, its medial carina present in anterior half only, and its spiracle small (fig. 106).

Wings. — Fore wing: r:3-SR:SR1 = 11:39:86; 1-SR about as wide as 1-M (fig. 108); CU1b subequal to 3-CU1 (fig. 115); 2-SR:3-SR:r-m = 19:39:11. Hind wing: M+CU:1-M = 16:9; m-cu absent.

Legs. — Length of femur, tibia and basitarsus 4.1, 9.2 and 6.8 times their width, respectively (fig. 112); inner side of hind tibial apex with a whitish comb of setae; hind femur largely smooth.

Metasoma. — Length of first tergite 2.0 times its apical width, its surface densely rugulose behind dorsope, rather dull, its dorsal carinae are separate in the basal 0.5, and dorsope medium-sized (fig. 114); length of ovipositor sheath 0.20 times the fore wing.

Colour. — Black; palpi, mandibles, humeral plate (but tegula largely black), three basal and 15th-20th antennal segments, and legs, brownish-yellow; apical antennal segment dark brown; clypeus and propleuron reddish-brown; head with brownish tinge; metasoma dark brown; hind tarsi slightly infuscated; pterostigma and veins brown.

Carinthilota vechti spec. nov.
(figs. 118-129)

Holotype in the Rijksmuseum van Natuurlijke Historie, Leiden: "Nederland, Putten (Gld.), 24-28.IX.1970, J. v.d. Vecht, Malaise-trap, G[arden]."

Holotype, ♀, length of body 3 mm, of fore wing 2.9 mm.

Head. — Antennal segments 22, length of third segment 1.4 times the fourth segment, length of third, fourth, and penultimate segments 3.5, 1.8 and 1.3 times their width, respectively (figs. 118, 129); length of eye in dorsal view about equal to length of temple (fig. 120); anterior tentorial pits large, largest diameter about equal to distance between eye and pit (figs. 121, 125); length of malar space 0.4 times basal width of mandible; medial length of mandible about 1.8 times its maximum width, both lateral teeth lobe-shaped, and shorter than acute middle tooth, third tooth less protruding than in *parapsidalis* (figs. 121, 123).

Mesosoma. — Length of mesosoma 1.3 times its height; precoxal sulcus distinctly crenulate, but absent posteriorly (fig. 118); pleural sulcus finely cenulate (fig. 118); medio-posterior pit of mesoscutum oval, and distinct (fig. 128); scutellar sulcus with one longitudinal carina and some rugulae (fig. 128);

surface of propodeum coarsely reticulate, with complete medial carina and its spiracle small (fig. 118).

Wings. — Fore wing: r:3-SR:SR1 = 13:46:97; 1-SR wider than 1-M (fig. 119); CU1b distinctly shorter than 3-CU1 (fig. 122); 2-SR:3-SR:r-m = 21:46:10. Hind wing: M+CU:1-M = 20:8; m-cu absent.

Legs. — Length of femur, tibia and basitarsus of hind leg 4.1, 8.1 and 6 times their width, respectively (fig. 127); hind tibial apex with a comb at inner side; hind femur distinctly sculptured (fig. 127).

Metasoma. — Length of first tergite 2.1 times its apical width, its surface rather coarsely reticulate-rugose behind dorsope, dorsal carina united at level of spiracles, and almost reaching apex of tergite, dorsope medium-sized (fig. 126); length of ovipositor sheath 0.18 times fore wing.

Colour. — Black; palpi, mandibles, three basal and 14th-22nd antennal segments, humeral plate, and legs, brownish-yellow; pterostigma and wing veins, brown; clypeus, propleuron, pronotum anteriorly, tegula, and metasoma (except first tergite), reddish-brown; remainder of antenna and first tergite, dark brown.

Note. It is a great pleasure to me to dedicate this species to its collector, Prof. Dr. J. v.d. Vecht, whose valuable collections proved to contain several new species.

Dinostigma Fischer

Dinostigma Fischer, 1966a: 182-183.
Type-species and only known species: *Dinostigma muesebecki* Fischer, 1966.

Closely related to *Eudinostigma* Tobias. The biology is unknown. Only known from one ♀ from Pennsylvania, U.S.A.

Dinotrema Foerster
(figs. 54-82, 130-192, 223, 224, 227)

Dinotrema Foerster, 1862: 268; Van Achterberg & Bin, 1981: 104. Type-species: *Dinotrema erythropa* Foerster, 1862 (by monotypy); lectotype examined.
Aspilota auct. p.p.; Fischer, 1972: 327-329 (sections A & C); Shenefelt, 1974: 966; Fischer, 1976: 345, 346 (sections A & C).
Spanomeris Foerster, 1862 (type-species: *Spanomeris pulla* Foerster, 1862; holotype examined).
Coloboma Foerster, 1862 (syn. nov.; type-species: *Coloboma nigrina* Foerster, 1862; type probably lost).
Prosapha Foerster, 1862 (syn. nov.; type-species: *Alysia speculum* Haliday, 1838; lectotype examined).

Synaldis Foerster, 1862 (syn. nov.; type-species: *Bassus concolor* Nees, 1814; type-series lost).
Scotioneurus Provancher, 1886 (type-species: *Scotioneurus stenostigma* Provancher, 1886).

Diagnosis. — Antennal segments 13-32; length of third antennal segment 1.1-1.4 times fourth segment; frons without a distinct round pit or groove (figs. 59, 148, 177); maximum width of head in dorsal view 1.2-1.7 times the maximum width of the mesoscutum; maximum width of eye usually about equal to maximum width of temple in lateral view (figs. 154, 167); no depression between eye and antennal socket, but sometimes with a narrow transverse depression; anterior tentorial pits medium-sized to very large (figs. 57, 71, 136, 150, 161, 185, 227); malar suture absent, instead with an oblique subocular depression (figs. 136, 150, 158), which may be obsolescent or absent (*Prosapha*-section; figs. 62, 69, 71); depression near eyes smooth (fig. 69) or crenulate (fig. 62); mandible without a transverse carina, largely smooth, first tooth with (fig. 174) or without carina (fig. 133), and third tooth small (fig. 173) to wide, lobe-shaped (fig. 185); propleuron smooth, exceptionally rugulose (fig. 54); pronotal sides (nearly) smooth (figs. 68, 130) or distinctly crenulate (fig. 54); precoxal sulcus at least medially developed (figs. 68, 154, 167); notauli largely absent (figs. 75, 141), if exceptionally distinct on the mesoscutal disk, then obsolescent near medio-posterior depression; medio-posterior depression frequently developed (fig. 149); metanotum usually not or weakly protruding (figs. 142, 154), its medial carina absent (fig. 141) to medium-sized (fig. 149), but sometimes complete and protruding (figs. 58, 67); posterior part of propodeum differentiated (fig. 154) or not (fig. 180); propodeum reticulate, areolate or completely smooth; macropterous; vein r of fore wing long (fig. 132) to medium-sized (fig. 171) or short (fig. 70); pterostigma usually (sub)linear (figs. 132, 143, 156), but sometimes widened (*Prosapha*-section; figs. 55, 70, 81, 82); vein m-cu of fore wing distinctly postfurcal (figs. 70, 132), but sometimes nearly interstitial (*Prosapha*-section: figs. 55, 82), and usually converging to vein 1-M posteriorly; vein 1-SR+M of fore wing sclerotized (fig. 143), unsclerotized (fig. 132) or completely absent (cf. fig. 216; "*Synaldis*" p.p.); vein 1-SR of fore wing short (figs. 55, 168) to medium-sized (fig. 182); vein CU1b of fore wing shorter than or subequal to vein 3-CU1 (figs. 132, 159, 187), less commonly distinctly longer than vein 3-CU1 (especially *Prosapha*-section: figs. 55, 77); vein m-cu of hind wing absent (fig. 156); vein M+CU of hind wing usually longer than vein 1-M (fig. 132), but especially in the groups without an oblique subocular depression, vein M+CU shorter than or subequal to vein 1-M (fig. 70); tarsal claws slender (figs. 78, 137) or medium-sized (fig. 152), sometimes with a subbasal lobe (fig. 63); first metasomal tergite slender and dorsope medium-sized to large (figs. 76, 168, 179, 192); length of ovipositor sheath 0.5-3 times length of the first

tergite (figs. 142, 154).

Large genus, containing parasites of Phoridae, partly in mushrooms. Keys for Palaearctic species are given by Fischer (1970b: 25, 26; for species with vein 2-SR of fore wing completely absent (*"Synaldis"*); 1976: 345-353, for the sections A & C). For Nearctic species see Fischer (1967b, *"Synaldis"*: 433, 440, 450, 467; 1969a-d, for species with vein 2-SR of fore wing distinct).

Distribution. — Cosmopolitan, most common genus of the group.

Note. — The genus *Dinotrema* Foerster as treated in this paper includes all the species of *Aspilota* sensu Fischer (1976) without enlarged tentorial pits, plus those species of the genus *Synaldis* Foerster without enlarged tentorial pits (one the type-species) and all species of *Prosapha* Foerster. Although this group is treated in a much narrower sense than by other authors, *Dinotrema* still shows considerable variation. The majority of the species have a distinct oblique subocular depression (*Dinotrema* s.s.), some of the species have vein 2-SR of fore wing unsclerotized (fig. 132) or absent (cf. fig. 216; *"Synaldis"* p.p.). The remaining species have the subocular depression obsolescent (e.g. because of narrow malar space) or absent (fig. 71; *"Prosapha"* and other not closely related species). Even the part of the group of *Synaldis* auct. included in *Dinotrema* is likely paraphyletic and intermediates with *Dinotrema* s.s. occur (fig. 132). According to König (1972: 93), one species (*Synaldis maxima* Fischer, 1962) is even conspecific with a long known species (*Dinotrema concinnum* (Haliday, 1838) comb. nov. The angle between veins 3-SR and SR1 of the fore wing (and similarly the angle between vein r and 3-SR) is less distinct if vein 2-SR is absent; however this is subject to considerable intraspecific variation and intermediates do occur (fig. 132).

KEY TO FUNGICOLOUS *DINOTREMA* SPECIES IN THE NETHERLANDS

1. Oblique subocular depression absent or shallow and obsolescent (figs. 173, 185); costulae of propodeum absent or obsolescent (figs. 167, 192); first tooth of mandible with a short carina (figs. 174, 190) 2
– Oblique subocular depression deep, sharply delimited (figs. 136, 147, 150, 158); costulae variable, usually partly present (figs. 138, 153, 166); first tooth of mandible without a distinct carina (figs. 133, 147, 158) 4
2. Length of ovipositor sheath about 1.5 times length of hind tibia; dorsope of first metasomal tergite shallow or nearly absent; mesoscutum without medio-posterior depression; propodeum completely smooth; length of vein M+CU of hind wing 0.9-1.5 times vein 1-M .. *tauricum* (Telenga)

- Length of ovipositor sheath 0.7-1.3 times length of hind tibia; dorsope deep, medium-sized or large (figs. 179, 192); mesoscutum with (shallow) medio-posterior depression (figs. 178, 191); propodeum with some sculpture medially (fig. 192); length of vein M+CU of hind wing 1.8-2.0 times vein 1-M (figs. 168, 182) 3

3. Mandible strongly widened dorsally (fig. 190); first discal cell of the fore wing shortly petiolate due to the presence of vein 1-SR (fig. 182); antennal segments of ♀♂ 21-23; first metasomal tergite rather flat (fig. 180); medial carina of propodeum obsolescent (fig. 192); anterior tentorial pits large (figs. 185, 189); apex of hind tibia yellowish; first subdiscal cell of fore wing parallel-sided and rather slender (fig. 182) *pratense* spec. nov.
- Mandible not widened (fig. 174); first discal cell of fore wing (sub)sessile due to the absence of vein 1-SR (fig. 171); antennal segments of ♀ about 20; first tergite convex medially (fig. 167); medial carina of propodeum distinct anteriorly; anterior tentorial pits smaller (figs. 173, 176); apex of hind tibia infuscated; first subdiscal cell of fore wing widened distally and rather robust (fig. 171) ..... *sessile* spec. nov.

4. Medio-posterior depression of mesoscutum completely absent; basal third of antenna (light) brown; antenna of ♀ slender; vein 2-SR of fore wing completely absent ..... species indet.
- Medio-posterior depression of mesoscutum present; antenna and vein 2-SR of fore wing variable 5

5. Third antennal segment blackish (and scapus dark brown as first tergite) *and* first metasomal tergite flattened basally, resulting in a shallow dorsope; mandible robust; vein 2-SR of fore wing completely absent or sometimes present as an unsclerotized trace .... species near *reductum* (Tobias)
- Third antennal segment yellowish or brownish; if blackish then first tergite not flattened and dorsope deep; mandible usually comparatively slender (figs. 133, 146, 155); vein 2-SR of fore wing present, sclerotized (fig. 143) or unsclerotized (fig. 132) 6

6. Antennal segments of ♀ 26-28 (♂ about 29); transverse carina of propodeum (costulae) strongly protruding, tooth-like in lateral view (fig. 154); ovipositor sheath not or slightly protruding in dorsal view (fig. 154) ..... *multiarticulatum* spec. nov.
- Antennal segments of ♀ 19-22 (♂ 21-23); costulae of propodeum not or rather weakly protruding (figs. 130, 142); ovipositor sheath variable (figs. 130, 142) 7

7. Occiput with (minute) tubercles (figs. 139, 148); vein 2-SR of fore wing unsclerotized (fig. 132) or sclerotized (fig. 143) 8

- Occiput without tubercles; vein 2-SR of fore wing sclerotized, but often indistinctly pigmented ..... species near *amoenidens* (Fischer)

8. Vein 2-SR of the fore wing unsclerotized and unpigmented, contrasting with vein 3-SR (fig. 132); middle antennal segments of ♀ robust (fig. 130), 1.5-1.7 times their width; length of ovipositor sheath about 0.2 times fore wing and 1.3-1.4 times length of the first tergite (fig. 130); pleural sulcus largely smooth (fig. 130) ..... *mesocaudatum* spec. nov.
- Vein 2-SR of the fore wing sclerotized (at least anteriorly) and more or less pigmented, somewhat less than vein 3-SR (fig. 143); middle antennal segments of ♀ less robust (fig. 142), 1.9-2.0 times their width; length of ovipositor sheath about 0.4 times length of fore wing and 2.4-3 times length of first tergite (fig. 142); pleural sulcus crenulate (fig. 142) .... *tuberculatum* spec. nov.

KEY TO EUROPEAN SPECIES OF *DINOTREMA* WITH MINUTE OCCIPITAL TUBERCLES

1. Propodeum longer than hind coxa, oblique and without a (sub)horizontal anterior part; length of first metasomal tergite 3.5-4 times its apical width; metasoma of ♀ very long, about 2.4 times the length of mesosoma ..... *kempei* (Hedqvist)
- Propodeum shorter than hind coxa or subequal, less oblique and with a (sub)horizontal anterior part (figs. 130, 142); length of first tergite 1.5-2.7 times its apical width (figs. 138, 153); metasoma of ♀ comparatively short, its length about 1.5 times mesosoma or less (figs. 130, 142) 2

2. Vein 2-SR of fore wing unsclerotized and unpigmented, contrasting with vein 3-SR (fig. 132); middle antennal segments of ♀ robust (fig.130), 1.5-1.7 times their width; length of ovipositor sheath about 0.2 times fore wing and 1.3-1.4 times length of first tergite (fig. 130); pleural sulcus largely smooth (fig. 130) ..... *mesocaudatum* spec. nov.
- Vein 2-SR of fore wing sclerotized (at least anteriorly) and more or less pigmented, somewhat less than vein 3-SR (fig. 143); middle antennal segments of ♀ less robust (fig. 142), 1.7-2.2 times their width; length of ovipositor sheath and pleural sulcus variable 3

3. Length of ovipositor sheath about 0.4 times length of fore wing, and 2.4-3 times the length of first tergite (fig. 142); pleural sulcus crenulate (fig. 142); length of first metasomal tergite of ♀ 1.6-1.8 times its apical width (fig. 153) ..... *tuberculatum* spec. nov.
- Length of ovipositor sheath less than 0.25 times length of fore wing, 1-1.8

times the length of first tergite; pleural sulcus smooth; length of first tergite 1.9-2.7 times its apical width 4

4. Length of ovipositor sheath 1.7-1.8 times the length of first tergite; length of first tergite about 2.7 times its apical width; length of middle antennal segments of ♀ about 2.2 times their width ..... *occipitale* (Fischer)

– Ovipositor sheath about as long as first tergite; length of first tergite about 1.9 times its apical width; length of middle antennal segments of ♀ about 1.7 times their width ..... *hodisense* (Fischer)

Dinotrema hodisense (Fischer) comb. nov.

Aspilota hodisensis Fischer, 1976: 373-375.

Only known from the Austrian holotype. The biology is unknown.

Dinotrema kempei (Hedqvist) comb. nov.

Aspilota kempei Hedqvist, 1973: 91.

The inclusion of this species in the key is based on the examination of the only known specimen, the holotype from N. Sweden. The biology is unknown.

Dinotrema mesocaudatum spec. nov.
(figs. 130-141)

"*Dinotrema* sp. nov. M. Van Achterberg" Vet & Van Alphen, 1985: 481.

Holotype in the Rijksmuseum van Natuurlijke Historie, Leiden: "Museum Leiden, Netherlands, Voorschoten", "ex *Collybia platyphylla* [= *Oudemansiella platyphylla* (Persoon ex Fries)], coll. 13.VIII.1980, L. Vet, no. 22", "em. 10.IX.1980, [oviposition behaviour] on video [by] L. Vet". Paratypes: 16 ♀♀ and 4 ♂♂ (Rijksmuseum van Natuurlijke Historie, Leiden; Museum Budapest; Naturhistorisches Museum Wien; Hedqvist Collection; Munk Collection): 4 ♀♀ + 3 ♂♂, topotypic and from same mushroom; 8 ♀♀, topotypic, but from various mushrooms, coll. 25.VI.1981; 3 ♀♀, Netherlands, Nyemirdum (F.), on mushrooms, coll. 26.VI.1981, L. Vet; ♀, "England, New Forest, 14.VII. 1980", ex mushroom, L. Vet".

Holotype, ♀, length of body 1.8 mm, of fore wing 2.1 mm.

Head. — Remaining antennal segments 17, apical segments missing, antenna slightly narrowed basally (fig. 130), length of (smooth) third segment 1.2

times fourth segment, length of third and fourth segments 2.1 and 1.6 times their width, respectively; middle antennal segments 1.5-1.7 times their width (fig. 130); length of penultimate antennal segment of ♀ paratype 1.8 times its width (fig. 130); length of eye in dorsal view 1.1 times temple (fig. 139); occiput angular in lateral aspect (fig. 130), because of pair of small tubercles (fig. 139); anterior tentorial pits large, largest diameter twice distance between eye and pit (fig. 136); length of malar space 0.3 times basal width of mandible; medial length of mandible about 2.2 times its maximum width, first tooth without carina, rather acute and upcurved (fig. 133), middle tooth comparatively short (figs. 133, 135), and third tooth lobe-shaped (fig. 135); subocular depression distinct (fig. 136).

Mesosoma. — Length of mesosoma 1.2 times its height; precoxal sulcus only medially impressed, and moderately crenulate (fig. 130); pleural sulcus largely smooth, ventrally with some crenulae; medio-posterior depression of mesoscutum medium-sized and deep (fig. 141) and with some micro-sculpture; spiracle of propodeum rather large, about twice its diameter distant from the anterior margin of propodeum (fig. 130).

Wings. — Fore wing: r:3-SR:SR1 = 6: 25:56; pterostigma slightly widened basally (fig. 132); 2-SR unpigmented and unsclerotized (fig. 132); 1-SR present (fig. 132); CU1b shorter than 3-CU1; 2-SR:3-SR:r-m = 9:25:5. Hind wing: M+CU:1-M = 2:1.

Legs. — Length of femur, tibia and basitarsus of hind leg 3.6, 7.8 and 6.5 times their width, respectively; hind femur sparsely setose.

Metasoma. — Length of first tergite 1.5 times its apical width, its surface rugulose and distinctly convex medially, dorsal carinae in front of spiracles only, and its dorsope medium-sized (fig. 138); length of ovipositor sheath 0.2 times fore wing, 0.7 times hind tibia and 1.4 times first tergite (fig. 130).

Colour. — Blackish; three basal antennal segments ventrally, and legs yellowish-brown; telotarsi infuscated; palpi pale yellowish; antenna dark brown but remainder of three basal segments brown; first tergite brown; pterostigma and veins rather light brown; propodeum with brownish tinge.

Variation. Antennal segments of ♀ 19 (3), 20 (5), 21 (3) or 22 (3), of ♂ 21 (1) or 23 (1), middle antennal segments of ♀ 1.5-1.7 times their width; third antennal segment may be mainly dark brown; antenna of ♂ slenderer than of ♀; third tooth of mandible may be more acute than figured (fig. 135); occipital tubercles may be very minute; vein 2-SR of fore wing exceptionally somewhat pigmented or with a short ramellus; precoxal sulcus may nearly reach anterior margin of mesopleuron; groove of propodeum may be absent; tarsi of ♂ more or less infuscated; length of first metasomal tergite 1.2-1.5 times its apical width; length of ovipositor sheath 0.19-0.21 times fore wing, 1.3-1.4 times first tergite.

Notes. The combination of an unpigmented and unsclerotized vein 2-SR of fore wing, the medium-sized ovipositor sheath and the small occipital tubercles makes it an easy species to identify. Resembles somewhat *Dinotrema castaneithorax* (Fischer, 1973) comb. nov. (formerly in *Aspilota*) but this species has vein 2-SR of fore wing sclerotized, mandible differently shaped (figs. 223, 224) and somewhat larger anterior tentorial pit (fig. 227). In the Shaw Collection (Edinburgh) is a series of *D. mesocaudatum* (from Norfolk, Marford Hall) reared from *Megaselia hirtiventris* in *Agaricus* spec. (Munk, in litt.).

Dinotrema multiarticulatum spec. nov.
(figs. 154-166)

Holotype in the Rijksmuseum van Natuurlijke Historie, Leiden: "Netherlands, Voorschoten (Horsten), L. Vet, no. 12", "Coll. 3. VIII.1980, em. 15.IX.1980, ex various mushrooms". Paratypes (same depository and Munk Collection); 8 ♀♀ and 1 ♂, topotypic and from same rearing, except 1 ♀ from Friesland ("Netherlands, Oude Mirdum, ex *Agaricus nivescens* (Moell.) Moell., coll. 17. VIII. 1980", "em. 15.IX.1980, L. Vet. no. 36").

Holotype, ♀, length of body 2.5 mm, of fore wing 2.9 mm.

Head. — Antennal segments 27, long setose (fig. 154), length of third segment 1.4 times the fourth segment (fig. 157), length of third, fourth and penultimate segments 3.2, 2.4 and 2.0 times their width, respectively; length of eye in dorsal view 1.2 times temple; occiput without tubercles (fig. 154); anterior tentorial pits large, largest diameter twice distance between the eye and pit (figs. 158, 161); length of malar space 0.3 times basal width of mandible; medial length of mandible about 1.3 times its maximum width (fig. 158), mandible somewhat widened dorsally (fig. 158), both lateral teeth lobe-shaped, first tooth without carina, middle tooth small and only slightly longer than lateral teeth (figs. 155, 158); subocular depression distinct (fig. 155).

Mesosoma. — Length of mesosoma 1.3 times its height; precoxal sulcus narrow, sparsely crenulate and absent anteriorly and posteriorly (fig. 154); pleural sulcus smooth dorsally, indistinctly crenulate ventrally; medio-posterior depression of mesoscutum deep, narrow and short (fig. 164); scutellar sulcus with one longitudinal carina; metanotum somewhat protruding (fig. 154); surface of propodeum largely smooth anteriorly, longitudinally rugose posteriorly (fig. 166), costulae and medial carina dentiform protruding dorsally (fig. 154), its medial carina complete and its spiracle rather small, about three times its diameter distant from anterior margin of propodeum (fig. 157).

Wings. — Fore wing: r:3-SR:SR1 = 7:24:54; pterostigma linear; 1-SR short

and rather wide (fig. 156); 2-SR sclerotized and pigmented; CU1b somewhat shorter than 3-CU1 (fig. 159); 2-SR:3-SR:r-m = 11:24:7. Hind wing: M+CU:1-M = 14:10.

Legs. — Length of femur, tibia and basitarsus of hind leg 3.9, 8.2 and 6.7 times their width, respectively; apex of hind tibia with a comb on the inner side.

Metasoma. — Length of first tergite 1.5 times its apical width, its surface rugose (fig. 166), distinctly convex medially, its dorsal carinae present in basal half of tergite, and dorsope medium-sized, deep (fig. 166); length of ovipositor sheath 0.14 times fore wing, largely glabrous and slightly protruding beyond metasoma in its dorsal view (fig. 154).

Colour. — Blackish; scapus, pedicellus, annellus, palpi, mandibles, and legs, brownish-yellow; antenna basally, veins, and tegulae, brown; propleuron, first and base of second tergite rather light reddish-brown; clypeus dark reddish-brown.

Variation. Antennal segments of ♀ 26 (1), 27 (3), 28 (2), of ♂ 29 (1); length of fore wing 2.6-2.9 mm; length of ovipositor sheath 0.12-0.15 times fore wing; length of first tergite 1.5-1.6 times its apical width; medio-posterior depression of mesoscutum may be shorter and subtriangular.

Note. Resembles *Dinotrema denticulatum* (Stelfox & Graham, 1951) comb. nov. (formerly in *Aspilota*) because of the high number of antennal segments and protruding propodeal carinae. However, *D. denticulatum* differs because of the longer eyes (in dorsal view 1.5 times temple), the longer ovipositor sheath (somewhat shorter than metasoma, as long as hind tibia), and the different colour (e.g., yellowish middle of metasoma).

Dinotrema occipitale (Fischer) comb. nov.

Aspilota occipitalis Fischer, 1973a: 148-150.

Only known from Austria; the biology is unknown.

Dinotrema pratense spec. nov.
(figs. 180-192)

Holotype in the Rijksmuseum van Natuurlijke Historie, Leiden: "Museum Leiden, Netherlands, Harich (Gaasterland)", "on *Agaricus* sp. in pasture, coll. 18.VII. 1982, L. Vet". Paratypes (same depository); 8 ♀♀ and 1 ♂; 1♂, topotypic; 1 ♀, "Museum Leiden, Netherlands, (F.), Oude Mirdum", "Ex *Bovista gigantea*-mushroom [= *Langermannia gigantea* (Batsch ex Per-

soon)], coll. 17.VIII.1980, em. 15.IX.1980"; 6 ♀♀, "Museum Leiden, Netherlands, (F.), Oude Mirdum", "ex *Agaricus nivescens* (Moell.) Moell., coll. 17.VIII.1980, em. 12/15.IX.1980, L. Vet, no. 36"; 1 ♀, "Museum Leiden, Netherlands, Wassenaar (Maaldrift)", "ex *Agaricus* sp., coll. 1.VIII.1980, em. 25.VIII.1980, L. Vet, no. 8".

Holotype, ♀, length of body 1.9 mm, of fore wing 2.1 mm.

Head. — Antennal segments 22, long whitish setose (fig. 180), length of third segment 1.1 times fourth segment (fig. 186), length of third, fourth and penultimate segments 3.7, 2.7 and 1.8 times their width, respectively (figs. 183, 186); length of eye in dorsal view 1.1 times temple (fig. 188); anterior tentorial pits large, distance between pit and eye 1/5 of longest diameter of pit (figs. 185, 189); occiput without tubercles; length of malar space 0.2 times basal width of mandible; medial length of mandible about 1.3 times maximum width of mandible, first tooth with carina and strongly protruding dorsally (fig. 190), middle tooth somewhat longer than first tooth and distinctly longer than wide lobe-shaped third tooth (fig. 185); subocular depression obsolescent (fig. 190).

Mesosoma. — Length of mesosoma 1.4 times its height; precoxal sulcus medially only and rather narrow, crenulate (fig. 180); pleural sulcus smooth; medio-posterior depression of mesoscutum linear, and deep (fig. 191); scutellar sulcus with one longitudinal carina; metanotum not protruding; surface of propodeum completely oblique (fig. 180, without subhorizontal part anteriorly), finely rugulose medially, remainder smooth (fig. 192), costulae and carinae absent and its spiracle small, about 2.5 times its diameter distant from the anterior margin (fig. 180).

Wings. — Fore wing: r: 3-SR:SR1 = 11:46:113; pterostigma slightly widened basally (fig. 182); 1-SR short (fig. 182); 2-SR sclerotized and pigmented but much narrower than 3-SR (fig. 182); CU1b shorter than 3-CU1 (fig. 187); 2-SR:3-SR:r-m = 19:46:10. Hind wing: M+CU:1-M = 9:5.

Legs. — Length of femur, tibia and basitarsus of hind leg 4.7, 8.0 and 5.5 times their width, respectively.

Metasoma. — Length of first tergite 1.8 times its apical width, rather flat medially (fig. 180), its surface finely rugulose (fig. 192), its dorsal carinae present in basal half of tergite, and its dorsope deep and large (fig. 192); length of ovipositor sheath 0.23 times fore wing, with few setae (fig. 180) and distinctly protruding beyond the metasoma.

Colour. — Black(ish); palpi, tegulae and legs, brownish-yellow; telotarsi infuscated; antenna (except yellowish annellus) blackish, but scapus and pedicellus yellowish-brown ventrally and brown dorsally; propleuron apically and first tergite, dark brown with reddish tinge; pterostigma rather dark brown; bases of tibiae light yellowish.

Variation. Antennal segments of ♀ 21 (3), 22 (1) or 23 (2), of ♂ 21 (1), length of middle segments of ♀ 2.5-2.6 times their width; length of body of ♀ 1.9-2.4 (♂:1.3) mm, of fore wing of ♀ 2.1-2.4 (♂ : 1.7) mm; length of first tergite 1.7-1.8 times its apical width; length of ovipositor sheath 0.23-0.29 times fore wing.

Note. Distinctive because of its widened mandibles, the obsolescent subocular depression, the sclerotized (but narrow) vein 1-SR+M of the fore wing, the rather flat first tergite and the oblique propodeum and the light yellowish bases of the tibiae. It runs in Fischer's key (1976) to *Dinotrema longicarinatum* (Fischer, 1976) comb. nov. (formerly in *Aspilota*), but *D. longicarinatum* differs from it for example by the larger eyes (length in dorsal view about 1.5 times temple), reddish-brown first tergite, yellowish propodeum and smaller anterior tentorial pits, maximum diameter only 1.5 times the distance between the eye and the pit.

Dinotrema sessile spec. nov.
(figs. 167-179)

"*Dinotrema* spec. nov. S. van Achterberg" Vet & van Alphen, 1985: 481.

Holotype in the Rijksmuseum van Natuurlijke Historie, Leiden: "Museum Leiden, Netherlands, Voorschoten (Horsten)", "ex *Amanita rubescens*-mushroom, coll. 13.VIII.1980, L. Vet, no. 20".

Holotype, ♀, length of body 1.3 mm, of fore wing 1.8 mm.

Head. — Antennal segments 20, middle segments about twice their width (fig. 167), length of the third antennal segment 1.1 times the fourth segment, the length of the third, fourth and penultimate segments 3.4, 2.5 and 2.3 times their width, respectively (figs. 169, 170); length of eye in dorsal view 1.5 times temple (fig. 177); occiput without tubercles (fig. 167); length of malar space 0.2 times basal width of mandible; medial length of mandible about 1.6 times its maximum width, mandible not widened dorsally (fig. 174), middle tooth somewhat longer than both medium-sized, lobe-shaped, lateral teeth (figs. 173, 174), first tooth with a carina; subocular depression shallow (fig. 174); anterior tentorial pits large, their maximum diameter about 1.5 times the distance between the eye and the pit (figs. 174, 176).

Mesosoma. — Length of mesosoma 1.2 times its height; precoxal sulcus only medially shortly impressed and crenulate (fig. 167); pleural sulcus smooth; medio-posterior depression of mesoscutum rather deep and narrow (fig. 178); scutellar sulcus with one longitudinal carina; metanotum not pro-

truding; surface of propodeum smooth except for the short medial carina anteriorly and some long rugae medially, costulae absent (fig. 167), its spiracle small, about three times the diameter distant from anterior margin of propodeum (fig. 167).

Wings. — Fore wing: r:3-SR:SR1 = 3:21:47; pterostigma somewhat widened basally (fig. 171); 1-SR absent, resulting in sessile first discal cell (fig. 171); 2-SR sclerotized but slightly pigmented and narrow (fig. 171); 1-SR+M about as wide as vein 1-M; CU1b subequal to 3-CU1 or somewhat shorter; first subdiscal cell widened distally and rather robust (fig. 171); 2-SR:3-SR:r-m = 8:21:4. Hind wing: M+CU about twice as long as 1-M (fig. 168).

Legs. — Length of femur, tibia and basitarsus of hind leg 4.6, 8.4 and 5.5 times their width, respectively; hind femur sparsely setose.

Metasoma. — Length of first tergite 1.9 times its apical width, its surface with some rugae, but largely smooth (fig. 179), rather convex (fig. 167), its dorsal carinae distinct in basal 0.8, and dorsope deep and large (fig. 179); length of ovipositor sheath 0.26 times length of fore wing, about as long as hind tibia, and sparsely setose (fig. 167).

Colour. — Dark brown; scapus, pedicellus (but annellus yellowish) and base of third antennal segment, first tergite, pterostigma and humeral plate (not tegula), palpi and legs (largely), yellowish-brown; apex of hind tibia distinctly infuscated, apex of hind femur dorsally and hind tarsi only slightly darker brownish.

Note. The following species may be distinguished from *Dinotrema sessile* by the listed characters. *Dinotrema carinatum* (Tobias, 1962) comb. nov. (formerly in *Aspilota*) differs e.g. by the slender mandibles (about twice their width) and apex of hind tibia yellowish; *D. castaneithorax* (Fischer, 1973) comb. nov. (formerly in *Aspilota*) differs e.g. by the deep subocular depression, length of middle antennal segments about 1.5 times their width and largely yellowish-brown antenna; *D. incarinatum* (Fischer, 1973) comb. nov. (formerly in *Aspilota*) differs e.g. by larger tentorial pits (nearly as wide as distance between eye and pit), length of middle antennal segments about 2.5 times their width, and apex of hind tibia yellowish; *D. significarium* (Fischer, 1973) comb. nov. (formerly in *Aspilota*) differs e.g. by the reddish first tergite, yellowish propodeum and first subdiscal cell of fore wing not widened.

There is one other species known from *Amanita* (reared from *Amanita phalloides*) which may be conspecific with one of the fungicolous species mentioned in this paper. However, the interpretation of *Pentapleura amanitae* Gautier & Bonnamour, 1939 is problematic and I was unable to find the type-series collected at Saint-Genis-Laval (Rhône, France). The original description is insufficient to even ascertain the genus, but I am unaware of any

Pentapleura species inhabiting mushrooms. The description would also permit it to belong to the *Aspilota*-group. The combination of a yellowish-brown and areolate propodeum, antennal segments of ♀ 17-19 and probably absent medio-posterior depression of mesoscutum was not encountered among the species reared from *Amanita* species in The Netherlands by Dr. L.E.M. Vet.

Dinotrema species indet.

Reared from a collection of various mushrooms at Voorschoten (The Netherlands) in low numbers. It runs in existing keys to "*Synaldis*" and to *A. parvicornis* but is not related because of the distinct oblique subocular depression.

Dinotrema species near **amoenidens**

"*Dinotrema* spec. nov. L. van Achterberg" Vet & Van Alphen, 1985: 481.

Reared from *Amanita rubescens* (Persoon ex Fries) at Nyemirdum (The Netherlands). Runs in existing keys to *Dinotrema amoenidens* (Fischer 1973b) comb. nov., but differs by the shallow oblique subocular depression.

Dinotrema species near **reductum**

Reared from *Agaricus nivescens* (Moell.) Moell. at Oude Mirdum (The Netherlands). This species is closely related to *Dinotrema reductum* (Tobias, 1962) comb. nov. and will be dealt with by Mr. T. Munk.

Dinotrema tauricum (Telenga) comb. nov.

Aspilota taurica Telenga, 1935: 190; Fischer, 1972: 444-447 (redescription); Shenefelt, 1974: 981; Fischer, 1975: 330.

Known from USSR (Crimea) and Austria; I have examined specimens from England (New Forest) and The Netherlands (Gaasterland (Lycklama Forest) and Voorschoten (Horsten)). The type was reared from a mushroom ("Champignon") as was the New Forest specimen. The specimens from The Nether-

lands were reared from *Amanita rubescens* (Persoon ex Fries) (2 ×) and *Tricholomopsis platyphylla* (Persoon ex Fries) (1 ×) by Dr. L.E.M. Vet (Wageningen).

Dinotrema tuberculatum spec. nov.
(figs. 142-153)

Dinotrema cf. *hodisensis* (Fischer); Vet & Van Alphen, 1985: 481.

Holotype, ♀, (Rijksmuseum van Natuurlijke Historie, Leiden): "Nederland, Putten (Gld.), 1-8.X.1970, J. v.d. Vecht, Malaise-trap, G[arden]". Paratype: 1 ♀ (same depository): "Museum Leiden, Netherlands, Voorschoten (Horsten), ex mushrooms", "coll. 1980, em. 13.VIII.1980, L. Vet". One ♂, not a type: "Museum Leiden, Netherlands, Nyemirdum, ex *Amanita rubescens*", "coll. 17.VIII.1980, em. 26.IX.1980, L. Vet, no. 39".

Holotype, ♀, length of body 1.9 mm, of fore wing 2 mm.

Head. — Antennal segments 19, middle segments about 2 times their width (fig. 142), length of the third segment 1.2 times length of fourth segment (fig. 144), length of third, fourth and penultimate segments 2.7, 2.0, and 2.1 times their width, respectively (figs. 144, 145); length of the eye in dorsal view equal to length of temple (fig. 148); anterior tentorial pits large, longest diameter 1.2 times distance between the eye and pit (figs. 147, 150); occiput with pair of minute tubercles (figs. 142, 148); length of malar space 0.2 times basal width of mandible; medial length of mandible about 1.3 times maximum width of mandible, rather flattened, first tooth without carina and rather widened dorsally (fig. 146), both lateral teeth lobe-shaped and somewhat shorter than acute middle tooth (figs. 146, 147); subocular depression distinct (fig. 150).

Mesosoma. — Length of mesosoma 1.2 times its height; precoxal sulcus only medially deeply impressed and rather widely crenulate (fig. 142); pleural sulcus finely crenulate (fig. 142); medio-posterior depression of mesoscutum rather deep and elongate (fig. 149); scutellar sulcus with one longitudinal carina (fig. 149); metanotum with a short median carina, not protruding; surface of propodeum largely smooth, with some punctures and a short medial carina with pair of short costulae (fig. 153), without areola and its spiracle medium-sized (fig. 153), medial carina rather protruding (fig. 142).

Wings. — Fore wing: r:3-SR: SR1 = 5:23:54; pterostigma somewhat widened basally (fig. 143); 1-SR medium-sized (fig. 143); 2-SR narrow, largely sclerotized and weakly pigmented; CU1b shorter than 3-CU1; 2-SR: 3-SR:r-m = 10:23:6. Hind wing: M+CU:1-M = 10:6.

Legs. — Length of femur, tibia and basitarsus of hind leg 4.0, 9.0 and 5.5 times their width, respectively (fig. 151); outer side of the hind femur rather glabrous.

Metasoma. — Length of the first tergite 1.8 times its apical width, convex

and rugose medially, its dorsal carinae nearly reached apex (fig. 153) and dorsope medium-sized (fig. 153); length of the ovipositor sheath 0.39 times the fore wing, about 3 times the length of the first tergite (fig. 142).

Colour. — Blackish; palpi, legs, scapus largely, pedicellus and first tergite, yellowish-brown; remainder of antenna and of metasoma dark-brown; pterostigma and veins brown; apex of hind tibia darker than its yellowish base.

Variation. Antennal segments of ♀ 17 (1) or 19 (1), of ♂ 21 (1); length of fore wing 1.7-2 mm; length of first tergite 1.6-1.8 (♂: 2.0) times its apical width; length of ovipositor sheath 0.37-0.39 times fore wing, 2.4-3 times first tergite; posterior part of propodeum may be more sculptured and with weak medial carina; in ♀-paratype 2-SR of right fore wing only basal quarter sclerotized but in left wing completely sclerotized.

Note. The male is excluded from the type-series because the occiput is only weakly angulate, not tuberculate.

REMARKS ON SOME ABERRANT *DINOTREMA* SPECIES

Dinotrema lineola (Thomson) comb. nov.

Alysia lineola Thomson, 1895: 2304.
Aspilota lineola; Fischer, 1972: 403-406; Shenefelt, 1974: 975.

There is only one complete ♂-specimen from the type-locality Lund ("L-d, 4/3") in the Thomson Collection (Lund), and it is designated here as the lectotype. Paralectotypes are 3 ♂ and 1 ♀, the latter without metasoma. Because it does not key out correctly in Fischer's key (1976) a short redescription is given.

Lectotype, ♀, length of body, and of fore wing both 2.8 mm. Antennal segments 20, very robust (0.7 times body) and long setose, antenna rather slightly narrowed basally, length of third antennal segment 1.3-1.4 times the fourth segment and 2.4 times its maximum width; width of anterior tentorial pit 1.5 times distance between pit and eye; length of eye in dorsal view 0.9 (5) times temple; temple parallel-sided behind eyes; occiput without tubercles; malar space and subocular depression distinct; length of mandible about 1.5 times its maximum width, distinctly widened dorsally, its teeth subequal; mesoscutum rather long setose along the notaulic area; precoxal sulcus only medially impressed and distinctly crenulate; propodeum with strong costulae, its spiracle medium-sized, about twice its diameter removed from anterior margin of propodeum; pleural sulcus indistinctly crenulate; vein 2-SR of fore wing weakly developed; vein 1+2-CU1 of fore wing 2.3 times vein m-cu; vein

3-SR of fore wing 2.2 times vein 2-SR; length of hind femur 3.9 times its maximum width; first tergite distinctly convex, of normal shape; length of ovipositor sheath 1.3 times first tergite, and 0.19 times fore wing; scapus dorsally only, hind telotarsus and base of hind coxa infuscated; legs largely yellowish (but may be bleached). Because of the pin-hole in the mesoscutum the presence of a medio-posterior depression is uncertain.

Dinotrema spec. nov.
(figs. 54-67)

This species will be described by Mr. T. Munk (Aarhus) and I refrain from a detailed description. In order to show the variation in this genus I present some figures of the present species as a representative of the species group to which it belongs. The specimen figured is deposited in the Rijksmuseum van Natuurlijke Historie by Mr. Munk and originates from Denmark, south of Vejle.

Dinotrema speculum (Haliday) comb. nov.
(figs. 68-82)

Alysia speculum Haliday, 1838: 241 (♂).
Prosapha speculum; Fischer, 1871: 130-133 (redescription); Shenefelt, 1974: 1018.
Alysia venusta Haliday, 1838: 242 (♀).

Figured and redescribed from a ♂ from Austra ("Spitzzicken, Burgenland, Fischer, 24.8.1959", "Prosapha speculum (Hal.), det. Fischer", "compared and conspecific with lectotype of Alysia speculum Hal., Van Achterberg, 1980") in the Rijksmuseum van Natuurlijke Historie, Leiden. Lectotype of *Alysia speculum* Haliday, 1838, ♂, (National Museum of Ireland, Dublin) here designated: "British Haliday, 20.2.82/Box 25 AWS", "Alysia speculum Hal., ♂, Type!, C.F.W. Muesebeck, 1928", "selected by Muesebeck as generic type of Prosapha, AWS"; 7 paralectotypes, ♂, 5 from box 25 and 2 from box 10. Two males from other boxes (no. 18 (from England) and 28 (from Ireland)) are excluded because they lack the number "10" on the card. Lectotype of *Alysia venusta* Haliday, 1838, ♀, (National Museum of Ireland, Dublin) here designated: "204" (on card), "19", "British Haliday, 20.2.82/Box 10 AWS", "Alysia venusta Hal., ♀ Type!, AWS, 26.12.1934"; paralectotypes, 4 ♀ (same depository): 1 ♀ from box 10 and "24" on card and 3 ♀♀ from box 10 and with number "49" on card. One ♀ is excluded because it has darker legs, somewhat longer ovipositor sheath, length of fore wing only 1.1 mm, pterostigma more slender (vein r longer than the width of pterostigma) and first tergite dark brown; it probably belongs to a closely related species. Additionally examined 2 ♂♂ (both in the Rijksmuseum van Natuurlijke Historie, Leiden); 1 ♂ from Yugoslavia (Slovenia, 800 m, H. Vlug) and Sweden (Bjurholm, river-meadow, L. Huggert).

Specimen from Austria (Spitzzicken), ♂, length of body 1.6 mm, of fore wing 1.8 mm.

Head. — Antennal segments 18, length of third segment 1.1 times fourth segment, length of third, fourth and penultimate segments 4.0, 3.1 and 2.3 times their width, respectively; length of eye in dorsal view 0.9 times temple (fig. 79); frons without pit (but present in ♂ from Yugoslavia); anterior tentorial pits large, their maximum diameter equal to the distance between the eye and the pit (figs. 69, 71); occiput without tubercles; length of malar space 0.2 times basal width of mandible; medial length of mandible about 1.3 times its maximum width, rather widened dorsally (fig. 72), both lateral teeth lobe-shaped and shorter than middle tooth (figs. 71,72), and first tooth with carina; subocular depression absent (fig. 71), but shallowly impressed in ♂ from Sweden.

Mesosoma. — Length of mesosoma 1.2 times its height; mesosternal sulcus smooth (in other *Dinotrema* species listed in this paper, distinctly crenulate); precoxal sulcus deep, widely crenulate, but absent posteriorly (fig. 68); pleural sulcus smooth except some crenulae ventrally; medio-posterior depression of mesoscutum absent (fig. 75); scutellar sulcus with one longitudinal carina; metanotum with a complete median carina (fig. 75), not protruding; dorsal surface of propodeum smooth except for a short medial carina, its posterior surface rugose and medial carina and areola are indistinct, its propodeal spiracle small (fig. 68) and costulae present.

Wings. — Fore wing: r:3-SR:SR1 = 1:15:46; pterostigma strongly widened (figs. 70, 81, but less of ♀: fig. 82); 1-SR short and wide: 2-SR sclerotized and about as wide as 3-SR; vein r very short (less in ♀: fig. 82) and originating comparatively distally (figs. 70, 81); CU1b longer than 3-CU1, and 3-CU1 strongly widened (fig. 77); 2-SR:3-SR:r-m = 19:15:3; m-cu shortly postfurcal (fig. 70). Hind wing: M+CU:1-M = 10:9.

Legs. — Length of femur, tibia and basitarsus of hind leg 4.1, 8.6 and 6 times their width, respectively (fig. 74); apex of hind tibia with an indistinct comb; claws comparatively slender (fig. 78).

Metasoma. — Length of first tergite 1.8 times its apical width, flattened medially (fig. 68), its surface longitudinally rugose medially (fig. 76), dorsal carinae almost reaching apex and dorsope deep, and large (fig. 76); ovipositor sheath of ♀ rather short (fig. 80).

Colour. — Blackish; palpi, mandible, legs, tegulae, scapus, pedicellus, annellus and first tergite brownish-yellow; rest of antenna and pterostigma dark brown; second tergite dark reddish-brown.

Variation. Antennal segments of ♂ 15-18, of ♀ 14 (2) or 17 (1, lectotype *A. venusta*); length of fore wing 1.2-1.8 mm, of body 1.4-1.7 mm; length of ovipositor sheath 0.14-0.16 times fore wing, about equal to length of first tergite (fig. 80); vein 3-CU1 of fore wing of both sexes strongly widened; vein r

of fore wing very short (♂; figs. 170, 81) to medium-sized (♀: fig. 82), about as long as maximum width of pterostigma or somewhat shorter.

Note. The large anterior tentorial pits and dorsope, and the more or less postfurcal vein m-cu of fore wing indicate that *Prosapha* Foerster (type-species: *Alysia speculum* Haliday) belongs to the *Aspilota*-group. The sometimes shallowly developed subocular depression indicates a close relationship to *Dinotrema* Foerster; the widened pterostigma (strongly only in ♀) is insufficient to retain *Prosapha* as a separate genus and it is therefore synonymized.

Eudinostigma Tobias

Type-species: *Eudinostigma fischeri* Tobias, 1986.

Diagnosis. — Antennal segments 13-20; frons without pit; maximum width of head in dorsal view 1.6-2.4 times maximum width of mesoscutum (figs. 201, 203, 212, 214); head strongly (fig. 193) to moderately depressed (fig. 204), resulting in a flattened vertex and antennal sockets near upper level of vertex (figs. 198, 215); maximum width of temple 1.1-2.5 times maximum width of eye in lateral view (figs. 193, 204); no groove between eye and antennal socket (fig. 198); anterior tentorial pits small, medium-sized to large, with subocular depression absent (fig. 197) or present (fig. 215); palpi comparatively short (figs. 193, 204); malar suture absent; depression near eye smooth (fig. 198); mandible without carinae (figs. 195, 207), its third tooth not (figs. 197, 207) or moderately (fig. 265) widened, and its surface (largely) smooth; propleuron and pronotal sides smooth; precoxal sulcus absent (fig. 193) or narrowly present (fig. 204); lateral carina of mesoscutum distinctly removed from lateral margin of mesoscutum anteriorly (figs. 193, 204); mesoscutum distinctly compressed and narrow (figs. 203, 214); notauli and medio-posterior depression absent on mesoscutal disk (figs. 203, 214); scutellar sulcus comparatively aberrant (figs. 203, 214); scutellum without transverse depression; metanotum not protruding (fig. 193), its medial carina absent posteriorly (fig. 203); propodeal spiracle (rather) small (figs. 193, 204); posterior part of propodeum more or less differentiated from anterior part (figs. 193, 204), rugulose (fig. 203) or with some rugae (fig. 208); macropterous (in the Palaearctic region); vein r of fore wing long and m-cu distinctly postfurcal if vein 2-SR is present (fig. 206); vein 2-SR of fore wing absent (fig. 194) or present and unsclerotized (fig. 206) or sclerotized and inconspicuous (fig. 263); vein 1-SR of fore wing

short and widened (figs. 194, 206); vein CU1b of fore wing longer to shorter than vein 3-CU1; first subdiscal cell closed; pterostigma subtriangular (fig. 194) or linear (fig. 206); vein m-cu of hind wing absent; vein M+CU of hind wing shorter (fig. 194) or longer (fig. 206) than vein 1-M; tarsal claws slender (figs. 202, 211); first metasomal tergite slender (fig. 199) or intermediate (fig. 208), its dorsope deep, medium-sized to large (figs. 199, 208); length of ovipositor sheath equal to first tergite or shorter (unknown of *E. stenosoma*).

Small genus, containing at least five Palaearctic species, of which the biology is unknown.

Distribution. — Holarctic; in the Nearctic region *Aspilota brachyptera* Wharton, 1980 and *A. floridensis* Shenefelt, 1974 (= *A. cubiceps* Fischer, 1969 nec Bischoff, 1932) probably belong to this genus.

Note. — Closely related to *Dinostigma* Fischer (fig. 1), but *Eudinostigma* species lack the open first subdiscal cell of fore wing and the extremely large propodeal spiracles.

KEY TO THE PALAEARCTIC SPECIES OF THE GENUS *EUDINOSTIGMA* TOBIAS

1. Subocular depression absent (fig. 197); precoxal sulcus absent (fig. 193); no distinct incision between second and third mandibular teeth (fig. 197); maximum width of head about 2.4 times width of mesoscutum (figs. 201, 203); height of eye in lateral view about 0.9 times maximum height of temple (fig. 193); scutellar sulcus reversed V-shaped (fig. 203) .... *stenosoma* spec. nov.
- Oblique subocular depression present (fig. 215, but obsolescent in *fischeri*); precoxal sulcus present medially (fig. 204); with distinct incision between second and third mandibular teeth (fig. 207); maximum width of head 1.6-2.0 times width of mesoscutum (figs. 212, 214); height of eye in lateral view 0.4-0.8 times maximum height of temple (fig. 204); scutellar sulcus normal (figs. 214, 267) 2
2. Pterostigma linear, narrow basally (fig. 206); maximum width of temple in lateral view 1.1-1.8 times maximum width of eye (fig. 204); antennal segments of ♀ 15-17, ♂ up to 20; vein 2-SR of fore wing present as unpigmented trace (fig. 206); vein CU1b distinctly shorter than vein 3-CU1 (fig. 206) 3
- Pterostigma wide (♂) or narrow (♀) triangular; maximum width of temple in lateral view 1.4-2.5 times maximum width of eye; antennal segments of ♀ 13-15 (♂: 17-18); vein 2-SR of fore wing completely

absent; vein CU1b of fore wing much longer than vein 3-CU1 or subequal 4

3. Scapus and pedicellus yellowish; height of eye in lateral view about 0.8 times maximum height of temple (fig. 264); mandible distinctly widened dorsally (fig. 265); face less protruding (fig. 264); hind femur less robust (fig. 273) ..... *alox* spec. nov.
- Scapus dark brown; height of eye in lateral view 0.4-0.6 times height of temple (fig. 204); pedicellus brown; mandible hardly widened dorsally (fig. 210); face more protruding (fig. 204); hind femur robust (fig. 209) ..... *pulvinatum* (Stelfox & Graham)

Note. If antennal segments about 13 (♂), vein 2-SR of fore wing sclerotized and veins of fore wing of ♂ strongly widened, cf. *Aspilota insignis* Stelfox & Graham, 1950.

4. Maximum width of temple in lateral view about 2.5 times maximum width of eye; vein CU1b of fore wing much longer than vein 3-CU1 .... *latistigma* (Fischer)
- Maximum width of temple in lateral view about 1.4 times maximum width of eye; vein CU1b of fore wing subequal to vein 3-CU1 *fischeri* Tobias

Eudinostigma alox spec. nov.
(figs. 262-274)

Holotype, ♂, (Rijksmuseum van Natuurlijke Historie, Leiden): "Hungary, Törökbálint, swept: 24-8-1986, leg. H. J. Vlug".

Holotype, ♂, length of body 1.6 mm, of fore wing 1.9 mm.

Head. – Antennal segments 20, length of third antennal segment 1.2 times fourth segment, length of third, fourth and pultimate segments 3.3, 2.7, and 2.2 times their width, respectively (fig. 271); palpi short, maxillary palp about as long as height of head (fig. 262); maxillary and labial palpi with 6 and 4 segments, respectively, but both basal segments hardly separated; length of eye in dorsal view equal to temple (fig. 268); maximum width of temple in lateral view 1.2 times maximum width of eye (fig. 264); height of eye in lateral view 0.8 times maximum height of temple (fig. 264); temple depressed and with longitudinal groove (fig. 268); anterior tentorial pits small, its maximum diameter much less than distance between pit and eye (fig. 269); occiput without tubercles; oblique subocular depression distinct (figs. 264, 269); length of malar space 0.6 times basal width of mandible; medial length of mandible about 1.4 times its maximum width, mandible widened dorsally, with incision between first and second tooth, middle tooth acute, longer than both lateral, lobe-shaped teeth (figs. 265, 266); maximum width of head

behind eyes twice maximum width of mesoscutum (figs. 267, 268).

Mesosoma. — Length of mesosoma 1.4 times its height, strongly compressed (figs. 267); precoxal sulcus narrow, slightly crenulate, only medially present (fig. 262); pleural sulcus smooth; scutellar sulcus normal, wide, with one carina (fig. 267); mesoscutum strongly convex; surface of propodeum rugose and with longitudinal carina, remainder smooth (fig. 272), without costulae, its propodeal spiracle small and submedially situated (fig. 262).

Wings. — Fore wing: 2-SR weakly sclerotized but unpigmented, inconspicuous; r:3-SR:SR1 = 4:19:53; pterostigma linear (fig. 263); 2-SR:3-SR:r-m = 6:19:4; CU1b somewhat shorter than 3-CU1 (fig. 270). Hind wing: M+CU:1-M = 14:8.

Legs. — Length of femur, tibia, and basitarsus of hind leg 4.4, 10.0, and 5 times their width, respectively (fig. 273).

Metasoma. — Length of first tergite 2.3 times its apical width, its surface largely smooth, with some microsculpture medially, its dorsal carinae present in basal half, and dorsope rather large (fig. 272).

Colour. — Black; scapus, pedicellus, annellus, palpi, and legs largely, yellowish; telotarsi, femora and tibia largely infuscated dorsally; first (and to a less degree), second and third tergites of metasoma brown; tegulae and pterostigma dark brown.

Eudinostigma fischeri Tobias

Eudinostigma fischeri Tobias, 1986: 152-153, figs. 107: 3, 4. Holotype examined.

Described from Moldavia (USSR). The biology is unknown.

Eudinostigma latistigma (Fischer) comb. nov.

Synaldis latistigma Fischer, 1962: 13; Fischer, 1967a: 99-102; Shenefelt, 1974: 1022.

Described from Austria and Germany, later reported from Bulgaria, Moldavia (USSR) and Mongolia. The biology is unknown.

Eudinostigma pulvinatum (Stelfox & Graham) comb. nov. (figs. 204-215)

Aspilota pulvinata Stelfox & Graham, 1949: 71; 1972: 434-436, figs. 124-128.

Redescribed from ♀, (Hedqvist Collection, Vallentuna): "[Sweden], Med., Ånge, 20.8.1957, K.-J. Hedqvist". Additional material: 6 ♀♀, (Hedqvist Collection & Rijksmuseum van Natuurlijke Historie, Leiden): 4 ♀♀, Sweden, "V.G., Kinnekulle, 15.8.1981, K.-J. Hedqvist"; 1 ♀, Sweden, "SK., Ravlunde, 2.7.1976, K.-J. Hedqvist"; 1 ♀, Sweden, "Upl., Vallentuna, 31.VII.1977, K.-J. Hedqvist"; 4 ♀♀ (Rijksmuseum van Natuurlijke Historie, Leiden); "Norway, EIS 28, AK Barum, Ostøya, 12.8-1.9.1984, leg. F. Midtgaard". 1 ♀, (id.): "Hungary, Peröcsény, swept: 23.8.1986, leg. H. J. Vlug".

Length of body 1.4 mm, of fore wing 1.8 mm.

Head. — Antennal segments 16, somewhat narrowed basally, long setose (fig. 204), length of third segment 1.1 times fourth segment, length of third, fourth, and penultimate segments 2.5, 2.3 and 2.0 times their width, respectively (figs. 204, 205); length of eye in dorsal view 0.7 times temple (fig. 212); maximum width of temple in lateral view 1.2(-1.3) times maximum width of eye (fig. 204); height of eye in lateral view 0.6 times maximum height of temple (fig. 204); anterior tentorial pits large, maximum diameter 1.5 times distance between eye and pit (fig. 215); occiput without tubercles; length of malar space 0.4 times basal width of mandible; oblique subocular depression distinct (fig. 215); medial length of mandible about 1.5 times its maximum width, slightly widened dorsally (fig. 213), with distinct incision between second and third tooth (fig. 207), all three teeth lobe-shaped (figs. 207, 213), smooth and first tooth subequal to second tooth (fig. 210); head 1.9 times wider than mesoscutum (figs. 212, 214).

Mesosoma. — Length of mesosoma 1.3 times its height; precoxal sulcus present in anterior half of mesopleuron only, narrow and finely crenulate (fig. 204); pleural sulcus smooth dorsally, crenulate ventrally (fig. 204); scutellar sulcus wide and reticulate only (fig. 214); surface of propodeum largely smooth, but medially with some rugae (fig. 208), medial carina virtually absent and no medial area, costulae absent and its spiracle rather small (fig. 204).

Wings. — Fore wing: r:3-SR:SR1 = 5:22:56; 2-SR present but obsolescent and unsclerotized; pterostigma linear, narrow basally (fig. 206); CU1b shorter than 3-CU1 (fig. 206); 2-SR:3-SR:r-m = 7:22:5. Hind wing: M+CU:1-M = 14:8.

Legs. — Length of femur, tibia, and basitarsus of hind leg 3.4, 8.6 and 4.7 times their width, respectively; outer side of hind femur sparsely setose, smooth.

Metasoma. — Length of first tergite 1.8 times its apical width, its surface smooth, its dorsal carinae distinct in basal 0.7, and dorsope medium-sized to rather small (fig. 208); length of ovipositor sheath 0.11 times fore wing, about as long as first tergite (fig. 204).

Colour. — Dark brown; palpi, legs largely, first tergite, and base of second

tergite, brownish-yellow; femora, tibiae and telotarsi partly somewhat infuscated; veins brown; pedicellus pale brown; third and sixth segments pale basally; tegulum dark brown, but humeral plate yellowish.

Variation. Antenna segments of ♂ 15 (2), 16 (2) or 17 (3); length of fore wing 1.5-1.8 mm; width of head 1.7-2.0 times maximum width of mesoscutum; maximum width of temple 1.1-1.5 times maximum width of eye; length of ovipositor sheath 0.10-0.16 times fore wing.

Note. In Fischer's key of *Aspilota* spp. it keys out to *Aspilota brevissimicornis* Stelfox & Graham, 1948 because of the long temple, but *brevissimicornis* has a different antenna and vertex, middle tooth of mandible slender, acute and longer than both lateral teeth and wider precoxal sulcus.

Eudinostigma stenosoma spec. nov.
(figs. 193-203)

Holotype, ♂, (Rijksmuseum van Natuurlijke Historie, Leiden): "18 ant.", "Budapest, Biró, 1927, IX.21", "226", "Museum Leiden, Aspilota fuscicornis Hal." (probably sent by Biró to the Rijksmuseum van Natuurlijke Historie under this incorrect name).

Holotype, ♂, length of body 1.8 mm, of fore wing 1.7 mm.

Head. — Remaining antennal segments 16 (complete antenna with 18 segments according to label), length of third antennal segment 1.2 times fourth segment, length of third and fourth segments 3.3, and 2.5 times their width, respectively; palpi short (fig. 193); maxillary palp 4-segmented, labial palp probably 3-segmented (not easily visible); length of eye in dorsal view 0.7 times temple (fig. 201); maximum width of temple in lateral view 2.2 times maximum width of eye (fig. 193); height of eye in lateral view 0.9 times maximum height of temple (fig. 193); anterior tentorial pits medium-sized, its maximum diameter about equal to distance between pit and eye (fig. 198); occiput without tubercles; oblique subocular depression absent (fig. 197); malar space absent (fig. 198); medial length of mandible about 1.2 times its maximum width, not widened dorsally, no incision between second and third tooth, middle tooth acute and distinctly longer than both lateral teeth (figs. 195, 197); maximum width of head 2.4 times maximum width of mesoscutum (figs. 201, 203).

Mesosoma. — Length of mesosoma 1.4 times its height, strongly compressed (fig. 203); precoxal sulcus absent (fig. 193); pleural sulcus smooth; scutellar sulcus reversedly V-shaped, narrow, with some micro-crenulae (fig. 203); surface of propodeum smooth anteriorly, remainder superficially sculp-

tured (fig. 203), without costulae and medial carina, its propodeal spiracle small and submedially situated (fig. 203).

Wings. — Fore wing: r+3-SR:SR1:r-m = 14:45:3; 2-SR completely absent (fig. 194); pterostigma narrow triangular (fig. 194), its maximum width five times width of vein 1-R1; CU1b about as long as 3-CU1 (fig. 196). Hind wing: M+CU:1-M = 7:10.

Legs. — Length of femur, tibia, and basitarsus of hind leg 4.0, 8.4 and 7.5 times their width, respectively (fig. 200).

Metasoma. — Length of first tergite 2.2 times its apical width, its surface superficially longitudinally rugose (fig. 199), its dorsal carinae present in basal half, and dorsope rather large (fig. 199).

Colour. — Dark brown; annellus, legs, palpi, and first-third tergites yellowish-brown; remainder of metasoma, scapus, pedicellus, and pterostigma rather dark brown.

Leptotrema gen. nov.
(figs. 15-27)

Type-species: *Aspilota dentifemur* Stelfox, 1943.

Etymology: from "leptos" (Greek for "small") and "trema" (Greek for "hole") because of the small anterior tentorial pits. Gender: neuter.

Diagnosis. — Antennal segments 18-20 (♀) or 19-23 (♂); frons without pit; head and mesoscutum of normal shape (figs. 15, 21, 26)); no groove between antennal socket and eye (fig. 22); anterior tentorial pits comparatively small (figs. 19, 22, 23); no oblique subocular depression, but vertical malar suture present (figs. 19, 22) and smooth; mandible with carina from first tooth (fig. 19) and third tooth moderately widened (fig. 15); precoxal sulcus present (fig. 15); lateral carina of mesoscutum removed from lateral margin of mesoscutum anteriorly (fig. 15); notauli absent on mesoscutal disk; medio-posterior depression of mesoscutum present (fig. 26); scutellar sulcus normal (fig. 26); scutellum without transverse depression; metanotum not protruding (fig. 15), without medial carina (fig. 26); propodeal spiracle small (fig. 15); posterior part of propodeum differentiated from comparatively long anterior part of propodeum (fig. 15), and areolate; macropterous; vein r of fore wing long (fig. 16); vein 2-SR of fore wing sclerotized; vein m-cu of fore wing distinctly postfurcal (fig. 16); vein 1-SR short (fig. 16); vein CU1b of fore wing shorter than vein 3-CU1 (fig. 27); first subdiscal cell of fore wing closed; pterostigma linear; vein m-cu of hind wing absent; vein M+CU of hind wing longer than

vein 1-M; fore femur with large obtuse flange (tooth) ventrally (fig. 18); tarsal claws rather robust (fig. 20); first metasomal tergite slender (fig. 24), its dorsope large and deep; length of ovipositor sheath about 1.5 times length of first tergite.

Small genus, containing the type-species only; the biology is unknown.

Distribution. — Palaearctic (European).

Leptrotrema dentifemur (Stelfox) comb. nov.
(figs. 15-27)

Aspilota dentifemur Stelfox, 1943: 201; Fischer, 1972: 371-373 (redescription); Shenefelt, 1974: 971.

Redescribed from ♀ from The Netherlands; "Nederland, Puttern (Gld.), 26.IX.-2.X. 1973, J. v.d. Vecht, Malaise-trap, G[arden]"; additionally examined 2 ♀♀ from Putten and 1 ♀ from Nunspeet (Gld.) (6.VIII. 1976, C.J. Zwakhals); all specimens in the Rijksmuseum van Natuurlijke Historie.

Length of body 2.0 mm, of fore wing 2.2 mm.

Head. — Antennal segments 20, length of third segment 1.3 times fourth segment, length of third, fourth, and penultimate segment 3.7, 2.4 and 1.8 times their width, respectively (figs. 15, 17); length of eye in dorsal view 0.9 times temple (fig. 21); maximum diameter of anterior tentorial pits 0.5 times distance between eye and pit (fig. 22); occiput without tubercles; length of malar space 0.6 times its maximum width; middle tooth of mandible acute, rather small and slightly surpassing both lobe-shaped lateral teeth (fig. 19, 25).

Mesosoma. — Length of mesosoma 1.2 times its height; precoxal sulcus deep, crenulate, oblique, absent anteriorly (narrowly) and posteriorly (fig. 15); pleural sulcus smooth dorsally, finely crenulate ventrally (fig. 15); medio-posterior depression of mesoscutum deep and suboval (fig. 26); scutellar sulcus with one longitudinal carina; metanotum without medial carina (fig. 26) and not protruding (fig. 15); surface of propodeum finely rugose, but behind costulae partly smooth, costulae strong and rather protruding (fig. 15), with wide pentagonal medial area posteriorly, its median carina complete, dividing medial area, and its spiracle small, submedially situated (fig. 15).

Wings. — Fore wing: r:3-SR:SR1 = 9:43:82; pterostigma linear (fig. 16); 1-SR (very) short (fig. 16); 2-SR sclerotized; CU1b shorter than 3-CU1; 2-SR:3-SR:r-m = 17:43:10. Hind wing: M+CU:1-M = 3:2.

Legs. — Length of femur, tibia and basitarsus of hind leg 3.5, 9.2 and 6.5 times their width, respectively; apex of hind tibia with comb-like array of bristles on inner side.

Metasoma. — Length of first tergite 2.1 times its apical width, its surface with some longitudinal carinae, dorsal carinae almost reaching apex and dorsope large (fig. 24); length of ovipositor sheath 0.23 times fore wing, about 1.5 times first tergite (fig. 15).

Colour. — Black; scapus, pedicellus, annellus, palpi, tegulae and legs yellowish-brown; remainder of antenna, mandible, first tergite and metasoma ventrally, dark brown; pterostigma and vein brown; remainder of metasoma blackish-brown dorsally.

Notes. The specimen from Nunspeet has two depressions on the vertex on the left side and one depression on the opposite side. Similar depressions are used by Fischer (1976) as a key-character for *Dinotrema suprapunctis* (Fischer, 1973) comb. nov. (formerly in *Aspilota*). However, it is likely that this character is unreliable for species characterization.

Stelfox based his description on *L. dentifemur* on specimens from Ireland, Scotland and England. In addition the species has been reported from North-West Germany (König, 1972: 97; in differently coloured "Farbschalen" from early May till middle of November in a marshy area) and Austria (Fischer, 1973a; 164; Ennstaler Alpen, (Steiermark), 1400 m).

Orthostigma Ratzeburg
(figs. 2-14)

Orthostigma Ratzeburg, 1844: 53; Shenefelt, 1974: 997. Type-species: *Aphidius flavipes* Ratzeburg, 1844 (by monotypy; = *Alysia pumila* Nees, 1834).

Delocarpa Foerster, 1862 (type-species: *Delocarpa praedo* Foerster, 1862 (by monotypy), the type-series is lost).

Ischnocarpa Foerster, 1862 (type-species: *Alysia pumila* Nees, 1834 (by monotypy), the type-series is lost).

Diagnosis. — Antennal segments 16-28; frons without pit; head and mesoscutum of normal shape (figs. 7, 12); between eye and antennal socket with a narrow, curved groove (figs. 2, 13); anterior tentorial pits usually inconspicuous (figs. 11, 13); no oblique subocular depression, but with (sub)vertical suture (figs. 11, 13); mandible with a complete transverse, more or less curved carina (figs. 8, 11), its third tooth very wide and lobe-shaped (fig. 11), its first tooth small and (rather) acute (fig. 8) and its surface smooth; pronotal side crenulate medially (fig. 2); propleuron smooth; precoxal sulcus present medially (fig. 2); lateral carina of mesoscutum removed from margin of mesoscutum anteriorly (fig. 2); notauli absent on mesoscutal disk; medio-posterior depression present (fig. 7); scutellar sulcus normal or somewhat

narrowed (fig. 7); scutellum without transverse depression (fig. 7); metanotum without median carina posteriorly, not protruding; propodeal spiracle small (fig. 2); anterior part of propodeum rather long (fig. 2) or hardly differentiated; macropterous; vein r of fore wing long (fig. 3); vein 2-SR of fore wing sclerotized; vein m-cu of fore wing distinctly postfurcal (fig. 3); vein 1-SR of fore wing short to rather long (fig. 3); vein CU1b shorter than vein 3-CU1 (fig. 3); first subdiscal cell of fore wing closed; pterostigma usually linear, sometimes (♂♂) distinctly widened, about twice as wide as length of vein r; vein m-cu of hind wing absent; vein M+CU of hind wing longer than vein 1-M; fore femur normal, without flange; tarsal claws medium-sized or slender; first metasomal tergite slender (fig. 14), its dorsope medium-sized to large, deep (fig. 14); length of ovipositor equal to length of first tergite or somewhat longer (fig. 2).

Medium-sized genus; parasites of Phoridae. Keys are given for the Palaearctic spp. by Van Achterberg & Ortega (1983: 124-127) and for the Nearctic species by Fischer (1969a: 81).

Distribution. — Holarctic and Oriental regions.

Note. — The type-species was described from *Phora* (= *Megaselia*) *rufipes* Meigen in *Lymantria monacha* (Linnaeus), probably from the surroundings of Eberswalde (East Germany). The type-series is lost and the description fits several genera of the *Aspilota* -group and is therefore useless for identification, except that the parasite belongs to the *Aspilota*-group and does not belong to the genus *Aphidius* (Aphidiinae). A neotype for *O. flavipes* is therefore designated and described below, to stabilize the nomenclature in accordance with the usual interpretation.

Orthostigma pumilum (Nees)
(figs. 2-14)

Alysia pumila Nees, 1834: 251.
Orthostigma pumila; Shenefelt, 1974: 999.
Orthostigma pumilum; Van Achterberg & Ortega, 1983: 126.
Aphidius flavipes Ratzeburg, 1844: 52.
Orthostigma flavipes; Shenefelt, 1974: 1000.

Redescribed from ♀, here designated as neotype of *Aphidius flavipes* Ratzeburg, and deposited in the Rijksmuseum van Natuurlijke Historie, Leiden: "Nederland, Waarder (Z.H.), Oosteinde 33, 16-29.VIII.1974, C. v. Achterberg", "♀ Orthostigma pumilum (Nees), det. C. van Achterberg, 1974".

Length of body 2.2 mm, of fore wing 2.4 mm.

Head. — Antennal segments 21, length of third segment 1.3 times fourth segment, slightly narrower than fourth segment (fig. 9), length of third, fourth and penultimate segments 4.1, 2.8 and 1.7 times their width, respectively (figs. 2, 4, 9); length of eye 1.6 times temple; anterior tentorial pits about as wide as epistomal suture and distinctly removed from ventral margin of clypeus (fig. 13); length of malar space 0.3 times basal width of mandible; medial length of mandible 1.5 times its maximum width, first tooth medium-sized and acute, middle tooth long and with incision between middle tooth and wide third tooth (figs. 8, 11).

Mesosoma. — Length of mesosoma 1.2 times its height; pronotal side narrowly crenulate medially and posteriorly (fig. 2); precoxal sulcus only medially present and crenulate (fig. 2); pleural sulcus narrowly crenulate (fig. 2); medio-posterior depression of mesoscutum small, shallow and narrow (fig. 7); scutellar sulcus with one longitudinal carina and some crenulation (fig. 7); metanotum with short median carina (fig. 7), not protruding; surface of propodeum smooth anteriorly, reticulate posteriorly (fig. 2), with a short medial carina, costulae distinct, no distinct medial area, and its spiracle rather small, far from anterior margin (fig. 2).

Wings. — Fore wing: r:3-SR:SR1 = 8:24:56; pterostigma linear, distinctly differentiated from 1-R1 (fig. 3); r issued 0.8 times its length from base of pterostigma (fig. 3); 1-SR medium-sized (fig. 3); CU1b much shorter than 3-CU1; 2-SR:3-SR:r-m = 15:24:7. Hind wing: M+CU:1-M = 11:7.

Legs. – Length of femur, tibia and hind basitarsus 4.0, 10.0 and 6.0 times their width, respectively (fig. 10).

Metasoma. — Length of first tergite 1.7 times its apical width, convex and rugose-reticulate medially, remainder largely smooth (fig. 14), its dorsal carinae distinct in basal 0.4 and dorsope deep and medium-sized (fig. 14); length of ovipositor sheath 0.19 times fore wing, 1.3 times first tergite (fig. 2).

Colour. — Blackish or dark brown: apical third of mandible, palpi, tegulae, scapus, pedicellus largely, annellus, and legs (except infuscated telotarsus), yellowish; veins and pterostigma (rather dark) brown; apex of hind tibia distinctly yellowish compared with pale basal 0.7 of tibia.

Note. The valid name of the lectotype of *Aphidius flavipes* Ratzeburg, 1844 is *Orthostigma pumilum* (Nees, 1834); the type-series of *O. pumilum* is lost but the common interpretation of this species is accepted.

Panerema Foerster
(figs. 94-105)

Panerema Foerster, 1862: 263. Type-species: *Panerema inops* Foerster, 1862 (by monotypy).

Diagnosis. — Antennal segments 23-26; length of third antennal segment 1.5-1.7 times fourth segment (fig. 95) or longer; frons of type-species with deep, short groove (fig. 104); face with short setae pointing upward medially and double row of long setae pointing forward laterally; maximum width of head 1.7-1.9 times maximum width of mesoscutum (figs. 104, 105); vertex convex (fig. 95); maximum width of temple about 1.3 times maximum width of eye in lateral view (fig. 95); no groove between eye and antennal socket (fig. 103); anterior tentorial pits medium-sized (figs. 98, 103); palpi normal (fig. 95); malar suture and oblique subocular groove absent (figs. 98, 103); malar space smooth; mandible with carina from first tooth only (fig. 97), third tooth rather wide (fig. 98), and its surface superficially sculptured; propleuron strongly to moderately convex and rugose or rugulose (fig. 95); pronotal sides extensively crenulate medially (fig. 95); lateral carina of mesoscutum at margin of mesoscutum (fig. 95; in other genera distinctly removed from each other anteriorly (fig. 130)) and crenulate above it; precoxal sulcus of ♀ wide anteriorly and complete (fig. 95), in ♂ reduced posteriorly; mesoscutum of brachypterous specimens with median groove (fig. 105), and medio-posterior depression absent; notauli distinct anteriorly, medially shallow and absent posteriorly (fig. 105); scutellar sulcus normal, with one longitudinal carina (fig. 105); scutellum with narrow transverse crenulate depression subposteriorly (figs. 101, 105); metanotum protruding dorsally (fig. 101), without complete median carina (fig. 105); propodeal spiracle small (fig. 95); posterior part of propodeum somewhat longer than antero-dorsal part, differentiated and reticulate (fig. 95); macropterous or brachypterous, if brachypterous then fore wing without distinct fringe apically and veins r, 2-SR and SR1 absent (fig. 94); macropterous specimens have vein m-cu of fore wing just postfurcal (fig. 275) or subinterstitial (cf. fig. 82) and pterostigma linear or nearly so; vein 1-SR of fore wing short to medium-sized (fig. 94); vein CU1b absent or shorter than vein 3-CU1; vein m-cu of hind wing absent; vein M+CU of hind wing distinctly longer than vein 1-M; tarsal claws rather robust (fig. 102); first metasomal tergite rather slender (fig. 99), its dorsope medium-sized and deep; length of ovipositor sheath distinctly shorter than first tergite (fig. 95).

A small genus, probably containing four described species (*Panerema fulvicornis* (Haliday, 1838) comb. nov. and the type-species) of which the females may be macropterous (= *fulvicornis*) or brachypterous (= *P. inops*

Foerster, 1862) and two species of which only a single male is known: *Aspilota szelenyiana* Fischer, 1974 and *A. pygmipunctum* Fischer, 1973. The differences between the first two as listed by Stelfox & Graham (1950: 289) are very likely partly associated with brachyptery. According to Disney (1982: 152) *P. inops* has been reared from *Megaselia fuscinervis* (Wood) in dead snails of *Vitraea cristallina* (Müller).

Distribution. — Palaearctic (European).

Note. — The genus *Panerema* was described by Foerster (1862: 263) to include the brachypterous *P. inops*. Stelfox & Graham (1950: 291) reduced the status of *Panerema* to a subgenus of *Aspilota* Foerster, and finally Fischer (e.g., 1972: 384, 390) treats *P. fulvicornis* and *P. inops* as valid species in *Aspilota* without giving a subgeneric status to the group. Because of the extensive set of (small) differences and because it does not fit well into another genus, I prefer a separate generic status for this group.

KEY TO THE SPECIES OF THE GENUS *PANEREMA*

1. First tergite robust, its length about 1.6 times its apical width (fig. 99); first tooth of mandible rather acute and narrow (fig. 97); frons with medial groove (fig. 104); ♀ brachypterous ..... *inops* Foerster
- First tergite rather slender, its length about 1.9 times its apical width (fig. 28); first tooth of mandible less acute and wider (fig. 277); frons without groove; ♀ macropterous (fig. 275) ..... *fulvicornis* (Haliday)

Panerema inops Foerster
(figs. 94-105)

Panerema inops Foerster, 1962: 263.
Aspilota inops; Fischer, 1972: 390; Shenefelt, 1974: 974.

Redescribed from 1 ♀ compared with holotype in the Museum für Naturkunde, Berlin ("25/135", "Frst", "inops Frst"), from The Netherlands (Rijksmuseum van Natuurlijke Historie, Leiden): "Cadier, 5.V.1975, B. v. Aartsen".

♀, Length of body 2.7 mm, of fore wing 0.5 mm.

Head. — Antennal segments 25 (according to literature 23-26), length of third segment 1.7 times fourth segment, length of third, fourth and penultimate segments 3.6, 2.2, and 1.3 times their width, respectively (figs. 95, 96); length of eye in dorsal view 0.9 times temple (fig. 104); maximum diameter of anterior tentorial pits 0.7 times distance between pit and eye (fig. 103); length

of malar space 0.1 times basal width of mandible; mandible with carina from first tooth strong, first tooth distinctly protruding dorsally and acute (fig. 97) and with incision between longer middle tooth and wide, lobe-shaped third tooth (fig. 98).

Mesosoma. — Length of mesosoma 1.4 times its height; precoxal sulcus complete, strongly crenulate and wide medially and anteriorly (fig. 95); pleural sulcus crenulate; medio-posterior depression of mesoscutum absent, except for median groove (fig. 105); surface of propodeum coarsely reticulate, without medial carina, no distinct medial area (fig. 99), and its spiracle small (fig. 95).

Wings. — Fore wing: 1-SR medium-sized (fig. 94); r, 2-SR, 3-SR, SR1, CU1b absent; parastigma comparatively large (fig. 94). Hind wing: 1r-m widened (fig. 94).

Legs. — Length of femur, tibia and basitarsus of hind leg 4.1, 8.4 and 6.2 times their width, respectively (fig. 100); hind femur distinctly widened behind its middle (fig. 100).

Metasoma. — Length of first tergite 1.6 times its apical width, its surface coarsely rugose (fig. 99), dorsal carina converging and nearly reaching apex of tergite, and dorsope medium-sized (fig. 99); length of ovipositor sheath 0.6 times (shortened) fore wing, about 0.3 times first tergite (fig. 95).

Colour. — Black(ish); antenna largely, palpi, legs (but telotarsi infuscated), and tegulae yellowish; third and following antennal segments apically and apex of antenna (somewhat) infuscated; second metasomal tergite, metasoma ventro-basallay, and mandible dark brown; pterostigma and veins brown.

Note. Reported from Austria, Czechoslovakia, England, Ireland, Sweden, Switzerland, West Germany and Yugoslavia.

Panerema fulvicornis (Haliday) comb. nov.
(figs. 275-281)

Alysia fulvicornis Haliday, 1838: 224.
Aspilota fulvicornis; Fischer, 1972: 384; Shenefelt, 1974: 972.

The holotype in the Curtis Collection (Melbourne) has been examined and is closely related to *P. inops*. Because of several (mostly minor) differences (relative length of third antennal segment, shape of first tergite, and of first tooth of mandible, absence of groove on frons) it seems justified to treat both as separate species.

Reported from Ireland, Wales and Poland.

Pterusa Fischer
(figs. 83-93)

Pterusa Fischer, 1958: 14; Shenefelt, 1974: 1108. type-species: *Pterusa crassiceps* Fischer, 1958 (by monotypy).

Diagnosis. — Antennal segments 16-20, (type-species, upto 24 in *P. ruficollis*), length of third antennal segment 0.9-1.0 times fourth segment (fig. 83); frons without groove or pit (fig. 92); face normally setose; maximum width of head 1.4 (*P. ruficollis*) – 1.9 (type-species) times maximum width of mesoscutum (figs. 92, 93); vertex convex (fig. 83); maximum width of temple up to 1.3 times maximum width of eye in lateral view (fig. 83); no groove between eye and antennal socket (fig. 87); anterior tentorial pits (rather) large, their maximum diameter somewhat less than distance between eye and pit (fig. 87); malar suture and oblique subocular groove absent (figs. 84, 86); malar space smooth; mandible with short carinae from first and third teeth (fig. 84) and third tooth medium-sized (fig. 86), and its surface smooth; propleuron with some microsculpture and weakly convex (fig. 83); pronotal sides smooth (fig. 83); lateral carina of mesoscutum weak, not reaching lateral margin of mesoscutum anteriorly (fig. 83); precoxal sulcus present medially and anteriorly (fig. 83); mesoscutum with medio-posterior depression obsolescent (fig. 93) to deeply linearly impressed; notauli absent on disk (fig. 93); scutellar sulcus with four longitudinal carinae (type-species; fig. 93); scutellum without transverse depression; metanotum not protruding and without medial carina (figs. 83, 93); propodeal spiracle small (fig. 83); posterior part of propodeum longer than antero-dorsal part, differentiated and reticulate-rugose (fig. 83); brachypterous (type-species), fore wing with long fringe apically (fig. 85), veins r, 2-SR and SR1 present and pterostigma enormously enlarged (fig. 85) or macropterous (*P. ruficollis*) with normal fringe and pterostigma linear; vein m-cu of fore wing antefurcal (type-species) or (sub)-interstitial (*P. ruficollis*); vein 1-SR of fore wing short (fig. 85); vein CU1b of fore wing absent (fig. 85) or present and shorter than 3-CU1; vein m-cu of hind wing absent; vein M+CU of hind wing longer than vein 1-M or subequal; tarsal claws slender (fig. 89); first metasomal tergite robust, 1.3-1.4 times its apical width, its dorsope comparatively small (fig. 91) and deep; length of ovipositor sheath about equal to length of first tergite.

Small genus, containing the type-species from Central Europe and *Pterusa ruficollis* Stelfox & Graham, 1950 comb. nov. (formerly in *Aspilota*), the latter is included because of the peculiar shape of the first tergite. The biology is unknown.

Distribution. — Palaearctic (European).

Note. — The genus *Pterusa* was placed by Fischer (1958) in the Dacnusini because of the lack of vein r-m of the fore wing. Obviously this character is unreliable in this genus. I have seen specimens of the type-species (both sexes) with vein r-m present. The shape of mandible, the low number of antennal segments, the shape of metasoma of ♀ and the comparatively robust hind femur also indicate that it belongs to the *Aspilota*-group.

KEY TO SPECIES OF THE GENUS *PTERUSA*

1. Brachypterous; vein 1-R1 and pterostigma enormously enlarged (fig. 85); maximum width of head about 1.9 times maximum width of mesoscutum (figs. 92, 93); vein r-m of fore wing absent (fig. 85); if present then vein m-cu antefurcal; antennal segments of ♂ 16-21 2
– Macropterous; vein 1-R1 and pterostigma normal, slender; maximum width of head about 1.4 times maximum width of mesoscutum; vein r-m of fore wing present and vein m-cu (sub)interstitial; antennal segments of ♂ 23-24 ..... *ruficollis* (Stelfox & Graham)
2. First metasomal tergite striate; marginal cell of fore wing elongate; third lobe of mandible as long as middle tooth; antennal segments of ♂ 21 ..... *naeva* (Tobias)
– First tergite largely smooth, partly finely rugulose (fig. 91); marginal cell of fore wing comparatively short (fig. 85); third lobe of mandible distinctly shorter than middle tooth (figs. 84, 86); antennal segments of ♂ 16-20 ..... *crassiceps* Fischer

Pterusa crassiceps Fischer
(figs. 83-93)

Pterusa crassiceps Fischer, 1958: 14; Shenefelt, 1974: 1108.

Holotype, ♂, (Naturhistorisches Museum Wien): "2.5.15, Leitha-Geb., Vimpacs [= Austria]"; "*Pterusa crassiceps* Fi., det. Fischer, Holotype".

Holotype, ♂, length of body 1.2 mm, of fore wing 0.7 mm, just reaching to apex of third metasomal tergite.

Head. — Antennal segments 16, length of third segment 0.9 times fourth segment, length of third, fourth and penultimate segments 2.5, 2.5 and 2.3 times their width, respectively (figs. 83, 88); length of eye in dorsal view 0.6

times temple (fig. 92); maximum diameter of anterior tentorial pits somewhat less than distance between eye and pit (fig. 87); length of malar space 0.2 times basal width of mandible; medial length of mandible 1.3 times its maximum width, first and third teeth lobe-shaped and large, shorter than acute middle tooth (fig. 86), and first tooth protruding dorsally (fig. 84).

Mesosoma. — Length of mesosoma 1.2 times its height; precoxal sulcus in anterior half of mesospleuron only, with few short crenulae (fig. 83); pleural sulcus narrowly crenulate (fig. 83); medio-posterior depression of mesoscutum obsolescent or virtually absent (fig. 93); surface of propodeum finely reticulate-rugose, with short medial carina anteriorly, and no distinct medial area, and its spiracle small (fig. 83).

Wings. — Fore wing: 1-SR widened (fig. 85); pterostigma and 1-R1 enormously enlarged (fig. 85); r-m, 2-M, and CU1b absent (fig. 85); 2-SR widened; parastigma hardly differentiated (fig. 85). Hind wing: M+CU longer or subequal to 1-M; 1r-m, SC+R1 and R1 widened (fig. 85).

Legs. — Length of femur, tibia and basitarsus of hind leg 3.8, 9.7 and 5.9 times their width, respectively.

Metasoma. — Length of first tergite 1.3 times its apical width, its surface shiny and somewhat finely rugulose (fig. 91), robust, dorsal carinae in front of spiracles only and dorsope rather small if compared with their mutual distance (fig. 91).

Colour. — Dark brown; first and second antennal segments, legs, first tergite, palpi and tegulae yellowish-brown; wing veins brown.

Note. In the Budapest Museum I found a series from Hungary consisting of both ♀♀ and ♂♂, which are very likely conspecific with *P. crassiceps*. The antennal segments are 16-20 (♂; one ♀ with complete antenna has 20 segments), ♀ has similar venation as ♂ (fig. 85), but both sexes show considerable variation. One male and the females have an indistinctly developed second submarginal cell of fore wing and vein 1-SR+M of fore wing may be weakly developed. One ♀ has the first subdiscal cell closed, with vein CU1b longer than vein 3-CU1. The medio-posterior depression of mesoscutum varies from shallow, obsolescent to deeply linearly impressed.

Pterusa naeva (Tobias) comb. nov.

Aspilota naeva Tobias, 1986: 123, 159, fig. 107-8,9 (holotype examined).

Known from the U.S.S.R. (European part, near Nevy); the only known specimen is a brachypterous male.

Pterusa ruficollis (Stelfox & Graham) comb. nov.

Aspilota ruficollis Stelfox & Graham, 1950: 292; Fischer, 1972: 129-130; Shenefelt, 1974: 979.

Known from Ireland and England; included here because of the peculiar stout first metasomal tergite.

APPENDIX

It may be useful for other workers on fungicolous insects that I give a key to the Alysiini species encountered by Dr. L.E.M. Vet (Wageningen) during her research at the Rijksuniversiteit at Leiden. The species of which I had good material and which are considered to be undescribed, are mostly described in the foregoing section. The material of the other species of *Dinotrema* and *Aspilota* is currently being studied by Mr. T. Munk (Aarhus) in his revision of European *Aspilota* and *Dinotrema* spp.

Surprisingly no species of *Alysia* were reared from mushrooms during this survey. At least three species are fungicolous in Europe: *Alysia brachycera* Thomson, 1895 (ex *Boletus* sp.; Hackman & Meinander, 1979: 55), *A. frigida* Haliday, 1838 (ex *Pegomya* larvae (Anthomyiidae) in *Leccinum scrabrum*-group, making characteristic galleries; l.c.), and *A. abdominator* (Nees, 1814).

Alysia abdominator was described from specimens in mushrooms: (Nees, 1814: 205) "Hab. in *Boletis* (v.g. circinnante, annulato) rarius in *Agaricis putridis*". This *Alysia* species was later synonymized with *Alysia tipulae* (Scopoli, 1765), as interpreted by the first revisor (Haliday, 1838).

KEY TO FUNGICOLOUS SPECIES OF ALYSIINI IN THE NETHERLANDS

1. Vein 1-M of hind wing distinctly longer than vein M+CU (fig. 239); antero-dorsal part of propodeum subequal to posterior part of propodeum (fig. 236); third antennal segment usually distinctly shorter than fourth segment (fig. 250), but sometimes subequal (fig. 240) 2
– Vein 1-M of hind wing subequal to vein M+CU or shorter (figs. 70, 143, 156), if exceptionally shorter (*Dinotrema* p.p.) than third antennal segment longer than fourth segment (cf. fig. 193) and antero-dorsal part of propodeum much shorter than apical part (cf. fig. 130) 4
2. Scutellar sulcus narrowed, its lateral part distinctly narrower than wide;

orbits of eye reddish; medio-posterior depression of mesoscutum very deep and large ..... *Phaenocarpa ruficeps* (Nees)
- Scutellar sulcus wider, its lateral part subquadrate (fig. 248); orbits of eye black; medio-posterior depression of mesoscutum medium-sized to small (fig. 248) 3

3. First metasomal tergite bright orange; hind coxa whitish; pterostigma very small (fig. 254); clypeus brownish; length of fore wing about 2 mm ..... *Phaenocarpa tacita* Stelfox
- First tergite black; hind coxa brownish; pterostigma medium-sized (fig. 239); clypeus black; length of fore wing about 3 mm .... *Phaenocarpa canaliculata* Stelfox

4. Pterostigma rather wide, elliptical; middle tooth of mandible very long and acute, much longer than both minute lateral teeth; hind coxa sculptured; (parasite of Lonchopteridae) ..... *Alloea lonchopterae* Fischer
- Pterostigma linear, narrow (figs. 156, 168); middle tooth of mandible medium-sized, less acute and not or moderately longer than both medium-sized lateral teeth; hind coxa (largely) smooth; (parasites of Phoridae) 5

5. Mandible with curved transverse carina (fig. 8); anterior tentorial pits indistinct (fig. 11) 6
- Mandible without curved transverse carina (fig. 45); anterior tentorial pits (very) large (figs. 47, 136, 150) 8

6. First metasomal tergite robust, its length about 1.6 times its apical width, and convex; length of vein 3-SR of fore wing about 1.9 times vein 2-SR; length of middle antennal segments less than twice their width 7
- First tergite rather slender, its length 1.9 times its apical width or more, and less convex; length of vein 3-SR of fore wing 1.7-1.9 times vein 2-SR; middle antennal segments nearly twice as long as wide or longer ..... *Orthostigma* spec. near *sculpturatum* Tobias

7. Third antennal segment about as wide as fourth segment; first metasomal tergite sculptured ..... *Orthostigma* spec. near *sordipes* (Thomson)
- Third antennal segment somewhat narrower than fourth segment; first tergite largely smooth .... *Orthostigma* spec. near *longicubitale* Königsmann

8. Anterior tentorial pits enormously enlarged, reaching eyes (figs. 33, 47); oblique subocular depression absent (fig. 47); medio-posterior depression of mesoscutum completely absent (fig. 52) 9
- Anterior tentorial pits large, but remaining separated from eyes (figs. 155, 174, 185); oblique subocular depression often present (figs. 158, 176); medio-posterior depression of mesoscutum variable (figs. 141, 178) 14

9. Hind femur very robust *and* all three mandibular teeth acute, slender and pointing forwards (fig. 222); no trace of vein 2-SR of fore wing (fig. 216); seventh antennal segment of ♀ subquadrate (fig. 218) ..... *Aspilota globipes* (Fischer)
- Hind femur usually slender; if robust (fig. 50) then mandible completely different, its teeth not acutely pointing forwards (fig. 46); vein 2-SR of fore wing variable (figs. 29, 44); seventh antennal segment of ♀ distinctly longer than wide (fig. 42) 10
10. Hind femur robust, swollen (fig. 50); antenna of ♀ distinctly widened apically (fig. 42); vein 2-SR of fore wing unsclerotized (fig. 49); apex of hind tibia infuscated ..... *Aspilota louiseae* spec. nov.
- Hind femur slender, not swollen (its sides subparallel, its length about 3 times its width or longer); if intermediate then antenna of ♀ slender, slightly widened apically; vein 2-SR of fore wing more or less developed; apex of hind tibia yellowish 11
11. Third (= ventral) mandibular tooth enlarged and dark brown; veins of fore wing of ♂ partly widened ..... *Aspilota* spec. B
- Third tooth medium-sized and yellowish; ♂ unknown 12
12. Antennal segments robust, its third segment of ♀ about twice as long as wide; third antennal segment and first metasomal tergite dark brown; ovipositor sheath about as long as first tergite ..... *Aspilota intermediana* Fischer
- Antennal segments rather slender, third segment of ♀ longer than twice its width; third antennal segment and first tergite variable; ovipositor sheath somewhat longer than first tergite 13
13. First metasomal tergite and third antennal segment yellowish; third antennal segment of ♀ about 2.2 times its width ..... *Aspilota* spec. A.
- First tergite and third antennal segment (largely) dark brown; third antennal segment of ♀ about 3 times its width ..... *Aspilota* spec. C.
14. Length of ovipositor sheath about 1.5 times length of hind tibia; first metasomal tergite light brown and robust, its dorsope shallow or almost absent; mesoscutum without medio-posterior depression; oblique subocular depression absent; propodeum completely smooth, without depression; length of vein M+CU of hind wing 0.9-1.5 times vein 1-M ..... *Dinotrema tauricum* (Telenga, 1935)
- Length of ovipositor sheath 0.7-1.3 times length of hind tibia; first tergite light or dark brown, usually slender, and its dorsope (rather) deep (figs. 179, 192), exceptionally shallow; mesoscutum usually with medio-posterior depression (figs. 178, 191); oblique subocular groove variable (figs. 158, 190); propodeum with a carina or depressed and rugulose medially

(figs. 153, 166, 192); length of vein M+CU of hind wing 1.8-2 times vein 1-M 15

15. Oblique subocular groove indistinct or absent (figs. 173, 185); vein 2-SR of fore wing sclerotized; medio-posterior depression of mesoscutum present (figs. 178, 191); antenna of ♀ slender (figs. 167, 180); mandible with short carina from first tooth (figs. 174, 190); (*Prosapha* section) 16
- Oblique subocular groove present (figs. 136, 150); if intermediate then vein 2-SR of fore wing absent of nearly so; medio-posterior depression of mesoscutum variable; antenna of ♀ usually stout (figs. 130, 142); mandible without carina from first tooth (figs. 133, 146, 158); (*Dinotrema* s.s.) 17

16. First metasomal tergite (at least partly) dark brown; mandible robust (fig. 190); propodeum with distinctly rugulose median depression (fig. 192); first subdiscal cell of fore wing subparallel-sided (fig. 187); length of ovipositor sheath 0.8-1.0 times length of hind tibia (fig. 180) .... *Dinotrema pratense* spec. nov.
- First tergite light brown or orange; mandible rather slender (fig. 174); propodeum with a medial carina; first subdiscal cell of fore wing distinctly widened apically (fig. 171); length of ovipositor sheath 0.6-0.7 times hind tibia (fig. 167) ..... *Dinotrema sessile* spec. nov.

17. Medio-posterior depression of mesoscutum completely absent; basal third of antenna (light) brown; antenna of ♀ slender; vein 2-SR of fore wing absent ..... *Dinotrema* spec. indet.
- Medio-posterior depression of mesoscutum present (fig. 164); antenna (colour and/or shape) of ♀ different; vein 2-SR of fore wing variable 18

18. Third antennal segment black, rather robust, *and* first metasomal tergite flattened basally, resulting in a shallow dorsope; vein 2-SR of fore wing absent or nearly so; mandible robust .... *Dinotrema* spec. near *reductum* (Tobias)
- Third antennal segment yellowish or brownish and/or slender, if black then first tergite not flattened and dorsope deep; vein 2-SR of fore wing more or less developed (figs. 132, 143); mandible usually comparatively slender (figs. 133, 146, 155) 19

19. Transverse carina of propodeum (costulae) very strongly protruding, tooth-like (fig. 154); ♀ with 26-28 antennal segments; ovipositor sheath not protruding beyond metasoma in dorsal view (fig. 154); mandible flattened; antenna brown basally; occipital tubercles of ♀ absent (fig. 154) ..... *Dinotrema multiarticulatum* spec. nov.
- Transverse carina of propodeum not or rather weakly protruding (figs. 130, 142); ♀ with 19-22 antennal segments; ovipositor sheath variable;

mandible usually not flattened, if distinctly flattened then occipital tubercles of ♀ distinct (fig. 148) 20

20. Length of ovipositor sheath about 1.3 times hind tibia (fig. 142); occipital tubercles of ♀ distinct (fig. 148); mandible rather flattened (fig. 146) ..... *Dinotrema tuberculatum* spec. nov.
- Length of ovipositor sheath shorter than hind tibia, about 0.7 times its length (fig. 130); occipital tubercles of ♀ rather small (fig. 130, 139) or absent (fig. 154); mandible not or slightly flattened (fig. 133) 21

21. Vein 2-SR of fore wing indistinct, unsclerotized (fig. 132); occipital tubercles of ♀ present (fig. 130, 139), at least occiput angular dorso-posteriorly in lateral view (fig. 130); first tooth of mandible large (fig. 133); propodeum without distinct medial carina (fig. 138) ..... *Dinotrema mesocaudatum* spec. nov.
- Vein 2-SR of fore wing rather distinct, sclerotized (but often indistinctly pigmented); occipital tubercles of ♀ absent (cf. fig. 154), and occiput rounded dorso-posteriorly in lateral view; first tooth of mandible less developed; propodeum with more or less developed medial carina .... *Dinotrema* spec. near *amoenidens* (Fischer)

LIST OF FUNGICOLOUS SPECIES NOT MENTIONED IN FOREGOING SECTION

Phaenocarpa canaliculata Stelfox
(figs. 236-248)

Phaenocarpa canaliculata Stelfox, 1941: 8-9; Fischer, 1970c: 425-427; Shenefelt, 1974: 1006; Vet & Van Alphen, 1985: 481; Vet, 1985a: 487, 491 & 1985b: 721, 726.

Holotype, ♀, (U.S. National Museum of Natural History, Washington): "29", "In motor [= in automobile while passing through] Larne, Co. An[trim], A.W.S., 25.7.1931", "canaliculata, ♀, Type!, AWS, 1940", "sp. nov., ♀, AWS, 4.2.34, G. Nixon", "Type. No. 75935 USNM". 15 ♀♀ + 1 ♂, (Rijksmuseum van Natuurlijke Historie, Leiden; USNM (NH), Washington): "Netherlands, Voorschoten" or reared in laboratory, from *Fannia monilis* Haliday in *Boletus edulis* Bull. ex Fries; one specimen from "red mushroom". 1 ♀, (Rijksmuseum van Natuurlijke Historie, Leiden); "Netherlands, Abbenes, in rotting sugarbeet leaves, em. 6.VIII.1981, L. Vet".

Holotype, ♀, length of body 3.2 mm, of fore wing 3.5 mm.

Head. — Antennal segments 29 (right) or 30 (left); length of antenna about 1.2 times body (figs. 236, 237); length of third segment 0.9 times fourth segment (fig. 240); length of third, fourth and penultimate segments 4.7, 5.0

and 2.7 times their width, respectively (figs. 238, 240); length of maxillary palp 1.3 times height of head; length of eye in dorsal view 1.6 times temple (fig. 247); anterior tentorial pits small, their maximum diameter about 0.5 times distance between pit and eye (fig. 242); length of malar space 0.3 times basal width of mandible; medial length of mandible about 1.7 times its maximum width (fig. 243), with carina from third tooth, no distinct incisions between teeth (fig. 243), both lateral teeth subrectangularly diverging from middle tooth, middle tooth much longer than lateral teeth (figs. 243, 244), its surface with some faint rugae and slightly widened dorsally (fig. 244).

Mesosoma. — Length of mesosoma 1.4 times its height; precoxal sulcus complete (fig. 236); dorsal half of pleural sulcus with some crenulae (fig. 236); notauli very shallowly impressed on glabrous disk (fig. 248), smooth dorsally; medio-posterior depression of mesoscutum elliptical and rather deep (fig. 248); scutellar sulcus wide and with three weak longitudinal carinae (fig. 248); metanotum not protruding (fig. 236) and without median carina posteriorly (fig. 248); surface of propodeum with some fine sculpture, shiny, with very strong, lamelliform protruding medial carina (fig. 248) and posterior part of propodeum about as long as anterior part (fig. 236).

Wings. — Fore wing: pterostigma elongate-elliptical (fig. 239), r departs submedially and wider than 3- SR (fig. 239), and much shorter than width of pterostigma; r:3-SR:SR1 = 2:24:41; CU1b much longer than 3-CU1 (fig. 245); 2-SR:3-SR:r-m = 15:24:9; m-cu subinterstitial with 2-SR (fig. 239). Hind wing: M+CU:1-M = 21:24.

Legs. — Length of femur, tibia and basitarsus of hind leg 4.4, 9.0 and 6 times their width, respectively (fig. 246).

Metasoma. — Length of first tergite 1.3 times its apical width (fig. 241), its surface rugose medially, striate latero-posteriorly (fig. 241), distinctly convex medio-posteriorly, its dorsal carinae distinct in basal half, and dorsope deep and rather large (fig. 241); second suture shallowly impressed (fig. 236); length of ovipositor sheath 0.26 times fore wing.

Colour. — Black; ventral half of clypeus, scapus, pedicellus (but partly darker), annellus, mandibles and lower part of temples somewhat, dark reddish-brown; legs yellowish-brown; palpi and tegulae yellowish; pterostigma and veins brown.

Variation. Length of fore wing 2.5-3.5 mm; antennal segments of ♀ 25 (5), 26 (7), 27 (1), 29 (1), 30 (1), and of ♂ 32 (1); medio-posterior depression of mesoscutum may be round and rather shallow; vein r of fore wing may be slender as vein 3-SR, and may leave at basal 0.6 of pterostigma; length of ovipositor sheath 0.26-0.32 times fore wing.

Note. The biology was unknown and the species was known from Ireland

and Austria only. The research by Dr. L.E.M. Vet resulted in the conclusion that it is a parasite of *Fannia* species (Muscidae) in decaying organic material (Vet & Van Alphen, 1985). In decaying mushrooms it parasitizes *Fannia monilis* Haliday.

Phaenocarpa ruficeps (Nees)

Bassus ruficeps Nees, 1814: 205.
Phaenocarpa ruficeps; Shenefelt, 1974: 1014-1015.

Not reared from mushrooms, but adults have been seen searching for hosts on *Amanita rubescens* (Persoon ex Fries) at Voorschoten (The Netherlands). One of the most common species of the genus in The Netherlands. Parasite of Anthomyiidae.

Phaenocarpa tacita Stelfox
(figs. 249-261)

Phaenocarpa tacita Stelfox, 1941: 10; Fischer, 1970c: 487-490; Shenefelt, 1974: 1016; Vet & Van Alphen, 1985: 481.

Holotype, ♀, (U.S. National Museum of Natural History, Washington): "22" (on card), "Glenasmole, Co. DU [= County Dublin], A.W.S., (1), 19.9.37", "Phaenocarpa tacita mihi, ♀, Type!, AWS", "Holotype, USNM # 75988". 10 ♀♀, (Rijksmuseum van Natuurlijke Historie, Leiden), Netherlands: 1 ♀, Waarder, Oosteinde 33, 21-30.IX.1975 (in coppice-wood); 1 ♀, Nyemirdum, ex *Russula fellia* Fries, em. XII.1980, no. 31, L. Vet; 1 ♀, reared in laboratory ex *Drosophila phalerata* (Meigen) (= Fl from fore mentioned ♀); 1♀, Nyemirdum, coll. 17.VIII.1980, in *Amanita rubescens* (Persoon ex Fries), L. Vet; 1 ♀, Voorschoten, Horsten, 9.IX.1980, no. 14, in rotting *A. rubescens*, L. Vet; 1 ♀, Nyemirdum, Lycklama woods, searching on rotting *A. rubescens*, VIII.1980, L. Vet; 2 ♀, Meijendel, on mushroom, 26.VI.1984; 1 ♀, Wassenaar, on *Phallus impudicus* Persoon; 1 ♀, reared in laboratory, L. Vet.

Holotype, ♀, length of body 2.0 mm, of fore wing 2.4 mm.

Head. — Antennal segments 22, length of antenna about 1.5 times body (fig. 249), length of third segment 0.9 times fourth segment (fig. 250), length of third, fourth, and penultimate segments 5.7, 6.8, and 4.5 times their width, respectively (figs. 250, 251); length of maxillary palp 1.4 times height of head; length of eye in dorsal view 3.6 times temple (fig. 258); anterior tentorial pits medium-sized, their maximum diameter about equal to distance between eye and pit (fig. 255)); length of malar space 0.2 times basal width of mandible; medial length of mandible about 2.2 times its maximum width, comparatively slender (fig. 253), slightly widened dorsally, its surface largely smooth, with

carina from third tooth (fig. 253), both lateral teeth lobe-shaped and distinctly shorter than middle tooth and without distinct incisions between teeth (figs. 252, 253).

Mesosoma. — Length of mesosoma 1.3 times its height; precoxal sulcus only medially distinctly impressed and finely crenulate (fig. 249); pleural sulcus with obsolescent crenulae (fig. 249); notauli absent on disk, but anteriorly protruding into "shoulders" (figs. 249, 256); medio-posterior depression of mesoscutum small, deep and round (fig. 256); scutellar sulcus wide and with one longitudinal carina (fig. 256); metanotum not protruding and without median carina posteriorly; surface of propodeum smooth between carinae, medial carina long, lamelliform, posteriorly with costulae not protruding (fig. 249), posterior part subequal to anterior part and with long medial area slightly widened dorsally (fig. 257).

Wings. — Fore wing; pterostigma slender, elongate, its maximum width equal to length of r (fig. 254); r departs somewhat in front of middle of pterostigma, slender; r:3-SR:SR1 = 5:33:53; CU1b subequal to 3-CU1 (fig. 261); 2-SR:3-SR:r-m = 13:33:8; m-cu distinctly antefurcal (fig. 254). Hind wing: M+CU:1-M = 10:18.

Legs. — Length of femur, tibia and basitarsus of hind leg 5.4, 11.0, and 7 times their width, respectively (fig. 259).

Metasoma. — Length of first tergite 1.4 times its apical width, its surface rugose-reticulate medially, remainder smooth (fig. 257), strongly convex medially (fig. 249), dorsal carinae distinct in basal half, and dorsope deep and rather large (fig. 257); second suture absent; length of ovipositor sheath 0.27 times fore wing.

Colour. — Blackish-brown; first-fourth (except apex of fourth) antennal segments, legs (but telotarsi infuscated), tegulae and mandibles brownish-yellow; pterostigma and veins light brown; palpi whitish; first tergite yellowish-orange.

Variation. Antennal segments of ♀ 21(2), 22(3) or 23(1); length of third antennal segment 0.9-1.0 times fourth segment; vein CU1b of fore wing subequal to or longer (up to 1.3 times) than vein 3-CU1; sometimes with stub of vein 1r of fore wing (at vein 2-SR) present; length of ovipositor sheath 0.27-0.32 times fore wing.

Note. The biology was unknown and the species was known from Ireland and Austria only. Dr. L. E. M. Vet managed to rear *P. tacita* successfully in the laboratory from *Drosophila phalerata* (Meigen) as host; obviously it is a parasite of Drosophilidae in mushrooms (Vet & Van Alphen 1985). *Drosophila phalerata* is a common (at least in Central Europe) fungivorous *Drosophila* sp., both in deciduous and coniferous woodlands and is polyphagous.

Alloea lonchopterae Fischer

Alloea lonchopterae Fischer, 1966b: 331; Shenefelt; 1974: 939.

Reared from *Boletus edulis* Bull. ex Fries at Voorschoten (The Netherlands); it is a parasite of Lonchopteridae.

Orthostigma species near **longicubitale**

Reared from *Amanita rubescens* (Persoon ex Fries) at Voorschoten in low numbers. Related to *Orthostigma longicubitale* Königsmann, 1969.

Orthostigma species near **sculpturatum**

Reared from *Amanita rubescens* (Persoon ex Fries) at Nyemirdum (The Netherlands) in low numbers. Related to *Orthostigma sculpturatum* Tobias, 1962 or belonging to this species.

Orthostigma species near **sordipes**

Reared from *Agaricus* sp. in pasture at Harich (The Netherlands) in low numbers. Related to *Orthostigma sordipes* (Thomson, 1895).

Aspilota species A

Reared from *Tricholomopsis platyphylla* (Persoon ex Fries) at Voorschoten (The Netherlands) and from fresh *Russula*- and *Amanita*-mushrooms in the New Forest (England).

Aspilota species B

Reared from *Calvatia maxima* (Schaeff) Morg. at Oude Mirdum (The Netherlands) in low numbers.

Aspilota species C

Reared from *Amanita rubescens* (Persoon ex Fries) at Nyemirdum (The Netherlands).

Aspilota intermediana Fischer

Aspilota intermediana Fischer, 1975: 304.

Reared from *Agaricus nivescens* (Moell.) Moell. at Nyemirdum (The Netherlands). Described from Austria.

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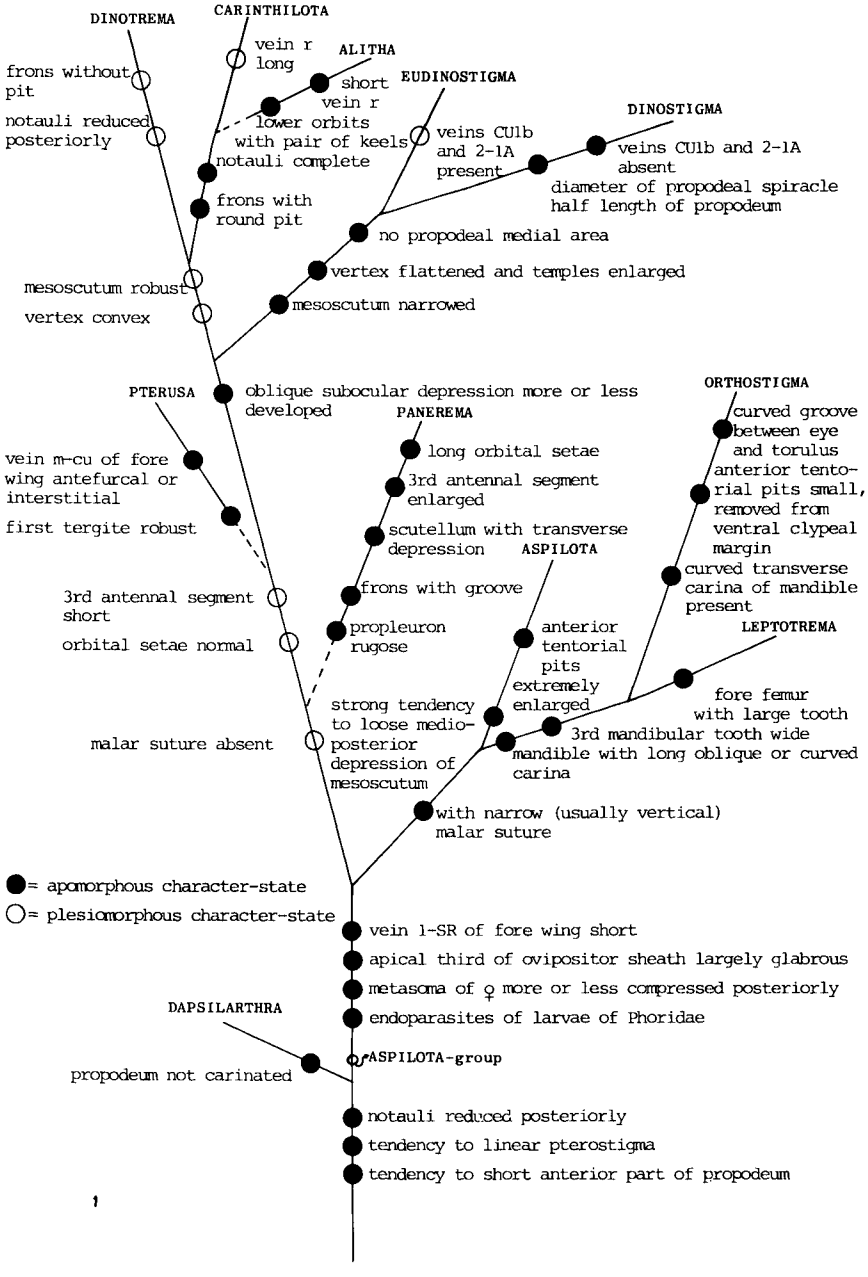
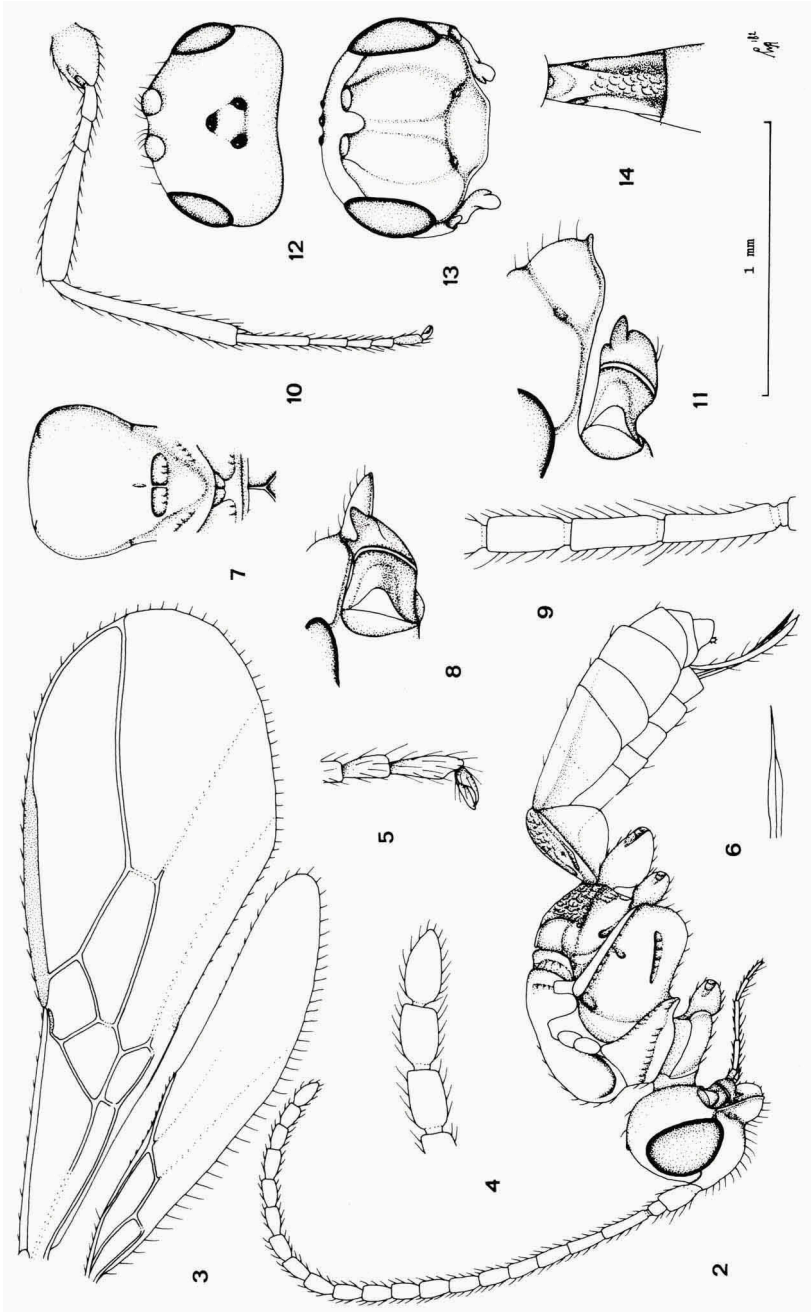
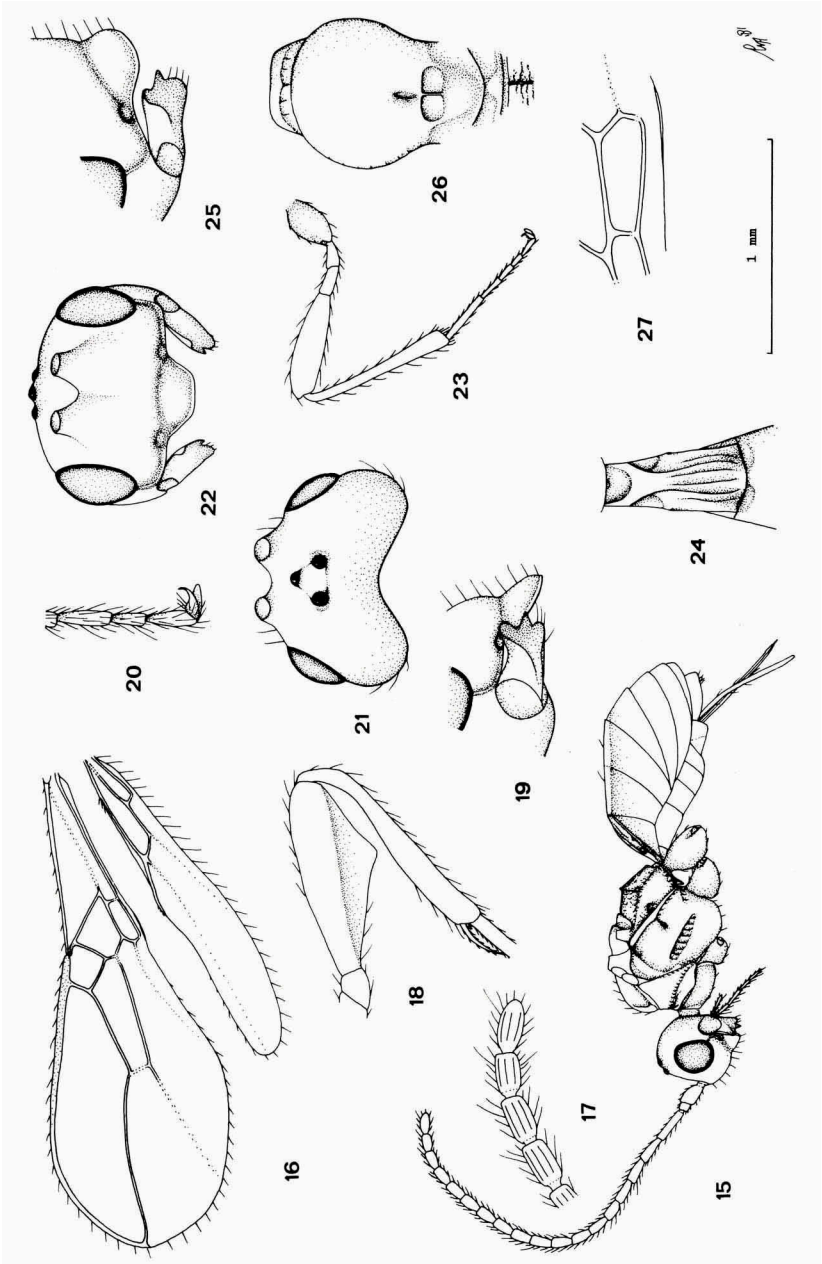


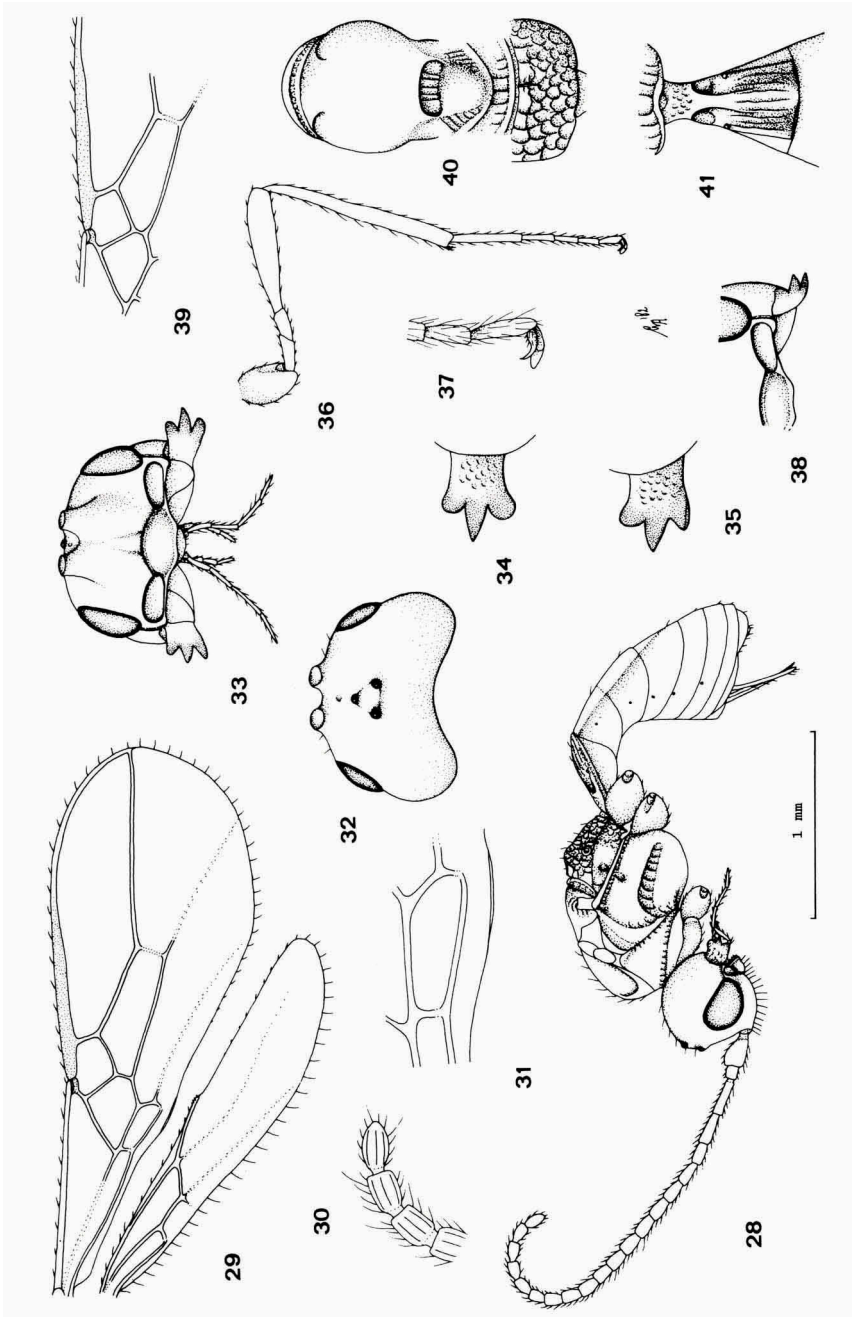
Fig. 1. Cladogram of the *Aspilota*-group.



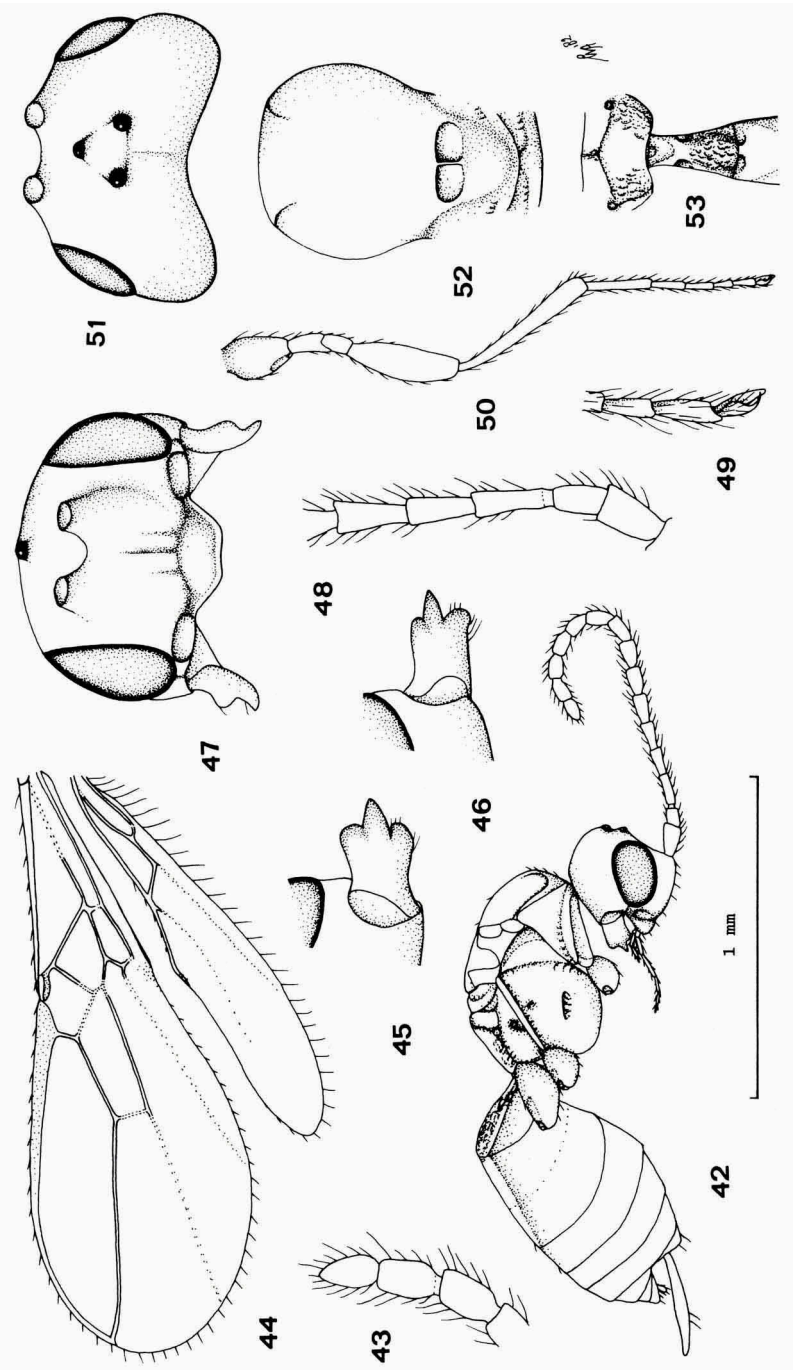
Figs. 2-14, *Orthostigma flavipes* (Ratzeburg), ♀, neotype (= *O. pumilum* (Nees)). 2, habitus, lateral aspect; 3, wings; 4, apex of antenna; 5, hind claw; 6, apex of ovipositor, lateral aspect; 7, mesosoma, dorsal aspect; 8, mandible, full sight on first tooth; 9, third-fifth antennal segments; 10, hind leg; 11, mandible, full sight on third tooth (lobe); 12, head, dorsal aspect; 13, head, frontal aspect; 14, first metasomal tergite, dorsal aspect. 2, 3, 10: scale-line (= 1 ×); 4-6, 8, 9, 11: 2.5 ×; 7, 12-14: 1.2 ×.



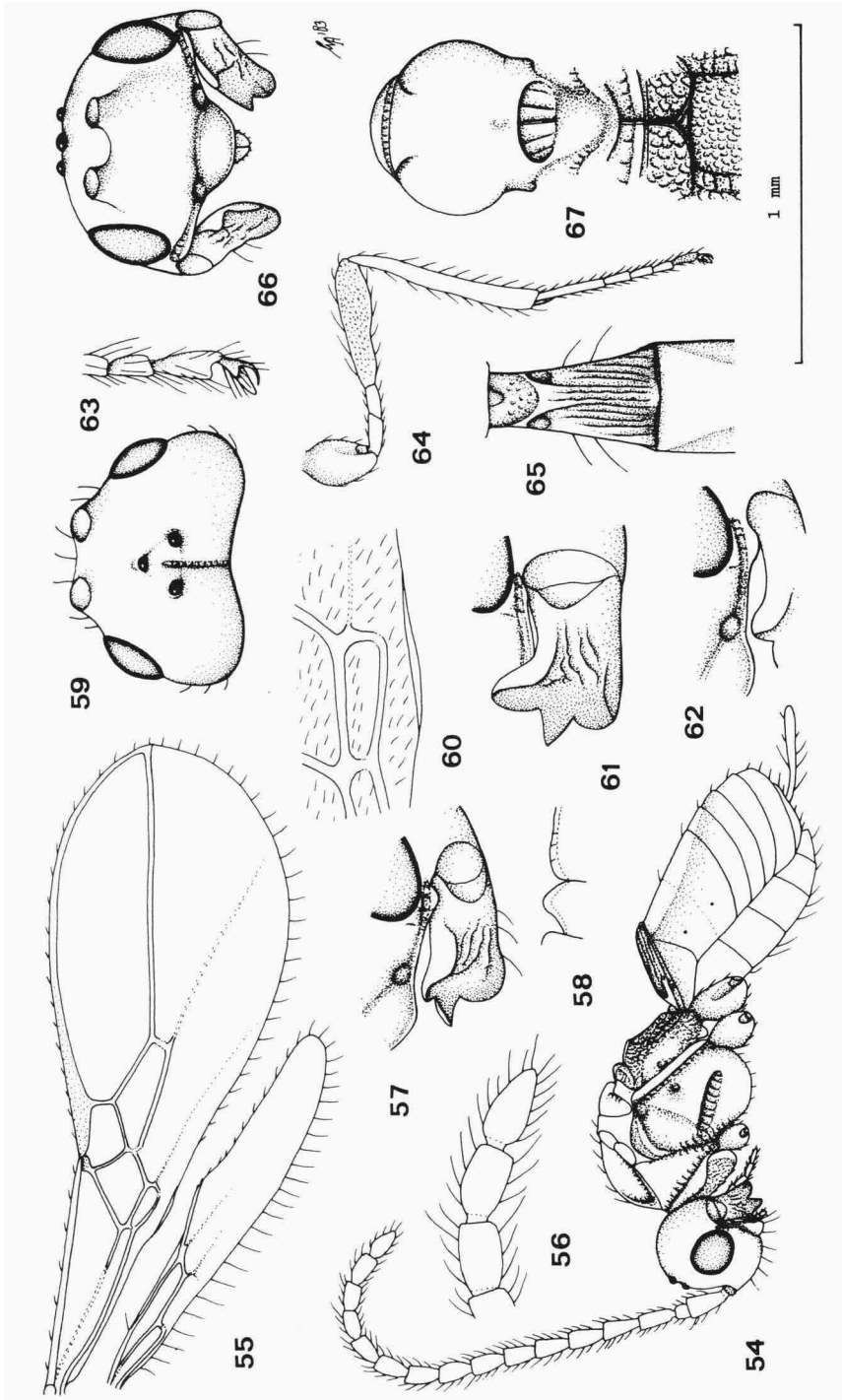
Figs. 15-27, *Leptotrema dentifemur* (Stelfox), ♀, Netherlands, Putten. 15, habitus, lateral aspect; 16, wings, 17, apex of antenna; 18, fore femur and tibia, frontal aspect; 19, mandible, full sight on first tooth; 20, hind claw; 21, head, dorsal aspect; 22, head, frontal aspect; 23, hind leg; 24, first metasomal tergite, dorsal aspect; 25, mandible, full sight on third tooth; 26, mesosoma, dorsal aspect; 27, first subdiscal cell of fore wing. 15, 16, 23: scale-line (= 1 ×); 17-20, 25: 2.5 ×; 21, 22, 24, 26: 1.9 ×; 27: 2 ×.



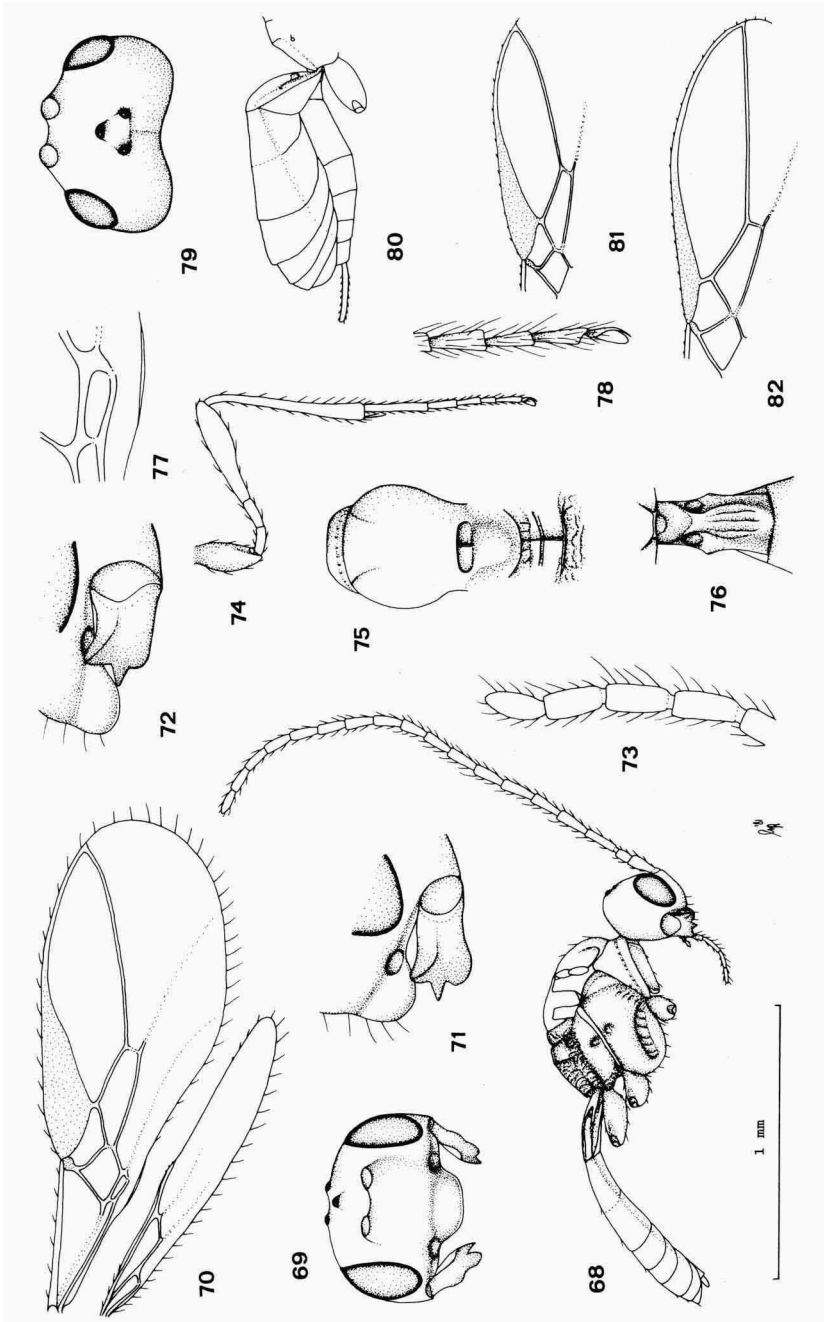
Figs. 28-41, *Aspilota ruficornis* (Nees), ♀, neotype, but 39 of ♂, topotypic. 28, habitus, lateral aspect; 29, wings; 30, apex of antenna; 31, first subdiscal cell of fore wing; 32, head, dorsal aspect; 33, head, frontal aspect; 34, mandible, full sight on third tooth; 35, mandible, full sight on first tooth; 36, hind leg; 37, hind claw; 38, detail of malar space, frontal aspect; 39, detail of pterostigma of ♂; 40, mesosoma, dorsal aspect; 41, first metasomal tergite, dorsal aspect. 28, 29, 36, 39: scale-line (= 1 ×); 30, 31, 34, 35, 37, 38· 2.5 ×; 32, 33, 40, 41: 1.5 ×.



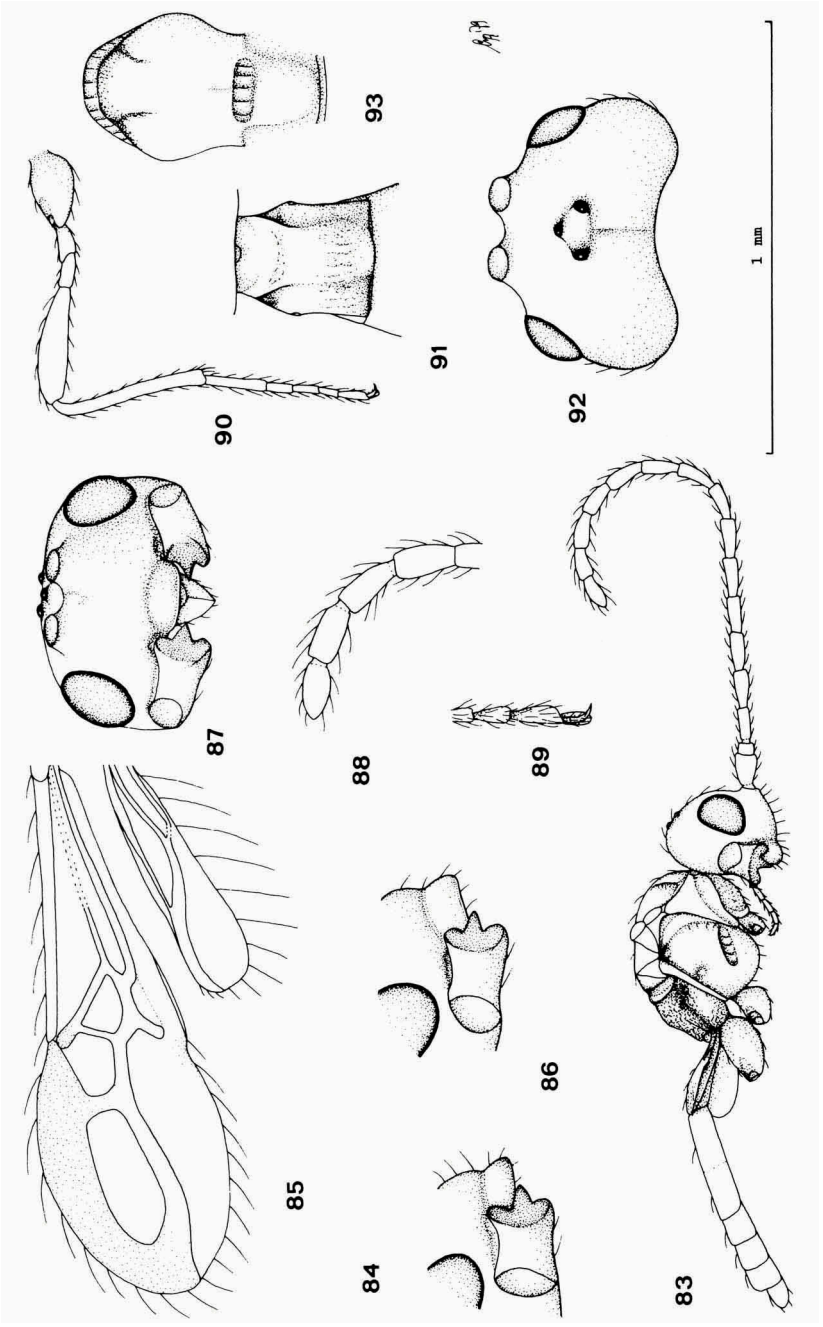
Figs. 42-53, *Aspilota louiseae* spec. nov., ♀, holotype. 42, habitus, lateral aspect; 43, apex of antenna; 44, wings; 45, mandible, full sight on first tooth; 46, mandible, full sight on third tooth; 47, head, frontal aspect; 48, first-fifth antennal segments; 49, hind claw; 50, hind leg; 51, head, dorsal aspect; 52, thorax, dorsal aspect; 53, propodeum and first metasomal tergite, dorsal aspect. 42, 44, 50, 53: scale-line (= 1 ×); 43, 45, 46, 48, 49: 2.5 ×; 47, 51, 52: 1.6 ×.



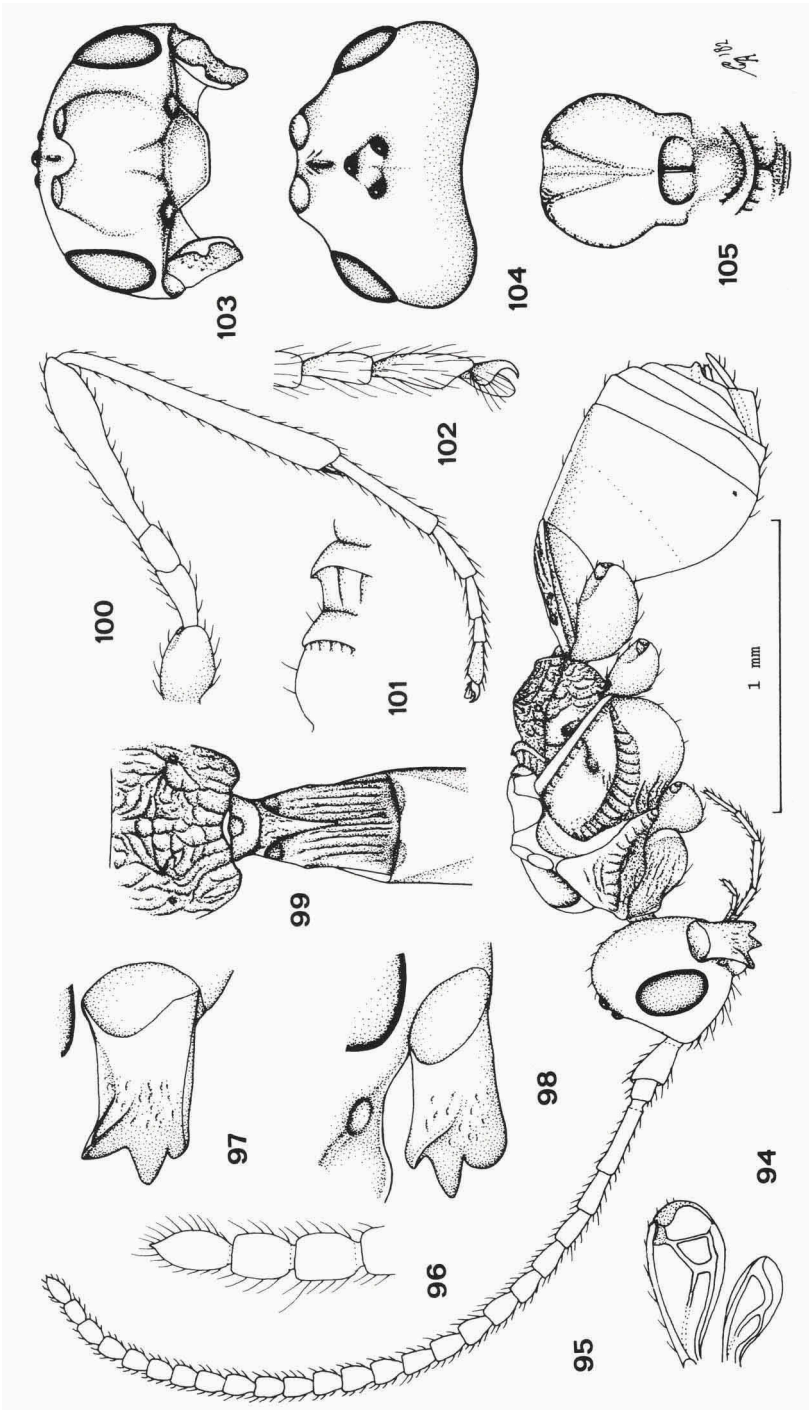
Figs. 54-67, *Dinotrema* spec. nov., ♀, Denmark, Håjen baek. 54, habitus, lateral aspect; 55, wings; 56, apex of antenna; 57, mandible, full sight on third tooth; 58, metanotum, lateral aspect; 59, head, dorsal aspect; 60, first subdiscal cell of fore wing; 61, mandible, full sight on first tooth; 62, detail of malar space, frontal aspect; 63, hind claw; 64, hind leg; 65, first metasomal tergite, dorsal aspect; 66, head, frontal aspect; 67, mesosoma, dorsal aspect. 54, 55, 64: scale-line (= 1 ×); 56-58, 60-63: 2.5 ×; 59, 65-67: 1.5 ×.



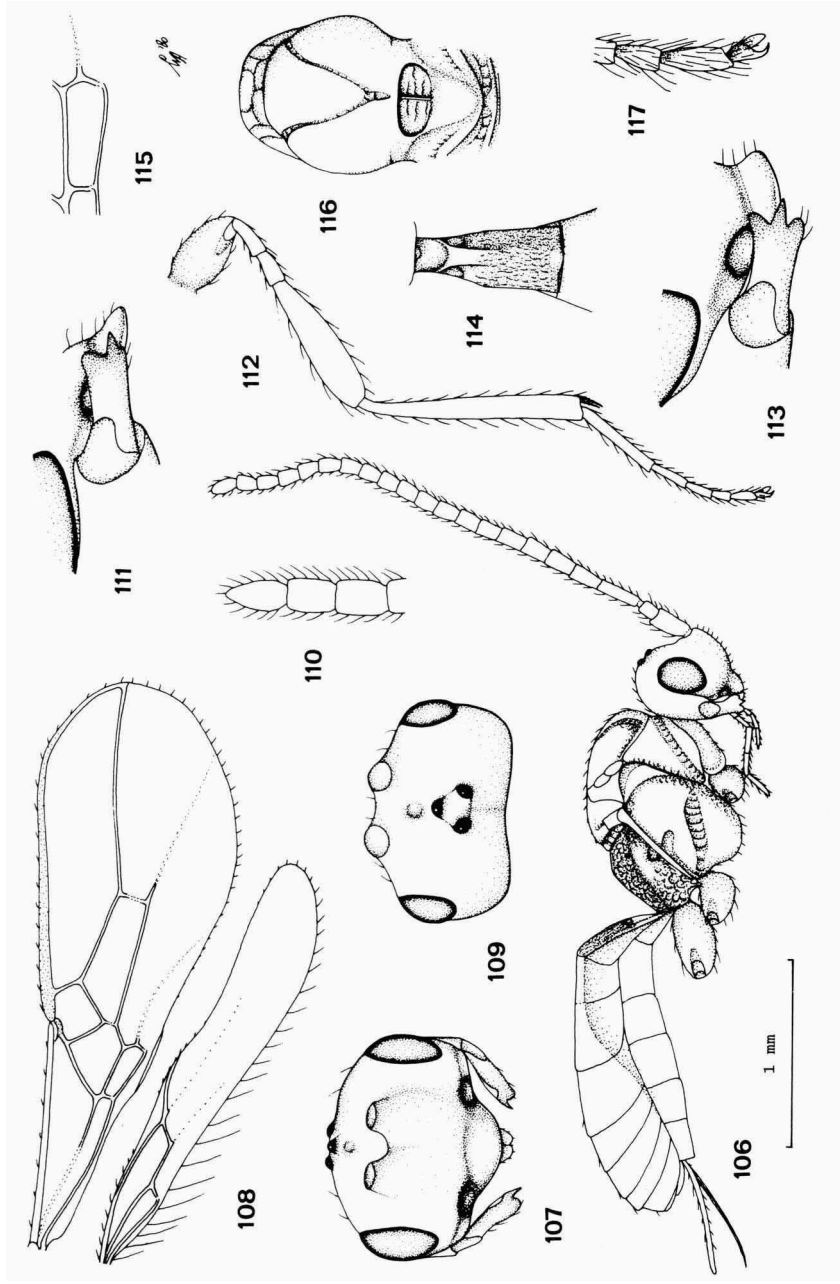
Figs. 68-82, *Dinotrama* ("*Prosapha*") *speculum* (Haliday), ♂, Austria, Spitzzicken, but 80 and 82 of ♀, lectotype of *D. venusta* (Haliday) (= *speculum*) and 81 of ♂, lectotype of *D. speculum* (Haliday). 68, habitus, lateral aspect; 69, head, frontal aspect; 70, wings; 71, mandible, full sight on third tooth; 72, mandible, full sight on first tooth; 73, apex of antenna; 74, hind leg; 75, mesosoma, dorsal aspect; 76, first metasomal tergite, dorsal aspect; 77, first subdiscal cell of fore wing; 78, hind claw; 79, head, dorsal aspect; 80, metasoma of ♀, lateral aspect; 81, pterostigma of ♂; 82, pterostigma of ♀. 68, 70, 74, 80-82: scale-line (= 1 ×); 69, 75, 76, 79: 1.5 ×; 71-73, 77, 78: 2.5 ×.



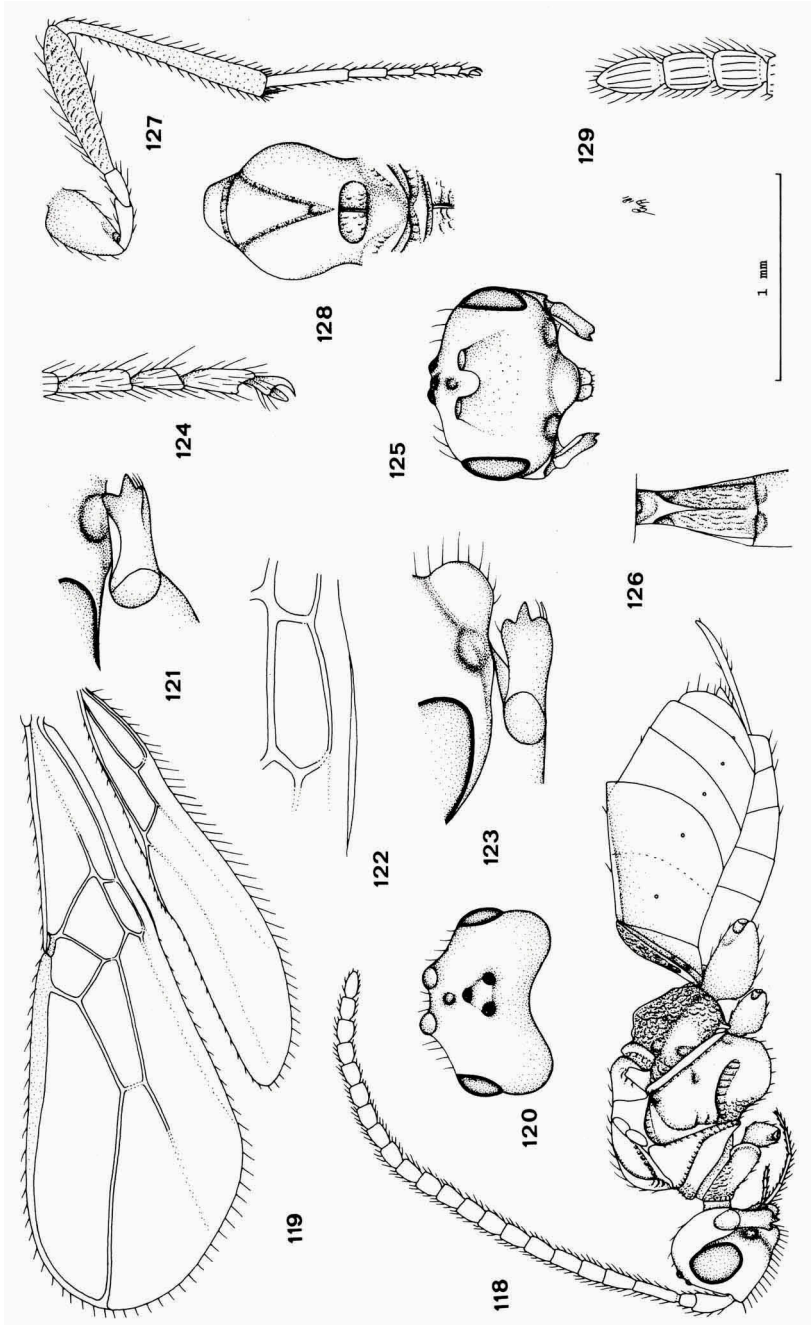
Figs. 83-93, *Pterusa crassiceps* Fischer, ♂, holotype. 83, habitus, lateral aspect; 84, mandible, full sight on first tooth; 85, wings; 86, mandible, full sight on third tooth; 87, head, frontal view; 88, apex of antenna; 89, hind claw; 90, hind leg; 91, first metasomal tergite, dorsal aspect; 92, head, dorsal aspect; 93, thorax, dorsal aspect. 83, 90: scale-line (= 1 ×); 84-88, 91-93: 1.6 ×.



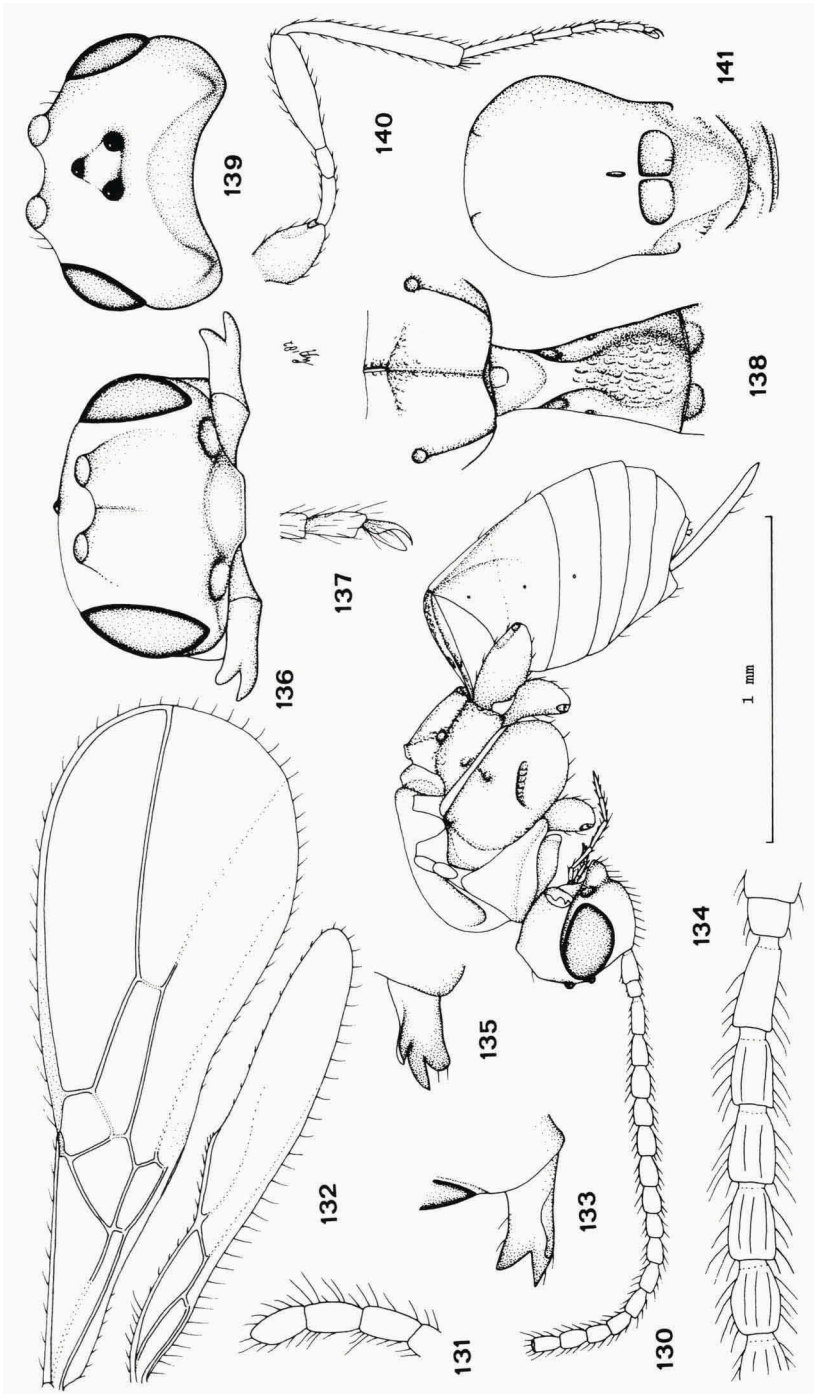
Figs. 94-105, *Panerema inops* Foerster, ♀, Netherlands, Cadier. 94, wings; 95, habitus, lateral aspect; 96, apex of antenna; 97, mandible, full sight on first tooth; 98, mandible, full sight on third tooth; 99, propodeum and first metasomal tergite, dorsal tergite; 100, hind leg; 101, scutellum, lateral aspect; 102, hind claw; 103, head, frontal aspect; 104, head, dorsal aspect; 105, thorax, dorsal aspect. 94, 95, 100: scale-line (= 1 ×); 96-98, 101, 102: 2.5 ×; 99, 103-105: 1.3 ×.



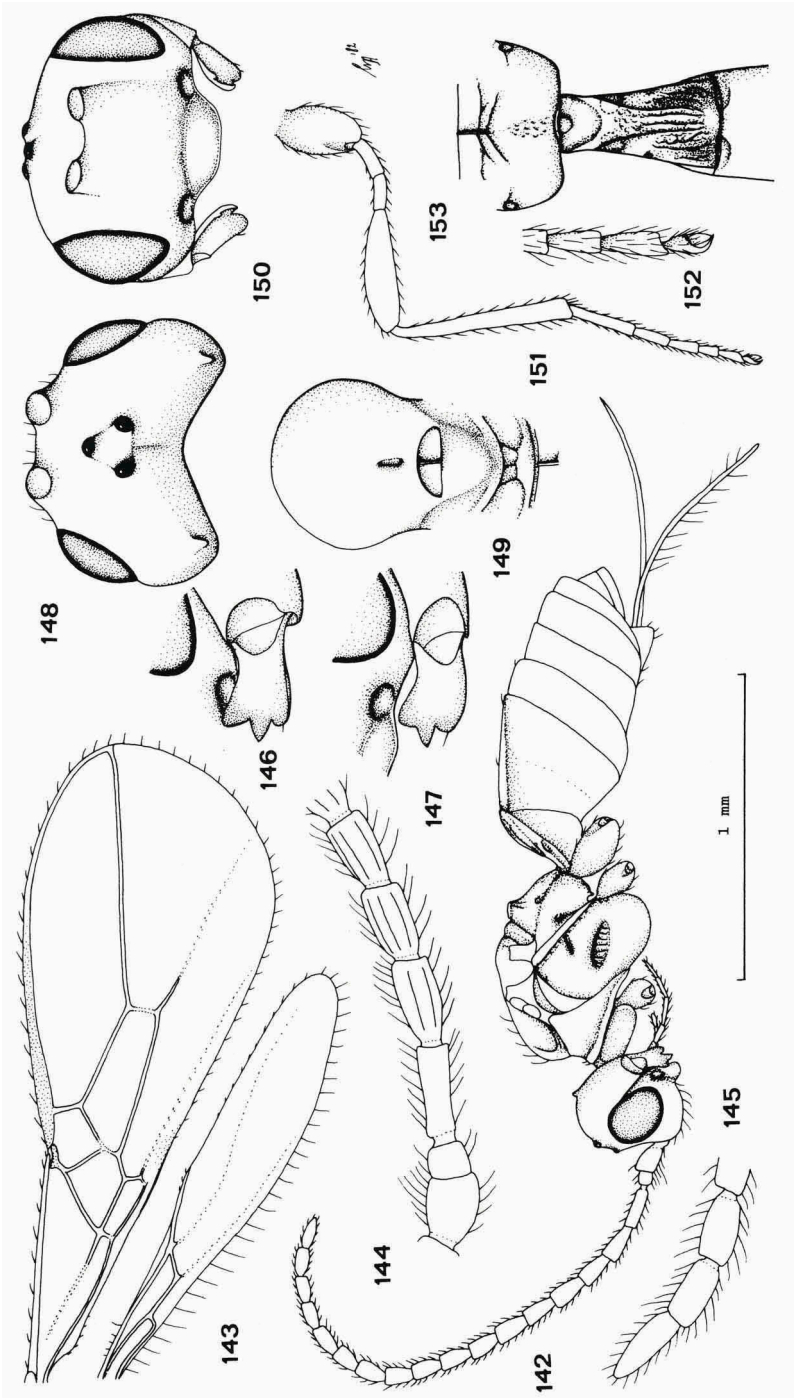
Figs. 106-117, *Carinthilota parapsidalis* Fischer, ♀, holotype. 106, habitus, lateral aspect; 107, head, frontal aspect; 108, wings; 109, head, dorsal aspect; 110, apex of antenna; 111, mandible, full sight on first tooth; 112, hind leg; 113, mandible, full sight on third tooth; 114, first metasomal tergite; 115, first subdiscal cell of fore wing; 116, thorax, dorsal aspect; 117, hind claw. 106, 108, 112: scale-line (= 1 ×); 110, 111, 113, 117: 2.5 ×; 115: 2 ×; 107, 109, 114, 116: 1.6 ×.



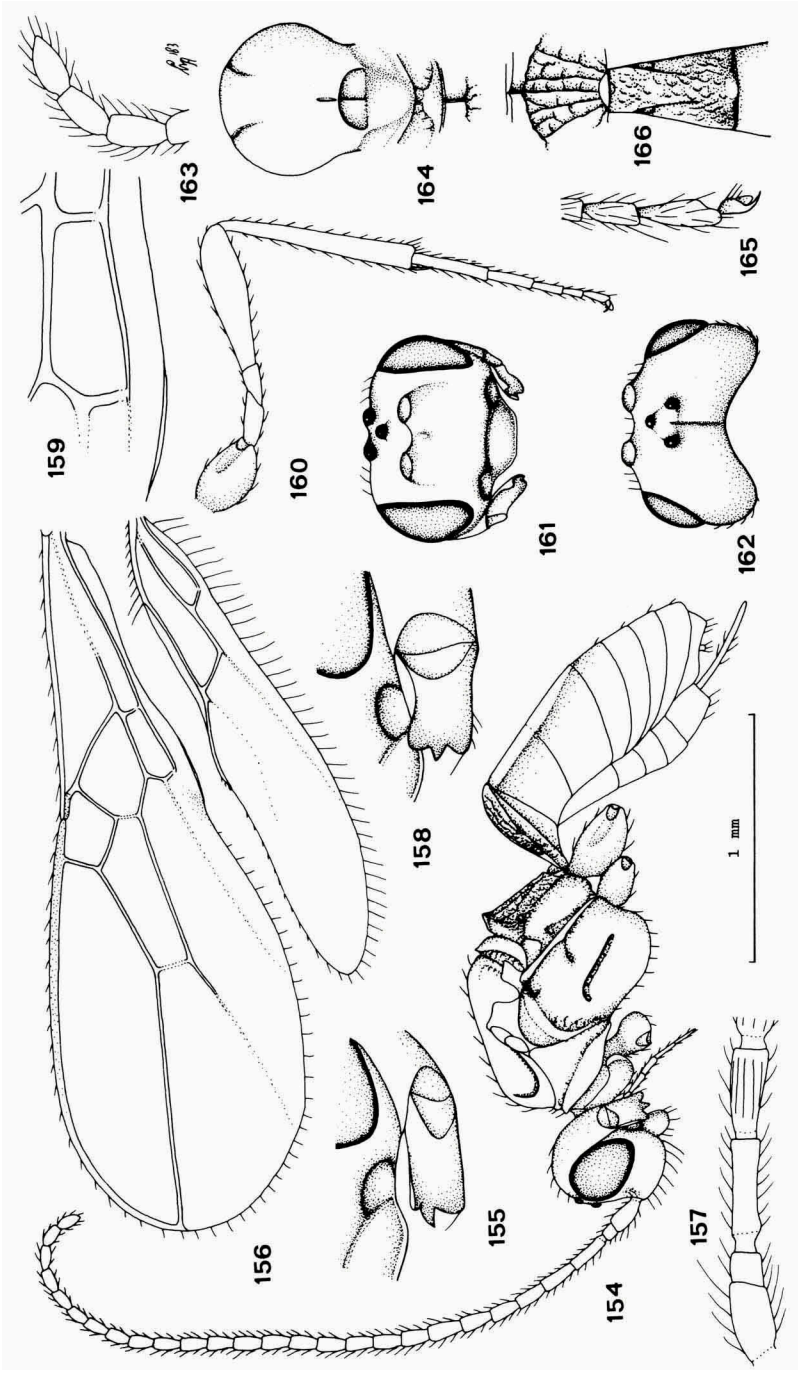
Figs. 118-129, *Carinthilota vechti* spec. nov., ♀, holotype. 118, habitus, lateral aspect; 119, wings; 120, head, dorsal aspect; 121, mandible, full sight on first tooth; 122, first subdiscal cell of fore wing; 123, mandible, full sight on third tooth; 124, hind claw; 125, head, frontal aspect; 126, first metasomal tergite, dorsal aspect; 127, hind leg; 128, mesosoma, dorsal aspect; 129, apex of antenna. 118, 119, 127: scale-line (= 1 ×); 120, 125, 126, 128: 1.3 ×; 121-124, 129: 2.5 ×.



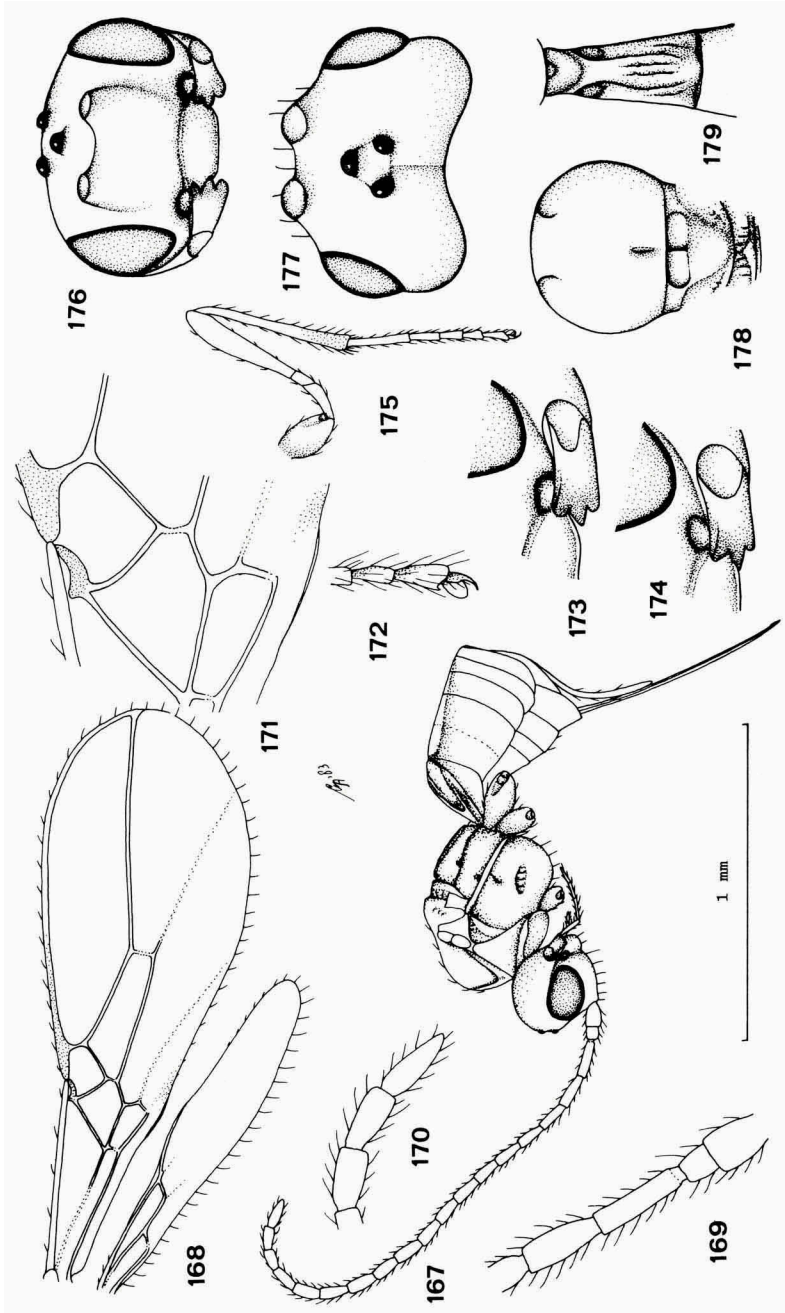
Figs. 130-141, *Dinotrema mesocaudatum* spec. nov., ♀, holotype, but 131 of ♀, paratype. 130, habitus, lateral aspect; 131, apex of antenna; 132, wings; 133, mandible, full sight on first tooth; 134, base of antenna; 135, mandible, full sight on third tooth; 136, head, frontal aspect; 137, hind claw; 138, propodeum and first metasomal tergite, dorsal aspect; 139, head, dorsal aspect; 140, hind leg; 141, thorax, dorsal aspect. 130, 132, 140: scale-line (= 1 ×); 131, 133-135, 137: 2.5 ×; 136, 138, 139, 141: 1.8 ×.



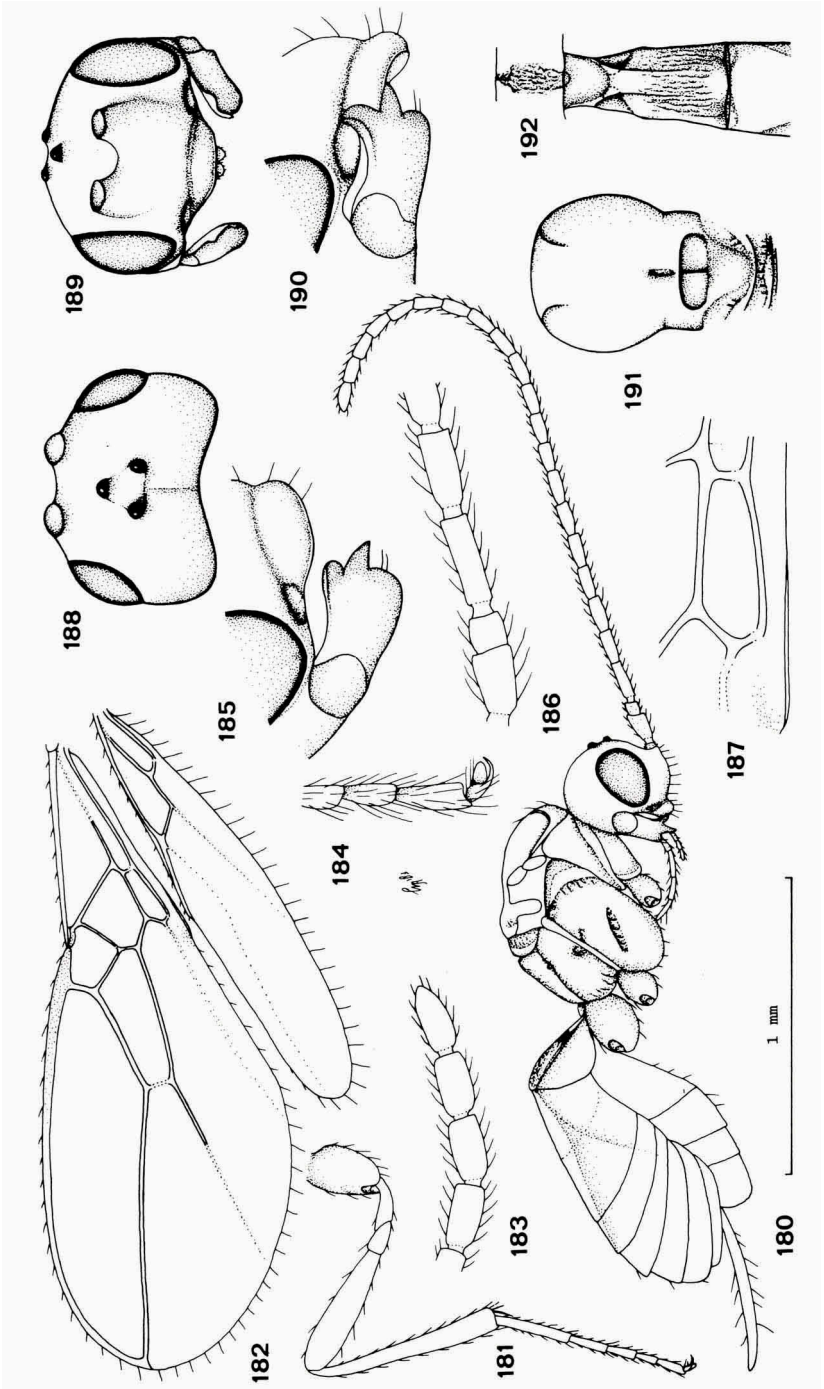
Figs. 142-153, *Dinotrema tuberculatum* spec. nov., ♀, holotype. 142, habitus, lateral aspect; 143, wings; 144, base of antenna; 145, apex of antenna; 146, mandible, full sight on first tooth; 147, mandible, full sight on third tooth; 148, head, dorsal aspect; 149, thorax, dorsal aspect; 150, head, frontal aspect; 151, hind leg; 152, hind claw; 153, propodeum and first metasomal tergite, dorsal aspect. 142, 143, 151: scale-line (= 1 ×); 144, 145-147, 152: 2.5 ×; 148-150, 153: 1.6 ×.



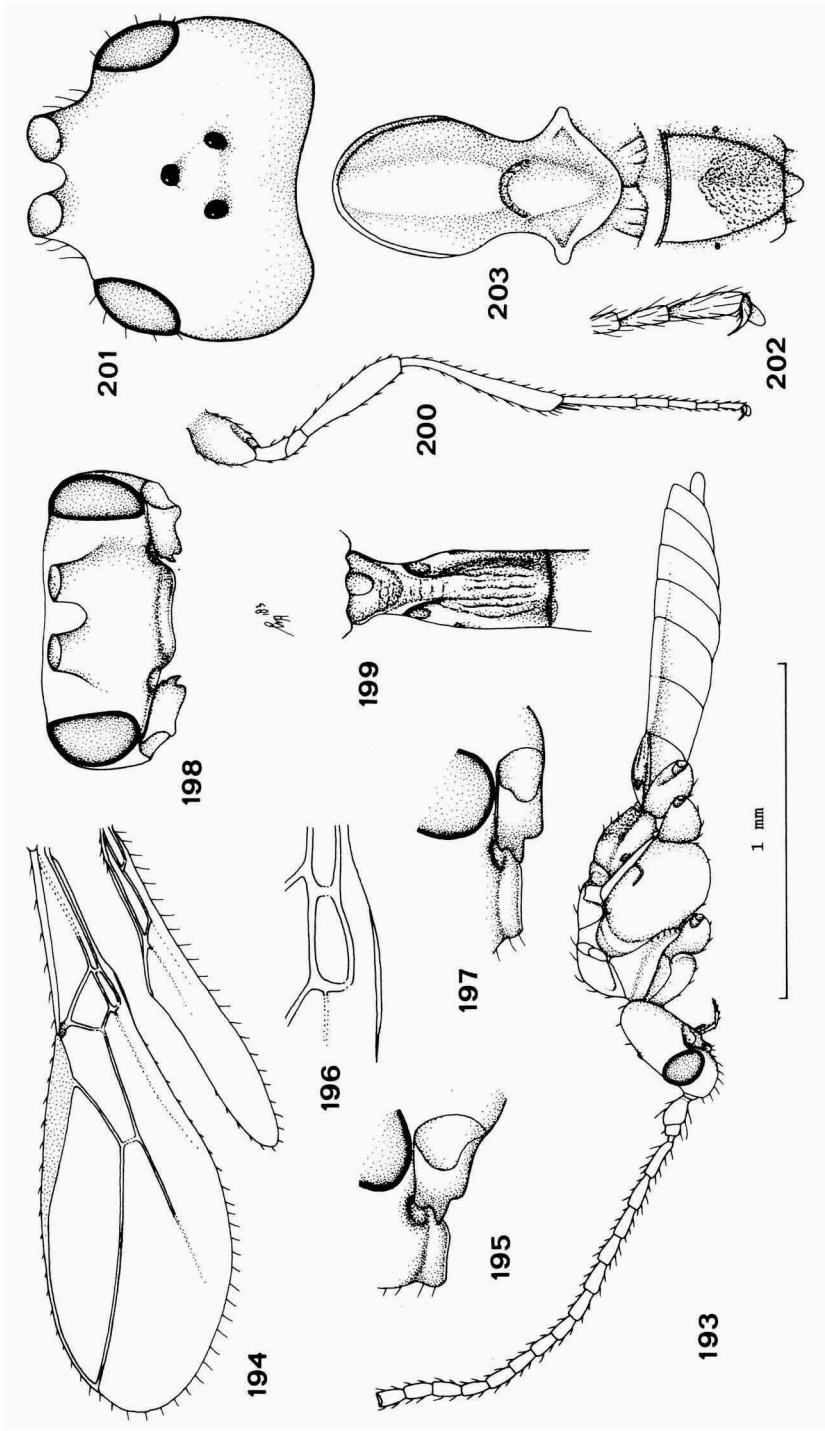
Figs. 154-166, *Dinotrema multiarticulatum* spec. nov., ♀, holotype. 154, habitus, lateral aspect; 155, mandible, full sight on third tooth; 156, wings; 157, base of antenna; 158, mandible, full sight on first tooth; 159, first subdiscal cell of fore wing; 160, hind leg; 161, head, frontal aspect; 162, head, dorsal aspect; 163, apex of antenna; 164, mesosoma, dorsal aspect; 165, hind claw; 166, propodeum and first metasomal tergite, dorsal aspect. 154, 156, 160: scale-line (= 1 ×); 155, 157-159, 163, 165: 2.5 ×; 161, 162, 164, 166: 1.2 ×.



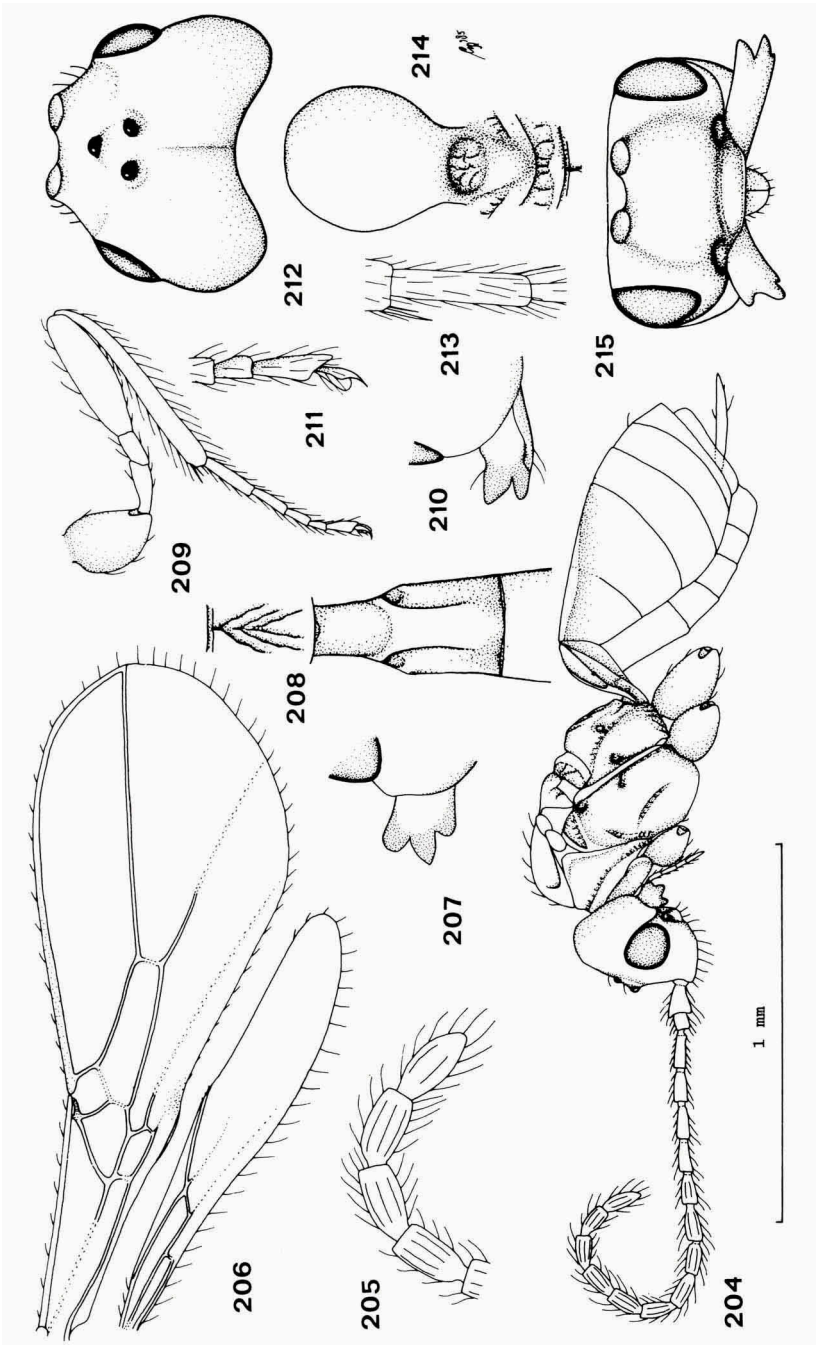
Figs. 167-179, *Dinotrema sessile* spec. nov., ♀, holotype. 167, habitus, lateral aspect; 168, wings; 169, base of antenna; 170, apex of antenna; 171, first discal and subdiscal cells of fore wing; 172, hind claw; 173, mandible, full sight on third tooth; 174, mandible, full sight on first tooth; 175, hind leg; 176, head, frontal aspect; 177, head, dorsal aspect; 178, thorax, dorsal aspect; 179, first metasomal trgite, dorsal aspect. 167, 168, 175: scale-line (= 1 ×); 169-174: 2.5 ×; 176-179: 2 ×.



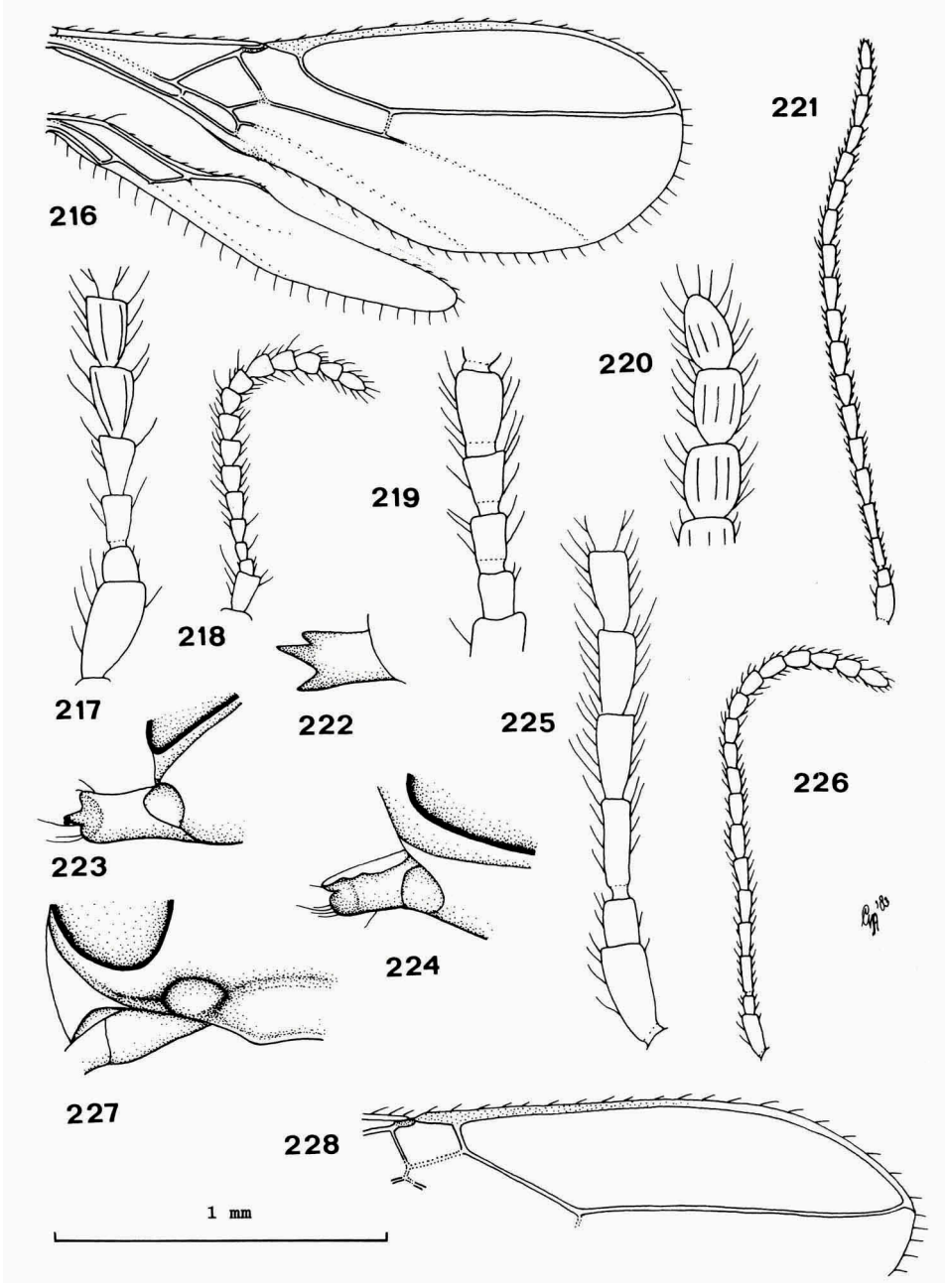
Figs. 180-192, *Dinotrema pratense* spec. nov., ♀, holotype. 180, habitus, lateral aspect; 181, hind leg; 182, wings; 183, apex of antenna; 184, hind claw; 185, mandible, full sight on third tooth; 186, base of antenna; 187, first subdiscal cell of fore wing; 188, head, dorsal aspect; 189, head, frontal aspect; 190, mandible, full sight on first tooth; 191, thorax, dorsal aspect; 192, propodeum and first metasomal tergite, dorsal aspect. 180-182: scale-line (= 1 ×); 183-187, 190: 2.5 ×; 188, 189, 191, 192: 1.6 ×.



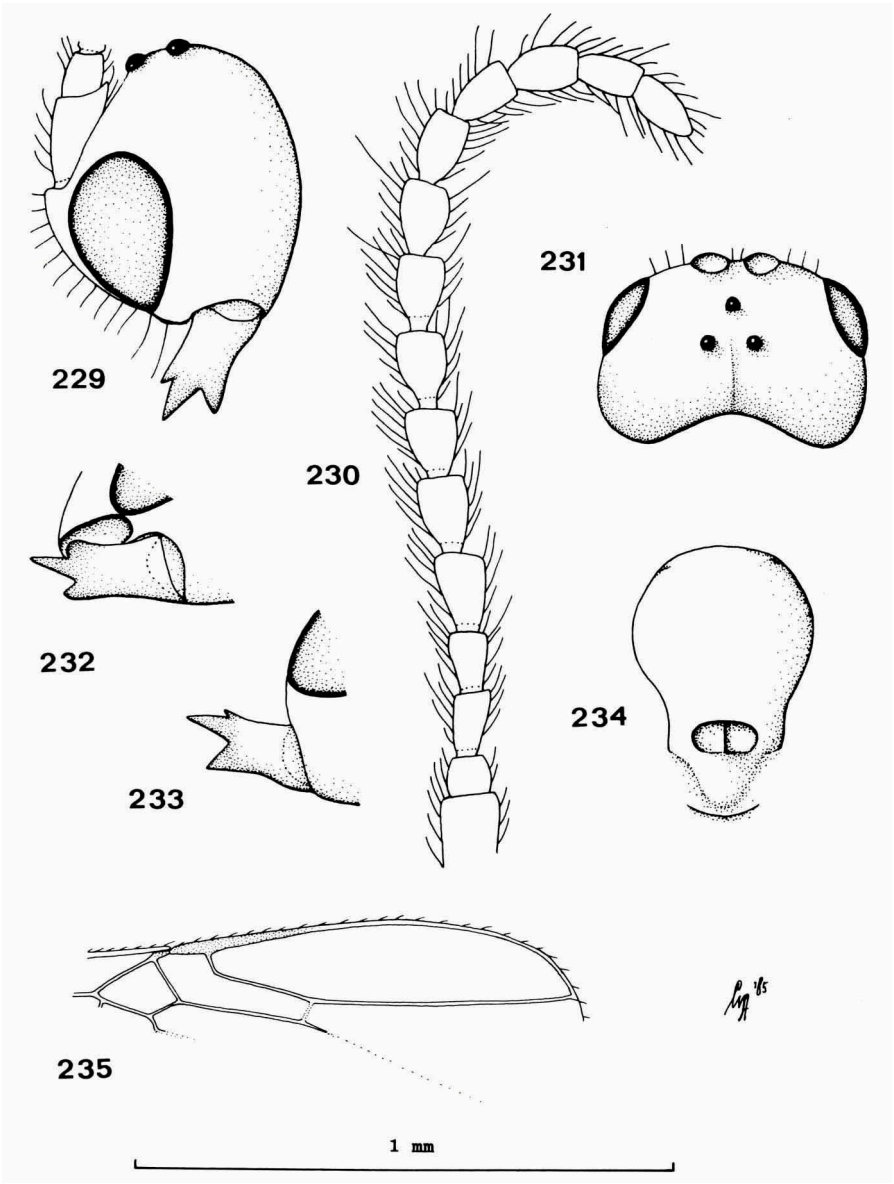
Figs. 193-203, *Eudinostigma stenosoma* gen. et spec. nov., ♂, holotype. 193, habitus, lateral aspect; 194, wings; 195, mandible, full sight on first tooth; 196, first subdiscal cell of fore wing; 197, mandible, full sight on third tooth; 198, head, frontal aspect; 199, first metasomal tergite, dorsal aspect; 200, hind leg; 201, head, dorsal aspect; 202, hind tarsus; 203, mesosoma, dorsal aspect. 193, 194, 200: scale-line (= 1 ×); 195-199, 201-203: 2.5 ×.



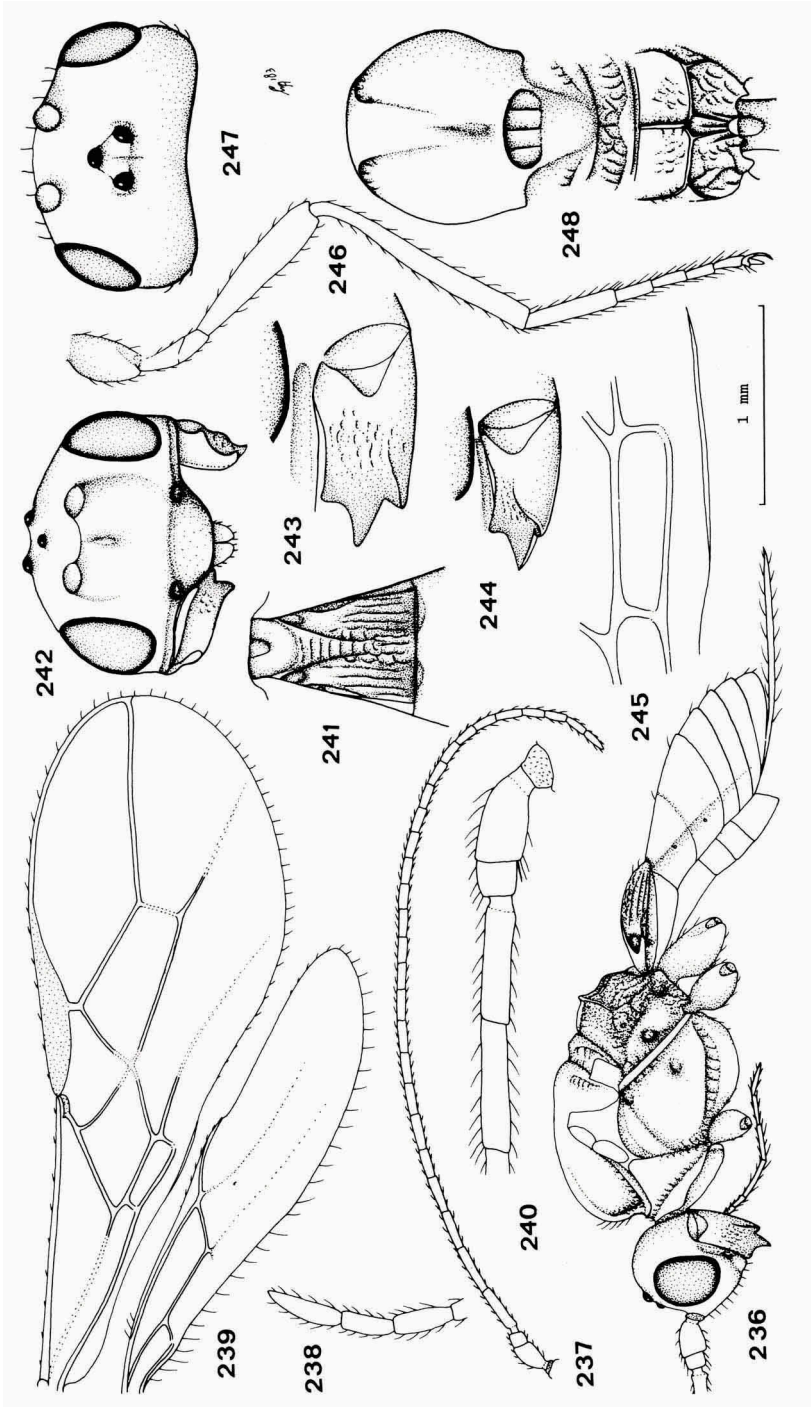
Figs. 204-215, *Eudinostigma pulvinatum* (Stelfox & Graham), ♀, Sweden, Ånge. 204, habitus, lateral aspect; 205, apex of antenna; 206, wings; 207, mandible, full sight on third tooth; 208, propodeum and first metasomal tergite, dorsal aspect; 209, hind leg; 210, mandible, full sight on first tooth; 211, hind claw; 212, head, dorsal aspect; 213, hind basitarsus, lateral aspect; 214, mesosoma, dorsal aspect; 215, head, frontal aspect. 204, 206, 209: scale-line (= 1 ×); 205, 207, 210, 211, 213: 2.1 ×; 208, 212, 214, 215: 1.9 ×.



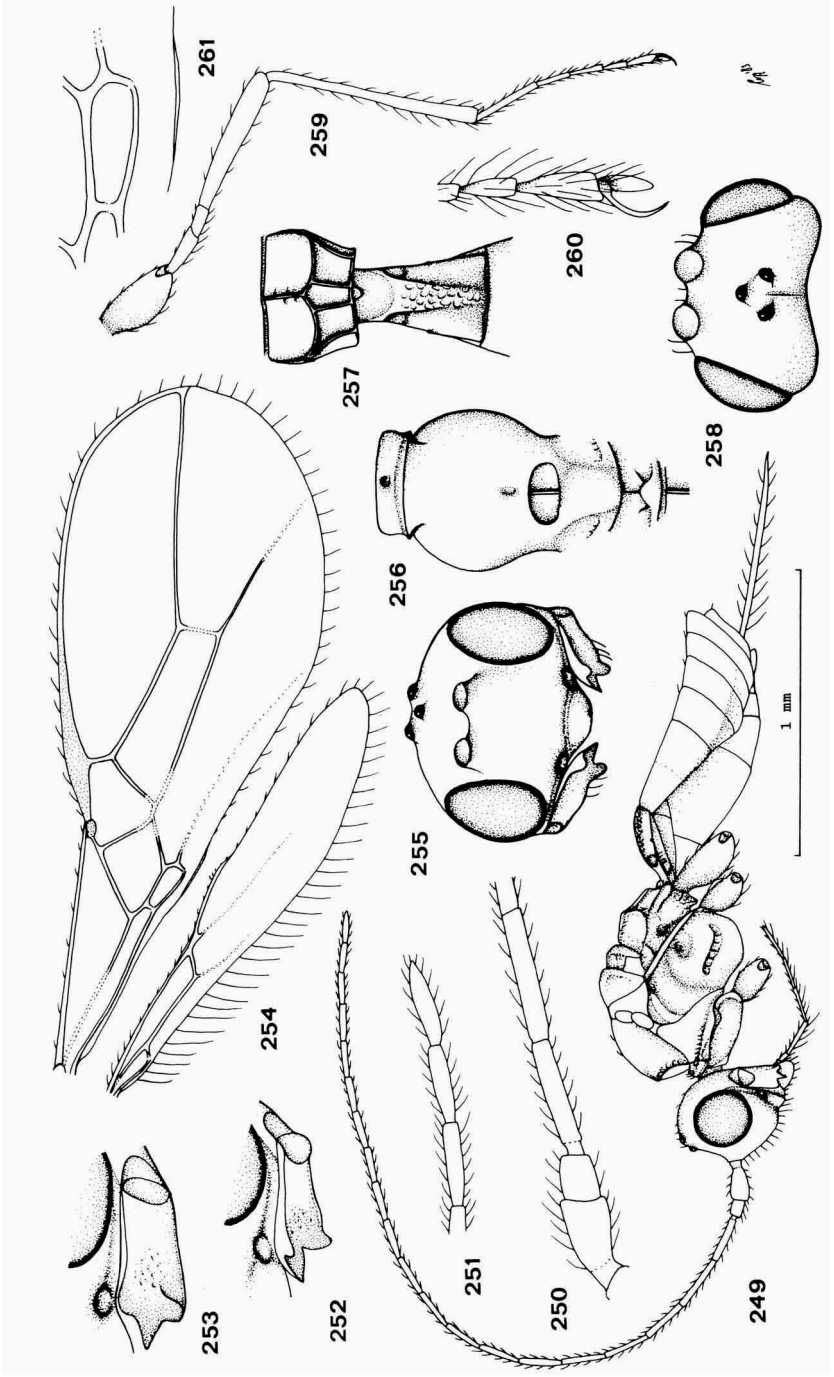
Figs. 216-222, *Aspilota globipes* (Fischer): 216, 219, 220, ♀, Netherlands, Nyemirdum; 217, 218, 222, ♀, holotype; 221, ♂, Netherlands, Voorschoten. Figs. 223, 224, 227, *Dinotrema castaneithorax* (Fischer), ♀, holotype. Figs. 225, 226, 228, *Dinotrema intermediana* (Fischer), ♀, holotype. 216, wings; 217, 219, 225, base of antenna; 218, 221, 226, antenna; 220, apex of antenna; 223, mandible, full sight on first tooth; 224, mandible, full sight on third tooth; 227, anterior tentorial pit; 228, part of fore wing. 218, 228: scale-line (= 1 ×); 216, 221: 1.1 ×; 217, 219, 220, 222-224, 227: 2.5 ×; 225: 2.3 ×; 226: 0.9 ×.



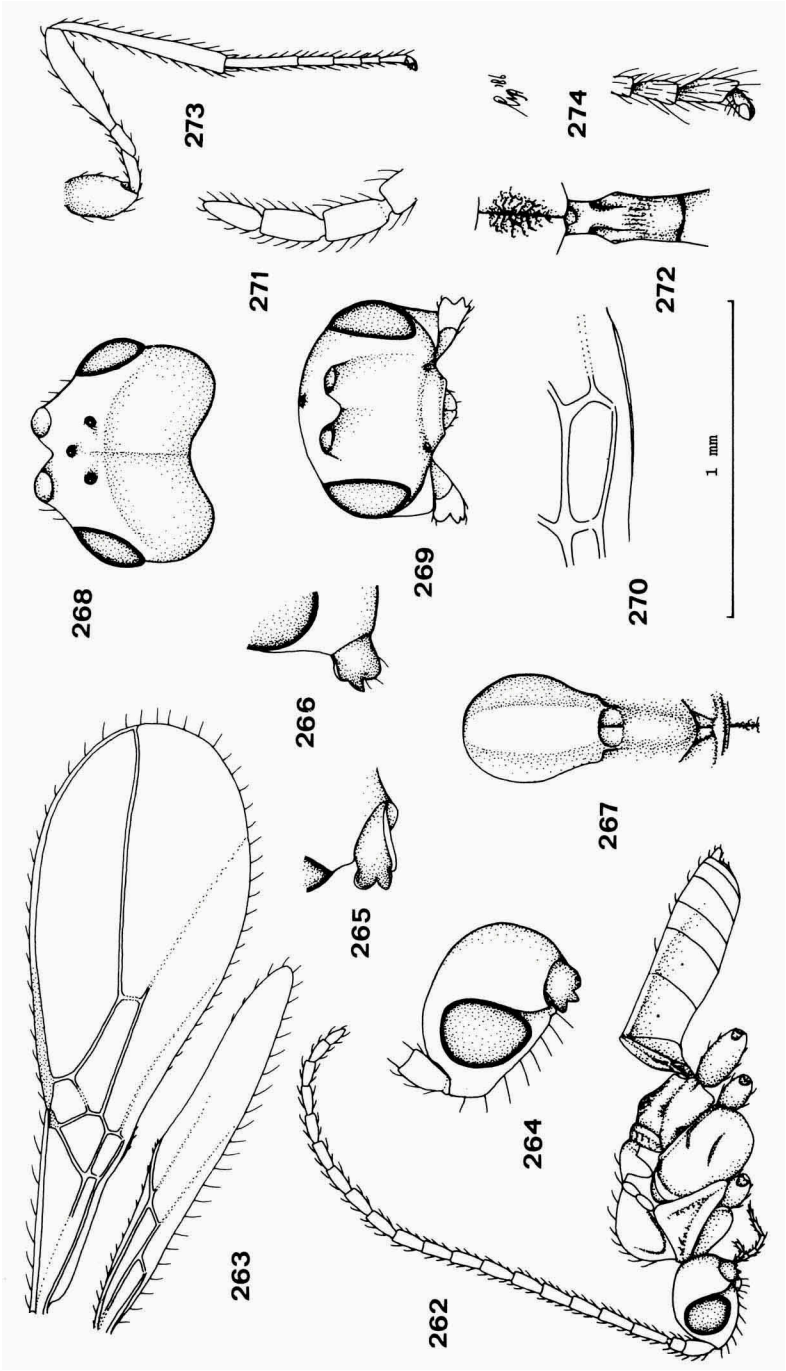
Figs. 229-235, *Aspilota parvicornis* (Thomson), ♀, Sweden, Mölle. 229, head, lateral aspect; 230, antenna; 231, head, dorsal aspect; 232, mandible, full sight on first tooth; 233, mandible, full sight on third tooth; 234, mesonotum, dorsal aspect; 235, part of fore wing. 229, 230, 232, 233: 1.5 ×; 231, 234: scale-line (= 1 ×); 235: 0.5 ×.



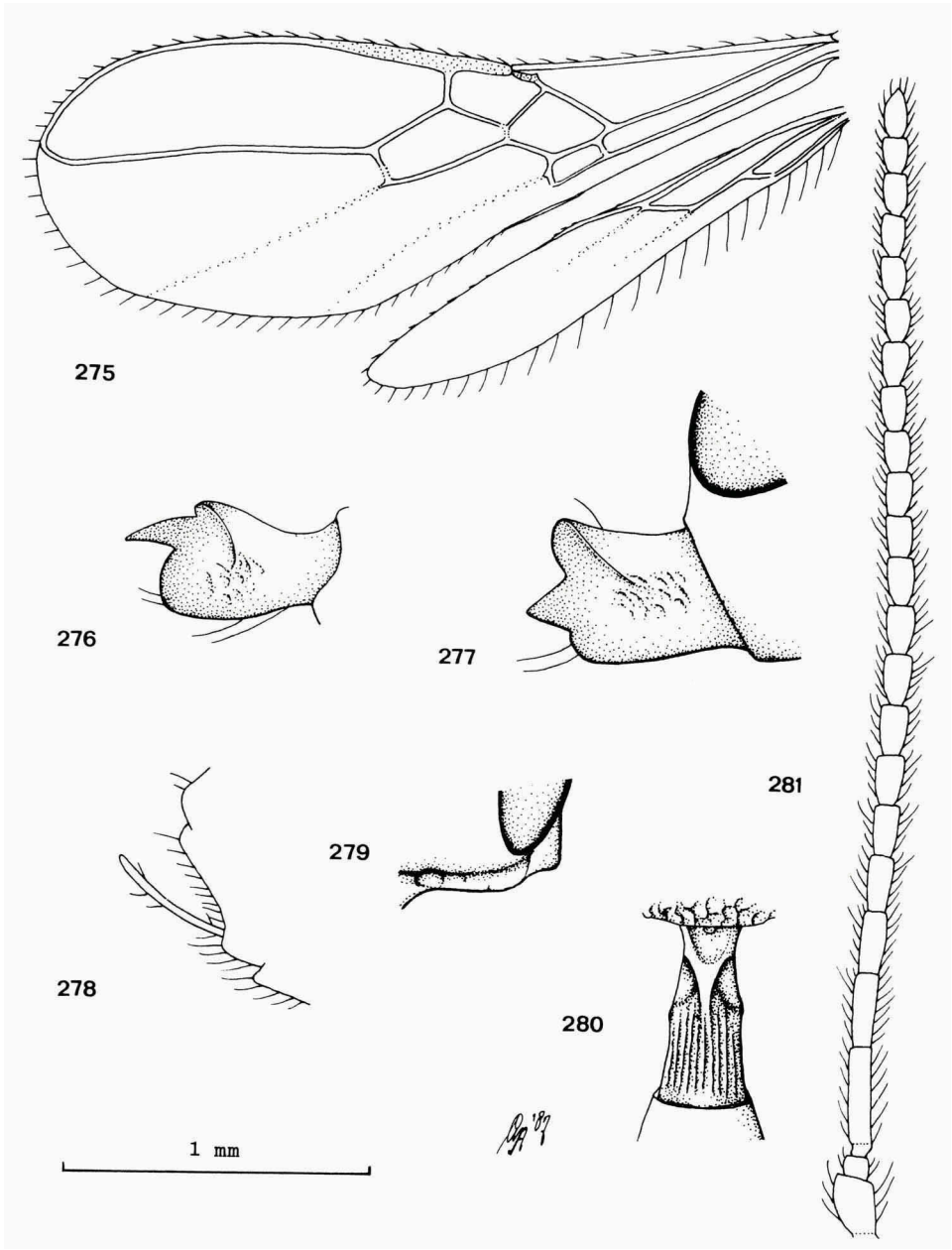
Figs. 236-248, *Phaenocarpa canaliculata* Stelfox, ♀, holotype. 236, habitus, lateral aspect; 237, antenna; 238, apex of antenna; 239, wings; 240, base of antenna; 241, first metasomal tergite, dorsal aspect; 242, head, frontal aspect; 243, mandible, full sight on third tooth; 244, mandible, full sight on first tooth; 245, first subdiscal cell of fore wing; 246, hind leg; 247, head, dorsal aspect; 248, mesosoma, dorsal aspect. 236, 237, 239, 246: scale-line (= 1 ×); 238, 240, 243-245: 2.5 ×; 241, 242, 247, 248: 1.5 ×.



Figs. 249-261, *Phaenocarpa tacita* Stelfox, ♀, holotype. 249, habitus, lateral aspect; 250, base of antenna; 251, apex of antenna; 252, mandible, full sight on third tooth; 253, mandible, full sight on first tooth; 254, wings; 255, head, frontal aspect; 256, thorax, dorsal aspect; 257, propodeum and first metasomal tergite, dorsal aspect; 258, head, dorsal aspect; 259, hind leg; 260, hind claw; 261, first subdiscal cell of fore wing. 249, 254, 259: scale-line (= 1 ×); 250-253, 260, 261: 2.5 ×; 255-258: 1.6 ×.



Figs. 262-274, *Eudinostigma alox* spec. nov., ♂, holotype. 262, habitus, lateral aspect; 263, wings; 264, head, lateral aspect; 265, mandible, full sight on first tooth; 266, mandible, full sight on third tooth; 267, thorax, dorsal aspect; 268, head, dorsal aspect; 269, head, frontal aspect; 270, first subdiscal cell of fore wing; 271, apex of antenna; 272, propodeum and first metasomal tergite, dorsal aspect; 273, hind leg; 274, middle claw. 262, 263, 273: scale-line (= 1 ×); 264, 267-269, 272: 2 ×; 265, 266, 270, 271, 274: 2.5 ×.



Figs. 275-281, *Panerema fulvicornis* (Haliday), ♀, holotype. 275, wings; 276, mandible, full sight on third tooth; 277, id., full sight on first tooth; 278, apex of metasoma, lateral aspect; 279, detail of malar space; 280, first metasomal tergite, dorsal aspect; 281, antenna. 275: scale-line (= 1 ×); 276, 277: 3 ×; 278, 280, 281: 1.3 ×; 279: 2 ×.