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Revisions of Nearctic Tersilochinae II. Genera *Allophrys* Förster, *Barycnemis* Förster, *Ctenophion* gen. nov., *Sathropterus* Förster, *Spinolochus* Horstmann and *Stethantyx* Townes

(Hymenoptera, Ichneumonidae)

Klaus Horstmann

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Twenty-one Nearctic species of the genera *Allophrys* Förster, *Barycnemis* Förster, *Ctenophion* gen. nov., *Sathropterus* Förster, *Spinolochus* Horstmann and *Stethantyx* Townes are revised, and most of them are described. Seven species and one subspecies are described as new: *Allophrys divaricata*, *Barycnemis brevicauda*, *B. longicauda*, *B. rufipes*, *B. rugosa occidentalis*, *B. striata*, *Ctenophion niger* and *Stethantyx crassa*.

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Introduction

In a first paper, the original descriptions of the species of Tersilochinae described from the Nearctic region were cited and their types were revised (Horstmann 2001). The genera treated in this second part are not closely related. *Barycnemis* Förster, *Ctenophion* gen. nov. and *Spinolochus* Horstmann may represent specialized species groups of *Probles* Förster, and *Sathropterus* Förster may represent a specialized species group of *Diaparsis* Förster. The relations of *Allophrys* Förster and *Stethantyx* Townes are unclear. Type revisions of species were published by Horstmann (1971, 1981, 2001).

In general terminology follows Townes (1969: 36 ff.). Some additional characters and indices used for the differentiation of species are defined here. The height of the head is defined as the distance between the upper contour of the vertex (between the lateral ocelli) and the lower edge of the clypeus. The ocellar index is defined as the ratio of the shortest distance between the eye and the lateral ocellus to the longest diameter of the lateral ocellus. The malar space

index is defined as the ratio of the shortest distance between the rim bordering the mandibular groove and the eye (= malar space) to the basal width of a mandible. The measurements of the 1st flagellar segment include the annellus. The length of the thorax is defined as the distance between the anterior edge of the mesoscutum and the posterior edge of the propodeum. The furrow on the mesopleurum, called the sternaulus by most previous authors, is called the foveate groove, following Townes (1971: 33). The spiracular carina is the carina connecting the propodeal spiracle with the pleural carina. The term thyridium is restricted to a semicircular, oval or elongated plate near the anterior edge on either side of the 2nd gastral tergite, which is defined by a change in the sculpture of the surface (slightly granulate instead of smooth) (as described and figured by Townes 1969: 40–41). In the Tersilochinae, the thyridium is situated in a depressed area, which usually is connected with the anterior edge of the tergite and which is called here the thyridial depression (contrary to previous authors, who used the term thyridium for this area). The length of the

ovipositor is measured as the distance between the base and the tip of the upper valve, following the curves of the ovipositor. In addition, the length of the ovipositor sheath is measured (visible length, in normal position), but in many specimens this character is difficult to ascertain, because the base of the sheath is often retracted.

Materials

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Abbreviations of depositories

AEI	American Entomological Institute, Gainesville (including Dasch collection)
CAM	Museum of Comparative Zoology, Harvard University, Cambridge (Mass.)
FRA	Department of Entomology, California Academy of Sciences, San Francisco
HOR	Coll. K. Horstmann, Würzburg
ITH	Department of Entomology, Cornell University, Ithaca
LAN	Department of Entomology, Michigan State University, East Lansing
LAV	Université Laval, Sainte-Foy (Quebec)
NHM	Department of Entomology, Natural History Museum, London
NUH	Coll. T. P. Nuhn (then Raleigh, North Carolina)
OTT	Canadian National Collection of Insects, Agriculture and Agri-Food Canada, Ottawa
TEX	Department of Entomology, Texas A & M University, College Station
WAH	Coll. D. B. Wahl, Gainesville
WAS	Systematic Entomology Laboratory, Smithsonian Institution, Washington D.C.
ZSM	Zoologische Staatssammlung, München

Taxonomy

Allophrys Förster

Allophrys Förster, 1869. Type species: *Thersilochus oculatus* Ashmead.

Allophrys Förster is a small genus with a few species known from the Old and New World tropics. It was re-described by Townes (1971: 45) and Gauld (1984: 309). The only named species is *A. oculata* (Ashmead) from the West Indian Islands (Grenada, St. Vincent). The species described here is frequently found in Florida, a few specimens were collected in Georgia, Louisiana, South Carolina and Texas (USA), and additional material was collected in Mexico, Trinidad-Tobago and Argentina. *A. oculata* and the new species differ by the following characters:

A. divaricata spec. nov. ♀: Lateral part of the pronotum and the mesopleurum reddish brown or brown. Propodeum black or dark brown dorsally (propodeum always darker than mesopleurum). ♂: Eye very large, ratio of the shortest distance between the inner margins of the eyes to the longest distance between the outer contours of the eyes 0.14-0.18, eye touching the lateral ocellus, distant from the median ocellus by half the diameter of the median ocellus (Fig. 2). Thorax and propodeum black, sometimes the lateral part of the pronotum and the mesopleurum tinged with brown, rarely the mesoscutum tinged with brown.

A. oculata (Ashmead) ♀: Lateral part of the pronotum, mesopleurum and propodeum reddish brown. ♂: Eye large, ratio of the shortest distance between the inner margins of the eyes to the longest distance between the outer contours of the eyes 0.23, ocellar index 0.3, eye distant from the median ocellus by the diameter of the median ocellus (Fig. 1). Thorax and propodeum reddish brown.

Allophrys divaricata spec. nov.

Holotype (♀): "Miami, Fla.", "O.D. Link Coll. 16154", "in trap" (Florida, USA) (AEI). – Paratypes (178♀♀, 66♂♂): USA: Florida: Archbold Biological Station (AEI, WAH), Big Pine Key (AEI), Bradenton (AEI), Everglades National Park (AEI), Fat Deer Key (AEI), Fort Myers (ZSM), Fort Ogden (OTT), Gainesville (AEI, TEX, WAH), Gold Head Branch State Park (WAS), Jacksonville (WAS), Judjoe Key (AEI), Lake Placid (AEI, WAH), Longwood (OTT), Miami (AEI), Myakka (TEX), No Name Key (AEI), Pennecamp State Park (AEI), Poe Springs (HOR, WAS), Rocksprings (OTT), St. Petersburg (AEI); Georgia: Sapelo Island (AEI, WAH); Louisiana: Kisatchie (TEX); South Carolina: Greenville (AEI), Hilton Head Island (OTT), Pendleton (AEI), Simpson Agriculture

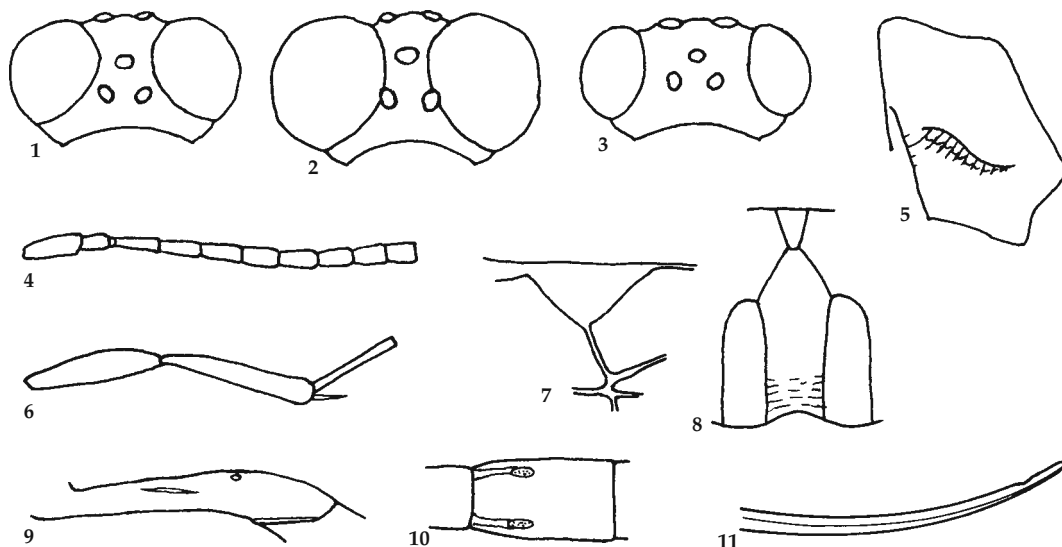


Fig. 1. *Allophrys oculata* (Ashmead) (♂). Head, top view.

Fig. 2-11. *Allophrys divaricata* spec. nov. 2. ♂, Head, top view. 3-11. ♀. 3. Head, top view. 4. Base of antenna. 5. Mesopleurum. 6. Hind femur, tibia and basitarsus. 7. Pterostigma and areolet. 8. Propodeum, top view. 9. 1st gastral segment, side view. 10. 2nd gastral tergite, top view. 11. Ovipositor, side view.

Experimental Station (WAS); Texas: Cypress Creek (TEX), Hemphill (TEX), Lick Creek Park (TEX), Long Hollow Creek (TEX). Mexico: Tamaulipas: Ciudad Victoria (FRA). Trinidad-Tobago: Sangre Grande (AEI). Argentina: Tucumán: Horco Molle (AEI). Flight period in the United States: almost all through the year, with peaks in xii-i, iv-vii and ix-x. Perhaps three generations can be assumed.

♀: Body length 2.5-3 mm. Temples strongly constricted behind the eyes, 0.37 times as long as the width of an eye, tangential lines on eyes and temples intersect on the middle of the mesoscutum (Fig. 3). Ratio of the shortest distance between the inner margins of the eyes to the longest distance between the outer contours of the eyes 0.50. Ocellar index 1.6-1.8. Face 1.1 times as wide as the frons. Malar space index 1.0. Clypeus large, 1.2 times as long as the face, 2.5 times as wide as long, convex dorsally, flat ventrally, with fine sculpture dorsally, smooth medially and ventrally, its apex rounded, blunt, with a transverse row of small punctures. Mandible slender, upper tooth distinctly the longer. Glossa 0.4 times as long as the width of the clypeus. Oral carina complete. Face and frons very finely granulate, shining, a very fine punctation hardly visible, face smooth centrally. Vertex and temple with very fine dispersed punctures on a smooth background. Flagellum with 15 segments, filiform, 1st segment 2.8 times, 2nd segment 2.3 times, median segments and the penultimate segment 1.4 times as long as

wide (Fig. 4). Thorax short, 2.0 times as long as the width of the mesoscutum. Prothorax finely granulate laterally. Mesoscutum and scutellum finely granulate, shining, with very fine dispersed punctures. Notaulus distinct anteriorly, bordered by a fine carina on the inner side, extending to 0.2 the length of the mesoscutum. Mesopleurum finely granulate, with very fine dispersed punctures. Foveate groove distinct, very oblique, as a rather long row of small grooves (Fig. 5). Mesosternum almost smooth, with very fine dispersed punctures. Metapleurum finely granulate, a very fine punctation hardly visible. Hind legs slender, femur 4.5 times as long as high, 0.9 times as long as tibia, basitarsus 0.6 times as long as tibia. Longer hind tibial spur almost straight apically, 0.25 times as long as the basitarsus (Fig. 6). Hind tarsal claws slender, slightly longer than the empodium, not pectinate. Pterostigma 1.8 times as long as wide. Metacarpus almost reaching the tip of the front wing. Intercubitus short, slightly or distinctly basad of the 2nd recurrent vein (Fig. 7). Nervellus strongly reclivous. Propodeum granulate, with distinct carinae. Basal area trapezoid, about 1.3 times as long as wide, 0.25 times as long as the petiolar area, sometimes the lateral carinae partly covered with wrinkles. Petiolar area distinctly bordered laterally, with fine transverse striae or granulate-strigose posteriorly (Fig. 8). Propodeal spiracle separated from the pleural carina by 1.5-2 times its diameter, the spiracular carina narrow. 1st gastral tergite 4.1

times as long as wide, smooth. Petiole 1.7 times as long as postpetiole, almost circular in cross-section, without longitudinal carinae or glymmae, with long narrow lateral areas. Postpetiole 1.6 times as long as wide, rounded dorsally, with almost straight parallel contours laterally. 1st sternite clearly surpassing the spiracles (Fig. 9). 2nd tergite 1.7 times as long as wide. Thyridium elongated, clearly distant from the anterior edge of the 2nd tergite, thyridial depression indistinct anteriorly, 3-4 times as long as wide (Fig. 10). Gaster strongly compressed posteriorly. Gastral tergites incised posteriorly from the 3rd tergite onwards. Ovipositor 1.9 times as long as 1st gastral tergite, slender, somewhat higher than wide, slightly and evenly bent upwards, with a shallow rounded dorsal depression subapically (Fig. 11). Ovipositor sheath 1.1 times as long as 1st tergite.

Colour: Head for the greater part dark brown. Palpi and glossa whitish. Mandible (teeth brown), clypeus (base narrowly brown), scape and basal half of flagellum yellowish or yellowish brown. Gena tinged with yellow. Apical half of flagellum dark brown. Mesoscutum and scutellum dark brown or black. Tegula yellowish. Pterostigma dark brown. Lateral part of pronotum, mesopleurum and mesosternum reddish brown or brown. Metapleurum brown. Legs yellowish or yellowish brown. Propodeum dark brown or black. 1st gastral tergite yellowish brown or reddish brown, postpetiole often darkened posteriorly. The following tergites yellowish brown, often the 2nd tergite darkened anteriorly, sometimes other tergites tinged with brown or black too. Sometimes the gaster completely brown or dark brown.

♂: Eye very large, ratio of the shortest distance between the inner margins of the eyes to the longest distance between the outer contours of the eyes 0.14-0.18, eye touching the lateral ocellus, distant from the median ocellus by half the diameter of the median ocellus (Fig. 2). Temple 0.24 times as long as the width of an eye. Malar space index 0.6. Gena black. Thorax black, rarely lateral part of pronotum und mesopleurum tinged with brown. Gaster for the greater part black, petiole usually yellowish brown or brown, posterior part of 2nd tergite and anterior part of 3rd tergite usually reddish brown or brown. In other characters similar to the ♀.

Host: Thespecies was reared in Trinidad-Tobago from an undetermined species of Nitidulidae (Coleoptera) in fallen guava fruits (*Psidium guajava* L.; Myrtaceae) (Williams et al. 1984: 55 and 58) (a pair in AEL).

Barycnemis Förster

Barycnemis Förster, 1869. Type species: *Porizon claviventris* Gravenhorst.

Leptopygus Förster, 1869. Type species: *Ichneumon harpurus* Schrank.

Cratophion Thomson, 1889. Type species: *Porizon gravipes* Gravenhorst.

Cyrtophion Thomson, 1889. Type species: *Porizon agilis* Holmgren (Horstmann 2005: 1260).

Zasterناولax Viereck, 1912. Type species: *Zasterناولax simplicicornis* Viereck.

Porizonidea Viereck, 1914. Type species: *Ichneumon exhaustator* Fabricius (Carlson 1979: 693).

Barycnemis is a medium-sized Holarctic genus, with two species from Mexico described by Khalaim (2002). The genus was re-described by Townes (1971: 39) and Horstmann (1981: 50 f.). Seven of the thirteen Nearctic species treated here were described from Europe, two were described from the Nearctic region by previous authors, and four are newly described. The species are variable and the determination of males is often difficult.

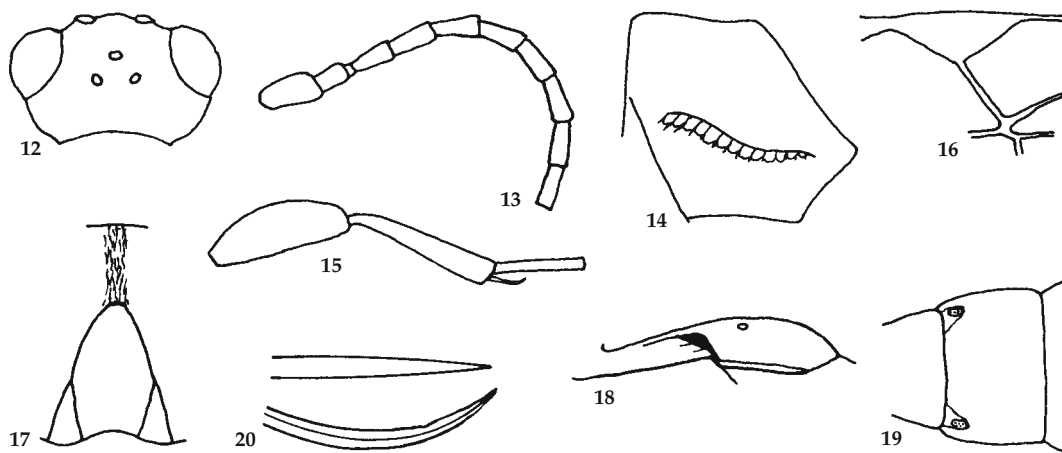
The Nearctic species can be placed into five species groups, which correspond to the genera cited above as synonyms (exception: *Porizonidea* Viereck, the type species of which does not occur in North America). *Barycnemis* Förster s. str.: *bellator* (Müller), *confusa* Horstmann, *frigida* Schwarz. *Leptopygus* Förster: *harpura* (Schrank), *rugosa* (Provancher). *Cratophion* Thomson: *gravipes* (Gravenhorst). *Cyrtophion* Thomson: *agilis* (Holmgren). *Zasterناولax* Viereck: *brevicauda* spec. nov., *dissimilis* (Gravenhorst), *linearis* Ashmead, *longicauda* spec. nov., *rufipes* spec. nov., *striata* spec. nov. The distinguishing characters are noted in the key to females. Among these species groups and species, *B. (Cyrtophion) agilis* (Holmgren) is the most isolated. Probably *Cyrtophion* merits subgenus or even genus rank.

The following character states apply to all species discussed here and are not repeated in the descriptions: Apex of clypeus rounded, blunt, with a transverse row of punctures. Upper mandibular tooth the longer. Oral carina obliterated. Upper end of the prepectal carina bent forwards and almost reaching the front margin of the mesopleurum. Hind tarsal claws not pectinate. Glymma situated at the posterior end of the petiole, connected with the ventrolateral furrow of the postpetiole (exception: ♂ of *B. rufipes*).

Key to females

1. Hind basitarsus 0.5-0.7 times as long as hind tibia (Figs 15, 79, 125).....2.
 - Hind basitarsus 0.9-1.2 times as long as hind tibia (Figs 24, 35, 44, 58, 69, 95, 106, 115, 136).....5.
2. Gaster stout, postpetiole at most as long as wide, 2nd tergite wider than long (Figs 19, 83). Ovipositor specialized, distinctly bent upwards over its total length (Figs 20, 84).3.
 - Gaster slender, postpetiole and 2nd tergite distinctly longer than wide (Fig. 129). Ovipositor slender, slightly compressed, slightly bent upwards proximally, distinctly bent upwards distally (Figs 87, 130).4.
3. Temple with fine and very dispersed punctures. Posterior gastral tergites with conspicuous long hairs. Ovipositor slender, slightly depressed medially (Fig. 20).....*agilis* (Holmgren)
 - Temple with strong and rather dense or dispersed punctures. Hairs of the posterior gastral tergites inconspicuous. Ovipositor stout, slightly compressed (oval) in cross-section, not tapered until subapically (Fig. 84).....*gravipes* (Gravenhorst)
4. Ovipositor with a shallow rounded dorsal depression subapically (Fig. 87).*harpura* (Schrank)
 - Ovipositor with a conspicuous triangular dorsal incision subapically (Fig. 130).*rugosa* (Provancher)
5. 1st gastral tergite stout, petiole 1.0-1.2 times as long as postpetiole (Figs 27, 47, 72). Ovipositor stout, not tapered from base to middle, basally at least twice as high as the width of a hind basitarsus (Figs 29, 49, 74).6.
 - 1st gastral tergite slender, petiole at least 1.2 times as long as postpetiole (Figs 38, 61, 98, 109, 118, 139). Ovipositor slender, basally at most 1.5 times as high as the width of a hind basitarsus (Figs 40, 63, 100, 111, 120, 141).8.
6. Metapleurum granulate. Lateral area of propodeum with dispersed punctures on a distinctly granulate background, sometimes with a few additional fine wrinkles. Ovipositor distinctly tapered from middle to apex (Fig. 49).*confusa* Horstmann
 - Metapleurum with fine dense punctures or fine wrinkles on a slightly granulate and shining background. Lateral area of propodeum punctate and/or wrinkled on a smooth background. Ovipositor distinctly bent upwards over its total length, not or only slightly tapered until subapically (Figs 29, 74).7.
7. Mesopleurum with fine punctures on a smooth background in the anterior dorsal corner, at most with a few fine wrinkles. Lateral part of petiole smooth anteriorly, with longitudinal striae posteriorly (Fig. 27). Ovipositor 1.7-2.1 times, ovipositor sheath 1.0-1.2 times as long as 1st gastral tergite.*bellator* (Müller)
 - Mesopleurum distinctly rugose in the anterior dorsal corner, a punctation hardly visible. Lateral part of petiole with longitudinal wrinkles over its total length (Fig. 72). Ovipositor 1.3 times, ovipositor sheath 0.7 times as long as 1st gastral tergite.*frigida* Schwarz
8. Metapleurum granulate, dull, with fine dispersed punctures (sometimes hardly visible). Lateral area of propodeum granulate, with additional fine punctures.9.
 - Metapleurum often with distinct punctures or fine wrinkles on a slightly sculptured and shining background. Lateral area of propodeum partly smooth and strongly shining.....10.
9. 2nd flagellar segment about 2.5 times as long as wide (Fig. 56). Mesopleurum smooth centrally. Hind coxa dark brown or black basally and medially. Hind basitarsus 1.1 times as long as hind tibia (Fig. 58).*dissimilis* (Gravenhorst)
 - 2nd flagellar segment 3.0-3.5 times as long as wide (Fig. 113). Mesopleurum slightly or distinctly granulate centrally. Hind coxa yellowish red. Hind basitarsus 0.9-1.0 times as long as hind tibia (Fig. 115).....*rufipes* spec. nov.
10. Head 0.9-1.1 times as high as wide (Figs 91-92). Hind femur 2.5-3.6 times as long as high (Fig. 95). Basal area of propodeum 2.0-2.6 times as long as petiolar area (Fig. 97). Ovipositor 1.6-1.9 times, ovipositor sheath 1.0-1.2 times as long as 1st gastral tergite.*linearis* Ashmead
 - Head 0.85-0.95 times as high as wide. Hind femur often slenderer. Basal area of propodeum 1.3-1.9 times as long as petiolar area (Figs 37, 108, 138). Ovipositor longer or shorter.....11.
11. Ovipositor 1.5 times, ovipositor sheath 0.9 times as long as 1st gastral tergite. Ovipositor slightly bent upwards proximally, distinctly bent upwards distally (Fig. 40).*brevicauda* spec. nov.
 - Ovipositor 2.0-2.2 times, ovipositor sheath 1.3-1.6 times as long as 1st gastral tergite. Ovipositor evenly bent upwards over its total length (Figs 111, 141).....12.

12. Petiole almost smooth laterally in front of the glymmae (Fig. 109). Ovipositor 2.0-2.2 times, ovipositor sheath 1.4-1.6 times as long as 1st gastral tergite. *longicauda* spec. nov.
 - Petiole almost completely striate laterally in front of the glymmae (Fig. 139). Ovipositor 2.2 times, ovipositor sheath 1.3-1.4 times as long as 1st gastral tergite. *striata* spec. nov.
- ### Key to males
- Males of *B. brevicauda*, *frigida* and *longicauda* are unknown.
1. Lateral area of propodeum smooth anteriorly and medially, rarely with a few fine punctures or fine wrinkles on a smooth background. 2.
 - Lateral area of propodeum finely or distinctly granulate or distinctly wrinkled. 4.
 2. Flagellum with 18 segments. Basal area of propodeum about 0.8 times as long as the petiolar area (Fig. 17). Posterior gastral tergites with conspicuous long hairs posteriorly. *agilis* (Holmgren)
 - Flagellum with 23-27 segments. Basal area of propodeum 1.3-2.0 times as long as the petiolar area (Figs 102, 138). Posterior gastral tergites with rather short hairs posteriorly. 3.
 3. Basal area of propodeum 1.4-2.0 times as long as the petiolar area (Fig. 102). Petiole with fine striae laterally in front of the glymmae, often smooth anteriorly (Fig. 98). *linearis* Ashmead
 - Basal area of propodeum 1.3 times as long as the petiolar area (Fig. 138). Petiole completely and distinctly striate laterally in front of the glymmae (Fig. 139). *striata* spec. nov.
 4. Metapleurum distinctly granulate, at most with fine punctures. Temple sometimes finely granulate. Mesopleurum often finely granulate. Lateral area of propodeum granulate, sometimes with wrinkles on a granulate background. 5.
 - Metapleurum rugose or densely punctate. Temple and mesopleurum smooth or punctate on a smooth background. Lateral area of propodeum with fine or distinct wrinkles. 7.
 5. Flagellum with 23-24 segments. Temple with a smooth background. Basal area of propodeum 1.2-1.3 times as long as the petiolar area (Fig. 65). *dissimilis* (Gravenhorst)
 - Flagellum with 25-29 segments. Temple sometimes with a finely granulate background. Basal area of propodeum sometimes longer. 6.
 6. Hind coxa for the greater part or completely dark brown or black. Basal area of propodeum 1.2-1.3 times as long as the petiolar area (Fig. 51). Lateral area of propodeum finely granulate and with fine or distinct wrinkles *confusa* Horstmann
 - Hind coxa for the greater part or completely reddish brown. Basal area of propodeum 1.8-2.0 times as long as the petiolar area (Fig. 117). Lateral area of propodeum granulate without wrinkles. *rufipes* spec. nov.
 7. Temples widened, parallel or slightly or distinctly constricted behind the eyes, with distinct rather dense or dispersed punctures (Figs 75-76). Metapleurum with fine dense punctures on a smooth background medially. Basal area of propodeum 0.7 times as long as the petiolar area. Petiolar area with a median longitudinal keel. *gravipes* (Gravenhorst)
 - Temples distinctly constricted behind the eyes, with fine dispersed punctures. Metapleurum rugose or rugose-punctate medially (rarely very densely punctate). Basal area of propodeum 0.9-1.4 times as long as the petiolar area (Figs 31, 88, 131). 8.
 8. Basal area of propodeum 0.9-1.1 times as long as the petiolar area, the latter without a median longitudinal keel (Fig. 88). Petiole 1.6-2.0 times as long as the postpetiole, almost smooth laterally in front of the glymmae (Fig. 89). Flagellum with 27-33 segments. *harpura* (Schrank)
 - Basal area of propodeum 1.2-1.4 times as long as the petiolar area, the latter often with a median longitudinal keel (Figs 31, 131). Petiole 1.2-1.6 times as long as the postpetiole, often with wrinkles or striae laterally in front of the glymmae (Fig. 132). 9.
 9. Body length 4-5 mm. Flagellum with 23-26 segments. Hind coxa for the greater part black. Lateral area of propodeum with rather fine wrinkles. Petiole 1.2-1.4 times as long as the postpetiole. *bellator* (Müller)
 - Body length 5-7 mm. Flagellum with 30-34 segments. Hind coxa for the greater part or completely reddish brown. Lateral area of propodeum with coarse wrinkles (Fig. 131). Petiole 1.4-1.6 times as long as the postpetiole. *rugosa* (Provancher)



Figs 12-20. *Barycnemis agilis* (Holmgren) (♀). 12. Head, top view. 13. Base of antenna. 14. Mesopleurum. 15. Hind femur, tibia and basitarsus. 16. Pterostigma and areolet. 17. Propodeum, top view. 18. 1st gastral segment, side view. 19. 2nd gastral tergite, top view. 20. Ovipositor, top view and side view.

Barycnemis agilis (Holmgren)

♀: Body length 3-3.5 mm. Temples strongly constricted behind the eyes, 0.7 times as long as the width of an eye, tangential lines on eyes and temples intersect on the posterior half of the mesoscutum (Fig. 12). Ocellar index 3.0. Face 0.9 times as wide as the frons. Malar space index 0.9. Clypeus 2.4 times as wide as long, convex basally and medially, almost flat subapically, smooth, with a few large punctures basally. Glossa 0.7 times as long as the width of the clypeus. Face finely granulate and with very fine punctures laterally, with very fine and dispersed punctures on a smooth background medially. Frons, vertex and temple with very fine dispersed punctures on a smooth background. Flagellum with 18-20 segments, filiform, 1st segment 2.5 times, 2nd segment 2.3 times, median segments 2.0 times, the penultimate segment 1.6 times as long as wide (Fig. 13). Thorax short, 2.5 times as long as the width of the mesoscutum. Pronotum with fine dispersed or rather dense punctures on a smooth background dorsolaterally, with wrinkles ventro-laterally. Mesoscutum in most parts with fine dispersed punctures on a smooth background, finely granulate laterally, with an almost smooth area centrally. Notaulus as a small groove, distant from the anterior edge of the mesoscutum. Prescutellar groove with fine striae. Scutellum bordered by carinae on the anterior 0.3, with fine punctures on a smooth background. Mesopleurum shining, finely granulate and with fine dispersed punctures centrally, speculum smooth. Foveate groove curved, as a rather long row of small grooves (length variable), not parallel with the ven-

tral edge of the mesopleurum (Fig. 14). Mesosternum almost smooth, with very fine dispersed punctures. Metapleurum shining, finely granulate and with fine punctures and wrinkles. Hind leg stout, femur 3.0 times as long as high, 0.9 times as long as tibia, basitarsus half as long as tibia. Longer hind tibial spur distinctly curved apically, 0.45 times as long as the basitarsus (Fig. 15). Hind tarsal claws slightly longer than empodium. Pterostigma 2.3 times as long as wide. Metacarpus reaching half the distance to the tip of the wing. Intercubitus short, basad of the 2nd recurrent vein (Fig. 16). Nervellus slightly reclivous. Basal area of propodeum about three times as long as wide, 0.6 times as long as the petiolar area, not distinctly bordered laterally, covered with wrinkles. Lateral area shining, with distinct fine punctures on a smooth or slightly granulate background. Petiolar area finely bordered laterally, with fine irregular wrinkles (Fig. 17). Propodeal spiracle separated from the pleural carina by its diameter, the spiracular carina narrow. 1st gastral tergite 2.3 times as long as wide. Petiole 1.3 times as long as postpetiole, almost flat and for the greater part smooth dorsally, with some wrinkles between the spiracles, with dorsolateral carinae, with large glymmae, almost smooth and with only short longitudinal striae laterally in front of the glymmae. Postpetiole about as long as wide, rounded dorsally, for the greater part smooth, with some wrinkles anteriorly, with divergent contours laterally. 1st sternite not reaching the spiracles (Fig. 18). 2nd tergite 0.6 times as long as wide. Thyridium small, oval, close to the anterior edge of the 2nd tergite, thyridial depression about as long as wide (Fig. 19). Gaster stout and somewhat

clavate posteriorly, not distinctly compressed. 6th and 7th tergites distinctly incised posteriorly. 7th and 8th tergites with conspicuous long hairs posteriorly. Ovipositor 1.8 times as long as the 1st gastral tergite, distinctly bent upwards over almost its total length, slender in lateral view, depressed medially, a very shallow rounded dorsal depression hardly visible subapically (Fig. 20). Ovipositor sheath 0.9 times as long as the 1st tergite.

Colour: Black. Palpi, Mandible (teeth light brown), scape, pedicellus, tegula and legs yellowish brown or reddish brown. Clypeus yellowish brown or brown medially and apically. Scape sometimes dark brown dorsally. Flagellum dark brown. Upper hind corner of pronotum tinged with brown. Hind coxa brown or dark brown basally. Pterostigma light brown or medium brown. Gastral tergites from the 2nd tergite onwards reddish brown or dark brown.

♂: Temples slightly less constricted behind the eyes, tangential lines on eyes and temples intersect on the scutellum. Flagellum with 18 segments, 1st segment 1.9 times, 2nd segment 1.5 times, middle segments 1.5 times, penultimate segment 1.3 times as long as wide. Hind coxa almost not darkened basally. Longer hind tibial spur slightly curved apically. Basal area of propodeum 0.8 times as long as the petiolar area. In other characters similar to the ♀.

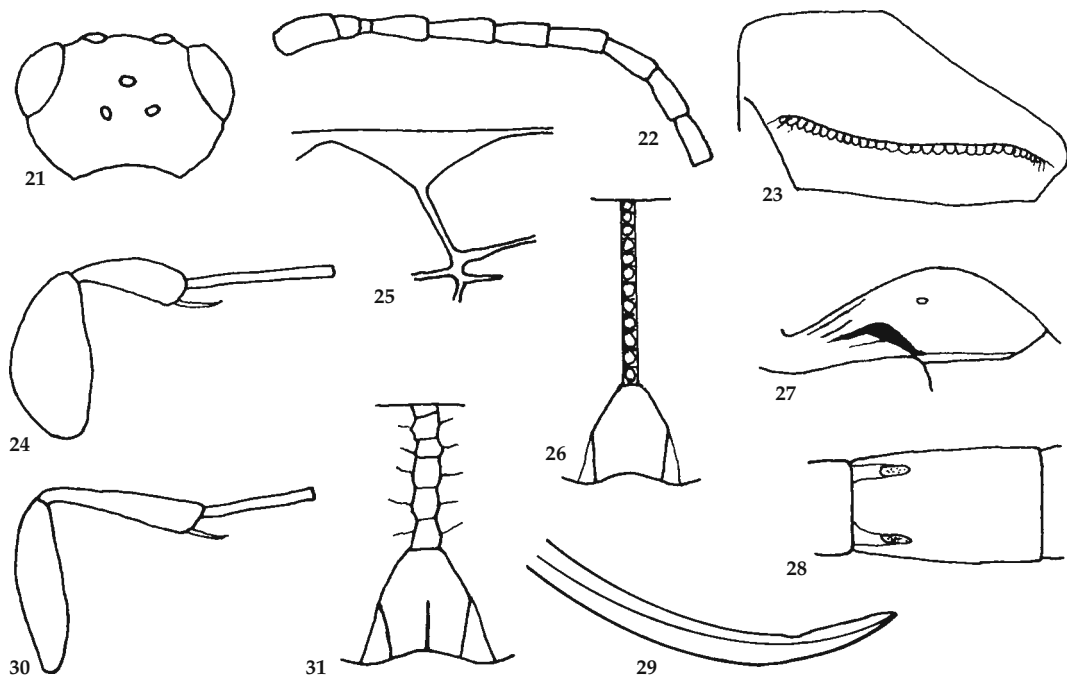
Taxonomic remark: The specimens from North America are less distinctly granulate than those from Europe (frons, mesoscutum, mesopleurum, metapleurum, lateral areas of propodeum), but the differences are inconspicuous, and other differences could not be found.

Material (114♀, 17♂): Canada: Alberta (OTT); British Columbia (AEI, OTT); Labrador (OTT); Newfoundland (OTT); Northwest Territories (Fort Simpson) (OTT); Nova Scotia (ITH); Ontario (OTT); Quebec (OTT); Yukon (AEI, OTT). USA: Alaska (AEI, OTT, WAS); California (WAH); Colorado (AEI, TEX); Idaho (CAM); Michigan (AEI, LAN); Oregon (AEI); Washington (AEI, CAM); Wyoming (LAN, TEX). Flight period: vi-viii (1 ♀ in ix), with a distinct peak in viii. Most probably the species is univoltine. In California, 1 ♀ was collected at about 3600 m a.s.l. (WAH).

***Barycnemis bellator* (Müller)**
(syn. *Barycnemis slossonae* Cushman)

♀: Body length 3.5-5 mm. Temples strongly constricted behind the eyes, 0.95 times as long as the width of an eye, tangential lines on eyes and temples intersect on the middle of the mesoscutum (Fig. 21). Ocellar index 3.0. Face 0.9 times as wide as the frons. Malar space index 1.0. Clypeus convex

basally and medially, almost flat apically, 2.7 times as wide as long, smooth, with a few distinct punctures basally. Glossa 0.6 times as long as the width of the clypeus. Face smooth medially and laterally, very finely granulate and with fine dispersed punctures sublaterally. Frons, vertex and temple with very fine dispersed punctures on a smooth background. Flagellum with 22-24 segments, filiform, 1st segment 2.4 times, 2nd segment 2.4 times, median segments 1.7 times, the penultimate segment 1.2 times as long as wide (Fig. 22). Thorax slender, 2.9 times as long as the width of the mesoscutum. Pronotum with fine rather dense punctures on a smooth background dorsolaterally, with wrinkles ventrolaterally. Mesoscutum finely granulate and with fine dispersed punctures, with a smooth background frontally and sublaterally. Notaulus as a distinct furrow, extending to 0.25 the length of the mesoscutum. Prescutellar groove with very fine sculpture. Scutellum bordered by carinae on the anterior 0.3, almost smooth, with very fine sculpture. Mesopleurum elongated, for the greater part smooth, shining, with very dispersed punctures, with rather dense punctures and a few wrinkles in the upper anterior corner. Foveate groove as a long narrow furrow, slightly S-shaped, parallel with the ventral edge of the mesopleurum (Fig. 23). Mesosternum almost smooth, with fine dispersed punctures. Metapleurum very finely granulate and with fine dense punctures, somewhat shining. Hind leg stout, femur 2.2 times as long as high, 1.5 times as long as tibia, basitarsus 1.3 times as long as tibia. Longer hind tibial spur distinctly curved apically, 0.3 times as long as the basitarsus (Fig. 24). Hind tarsal claws rather short. Pterostigma 2.5 times as long as wide. Metacarpus reaching 0.6 times the distance to the tip of the wing. Intercubitus distinctly basad of the 2nd recurrent vein, sometimes reduced to a point or completely obliterated (Fig. 25). Nervellus slightly reclivous. Propodeum long. Basal area as a narrow furrow, about 15 times as long as wide, not bordered by lateral carinae, with transverse wrinkles, 1.8 times as long as the petiolar area. Lateral area rather smooth dorsally beside the basal area, with dense punctures and some wrinkles dorsolaterally, almost smooth and with dispersed punctures ventrolaterally. Petiolar area bordered laterally, with fine irregular wrinkles (Fig. 26). Propodeal spiracle separated from the pleural carina by half its diameter, the spiracular carina broad. 1st gastral tergite 3.0 times as long as wide. Petiole 1.1-1.2 times as long as postpetiole, slightly depressed dorsally, smooth or with a few fine longitudinal striae in the depression, with strong dorsolateral carinae, with large glymmae and with a short furrow and some short or long striae laterally in front of the glymmae. A shorter or longer lateral part of the petiole often smooth ante-



Figs 21-31. *Barycnemis bellator* (Müller). 21-29. ♀. 21. Head, top view. 22. Base of antenna. 23. Mesopleurum. 24. Hind femur, tibia and basitarsus. 25. Pterostigma and areolet. 26. Propodeum, top view. 27. 1st gastral segment, side view. 28. 2nd gastral tergite, top view. 29. Ovipositor, side view. 30-31. ♂. 30. Hind femur, tibia and basitarsus. 31. Propodeum, top view.

riorly. Postpetiole about 1.5 times as long as wide, rounded or with a small depression dorsally, with almost parallel contours laterally, smooth or with fine longitudinal striae dorsally and laterally. 1st sternite reaching the spiracles (Fig. 27). 2nd tergite 1.6 times as long as wide. Thyridium elongated, distinctly distant from the anterior edge of the 2nd tergite, thyridial depression about 2.5 times as long as wide (Fig. 28). Gaster not compressed and slightly clavate posteriorly. Gastral tergites from the 3rd tergite onwards emarginate posteriorly. Ovipositor 1.7-2.1 times as long as 1st gastral tergite, thick, slightly compressed (oval) in cross-section, basally about twice as high as the width of a hind basitarsus, distinctly bent upwards over its total length (sometimes less bent upwards proximally than distally), only slightly tapered until subapically (Fig. 29). Ovipositor sheath 1.0-1.2 times as long as 1st tergite.

Colour: Black. Palpi and mandible (teeth brown) yellowish brown or brown. Clypeus tinged with brown apically. Scape and pedicellus brown or dark brown. Flagellum dark brown or black. Tegula brown. Pterostigma medium brown or dark brown, its base and apex narrowly whitish. Legs yellowish brown or reddish brown, the front and mid coxae

marked with black basally, the hind coxae almost completely black. Hind femur often tinged with brown. Gaster behind the 1st gastral segment reddish brown, dorsally marked with black basally (to a variable extent).

♂: Temples less strongly constricted behind the eyes, tangential lines on eyes and temples intersect on the propodeum. Malar space index 0.7. Flagellum with 23-26 segments. Thorax somewhat shorter. Hind leg rather slender, femur 3.4 times as long as high, 0.9 times as long as tibia, basitarsus 0.6 times as long as tibia (Fig. 30). Propodeum shorter. Basal area about five times as long as wide, 1.3-1.4 times as long as the petiolar area, bordered by distinct carinae laterally, with distinct transverse wrinkles. Lateral area with distinct rather fine irregular wrinkles dorsally and dorsolaterally, rarely almost smooth ventrolaterally. Petiolar area with distinct irregular wrinkles, often with a median longitudinal keel (Fig. 31). Gaster rather slender, 1st tergite 3.5 times as long as wide, 2nd tergite 3.1 times as long as wide. Petiole 1.2-1.4 times as long as postpetiole, with fine longitudinal striae dorsally and laterally, often partly smooth anteriorly. All coxae and trochanters often dark

brown. Gaster for the greater part black, the 2nd and 3rd (often also the 4th) tergites marked with reddish brown posteriorly and laterally.

Variation: The length of the 1st gastral segment is variable. In 4 ♀♀ from Alberta, Newfoundland and Nova Scotia (OTT) the petiole is rather long (1.3-1.6 times as long as the postpetiole) and almost smooth laterally in front of the glymmae. In the key, these specimens would run to *B. brevicauda*, but they differ by the shape of the hind legs and of the ovipositor. In 1 ♀ from New Mexico (WAS) the basal area is 2.5 times as long as the petiolar area. This specimen might belong to a separate species.

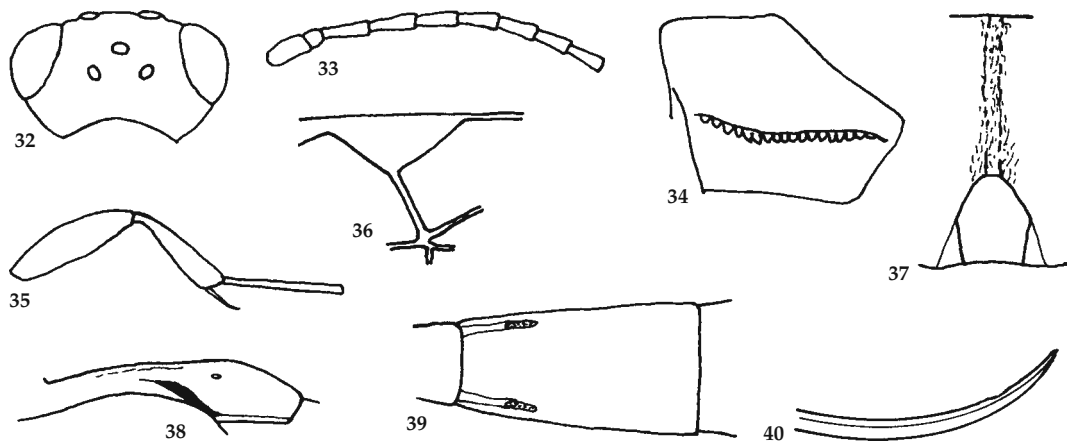
Material (195 ♀♀, 117 ♂♂): Canada: Alberta (OTT); British Columbia (AEI, FRA, OTT, TEX); Labrador (OTT); Manitoba (OTT); Newfoundland (OTT); Northwest Territories (OTT); Nova Scotia (ITH), Ontario (OTT, TEX); Quebec (OTT, WAH); Yukon (AEI, OTT, TEX). USA: Alaska (AEI, OTT, WAS); California (AEI, TEX); Colorado (AEI, CAM, OTT, TEX); Idaho (AEI); Maine (CAM); Michigan (AEI, LAN); Montana (AEI, TEX); New Hampshire (AEI, CAM, OTT, WAS); New York (AEI); Oregon (AEI, LAN, TEX); Utah (TEX); Wyoming (AEI, LAN). Flight period: v-viii, with a peak in vii. Most probably the species is univoltine. Several specimens were collected in Alberta at 2250 m a.s.l. (OTT) and in California and Colorado at 3100-3500 m a.s.l. (AEI, TEX).

Barycnemis brevicauda spec. nov.

Holotype (♀): "Krassel Ida. VII-2-1959", "On Flower", "M. M. Furniss Hopk. 35444F" (Idaho, USA) (WAS). – Paratypes (8 ♀♀): Canada: Alberta: Coleman (TEX), Elkwater (OTT), Vermillon Lake, Banff (WAS); British Columbia: Cassiar Highway (AEI, HOR). USA: Alaska: Isabella Pass, Summit Lake (OTT); Idaho: Moscow Mt. (WAS). Flight period: vi-viii. Most probably the species is univoltine. In Alberta, 1 ♀ was collected at about 1400 m a.s.l. (WAS).

♀: Body length 3-4.5 mm. Temples strongly constricted behind the eyes, 0.7 times as long as the width of an eye, tangential lines on eyes and temples intersect on the middle of the mesoscutum (Fig. 32). Vertex not conspicuously raised, head about 0.9 times as high as wide. Ocellar index 1.6-2.0. Face 0.95 times as wide as the frons. Malar space index 0.6. Clypeus slightly convex dorsally, almost flat medially and subapically, 3.1 times as wide as long, for the greater part smooth, with fine dispersed punctures dorsally. Glossa 0.6 times as long as the width of the clypeus. Face granulate, the central swelling smooth. Frons finely granulate, with very fine dispersed punctures. Vertex and temple with very fine dispersed punctures on a smooth background. Flagellum with 21-23

segments, slender, filiform, 1st segment 3.0 times, 2nd segment 2.3 times, median segments 2.2 times, the penultimate segment 1.6 times as long as wide (Fig. 33). Thorax slender, 2.9 times as long as the width of the mesoscutum. Pronotum with fine dense punctures on a very finely granulate background dorsolaterally, with wrinkles ventrolaterally. Mesoscutum for the greater part granulate, very finely granulate frontally and sublaterally, in these areas with distinct fine punctures. Notaulus as a distinct furrow, extending to 0.25 the length of the mesoscutum. Prescutellar groove with short striae. Scutellum bordered by carinae on the anterior 0.2, with fine punctures on a smooth background. Mesopleurum for the greater part smooth, with a few fine punctures, speculum and a central area without punctures, the upper anterior corner with some fine striae. Foveate groove as a long slightly curved narrow furrow, with transverse wrinkles in the furrow, almost parallel with the ventral edge of the mesopleurum (Fig. 34). Mesosternum almost smooth, with very fine dispersed punctures. Metapleurum finely granulate and with distinct fine punctures. Hind leg rather slender, femur 3.4-3.9 times as long as high, 1.2 times as long as tibia, basitarsus 1.00-1.05 times as long as tibia. Longer hind tibial spur slightly curved apically, 0.3 times as long as the basitarsus (Fig. 35). Hind tarsal claws short. Pterostigma 2.1 times as long as wide. Metacarpus reaching 0.6 times the distance to the tip of the wing. Intercubitus short, basad of the 2nd recurrent vein (Fig. 36). Nervellus strongly reclivous. Propodeum rather long. Basal area bordered by indistinct lateral carinae, about eight times as long as wide, 1.5-1.8 times as long as the petiolar area, with wrinkles inside of and beside the area. Lateral area for the greater part with dispersed or rather dense punctures on a smooth background, with wrinkles or short striae posteriorly. Petiolar area completely bordered laterally, with irregular wrinkles (Fig. 37). Propodeal spiracle separated from the pleural carina by 0.7-1.0 times its diameter, the spiracular carina broad. 1st gastral tergite 3.7 times as long as wide. Petiole 1.6 times as long as postpetiole, flat or slightly depressed and with short or long striae dorsally, with distinct dorsolateral carinae, with rather small glymmae, almost completely smooth or with short striae laterally in front of the glymmae. Postpetiole 1.5 times as long as wide, rounded dorsally, with slightly divergent contours laterally, with fine striae dorsally or dorsally and laterally. 1st sternite reaching or slightly surpassing the spiracles (Fig. 38). 2nd tergite 1.9 times as long as wide. Thyridium elongated, distant from the anterior edge of the 2nd tergite, thyridial depression 3-4 times as long as wide (Fig. 39). Gaster slender, slightly compressed posteriorly. Gastral tergites from the 3rd tergite onwards



Figs 32-40. *Barycnemis brevicauda* spec. nov. (♀). 32. Head, top view. 33. Base of antenna. 34. Mesopleurum. 35. Hind femur, tibia and basitarsus. 36. Pterostigma and areolet. 37. Propodeum, top view. 38. 1st gastral segment, side view. 39. 2nd gastral tergite, top view. 40. Ovipositor, side view.

emarginate posteriorly. Ovipositor 1.5 times as long as 1st gastral tergite, slender, slightly compressed, slightly bent upwards proximally, distinctly bent upwards distally, with a very shallow rounded dorsal depression subapically (Fig. 40). Ovipositor sheath 0.9 times as long as 1st tergite.

Colour: Black. Palpi, mandible (teeth brown), tegula and legs light reddish brown. Clypeus tinged with brown medially and apically. Scape tinged with brown ventrally. Flagellum blackish. Pterostigma medium brown. Hind coxa dark brown basally and medially (to a variable extent). Gastral tergites from the 2nd tergite onwards dark brown or blackish.

♂: unknown.

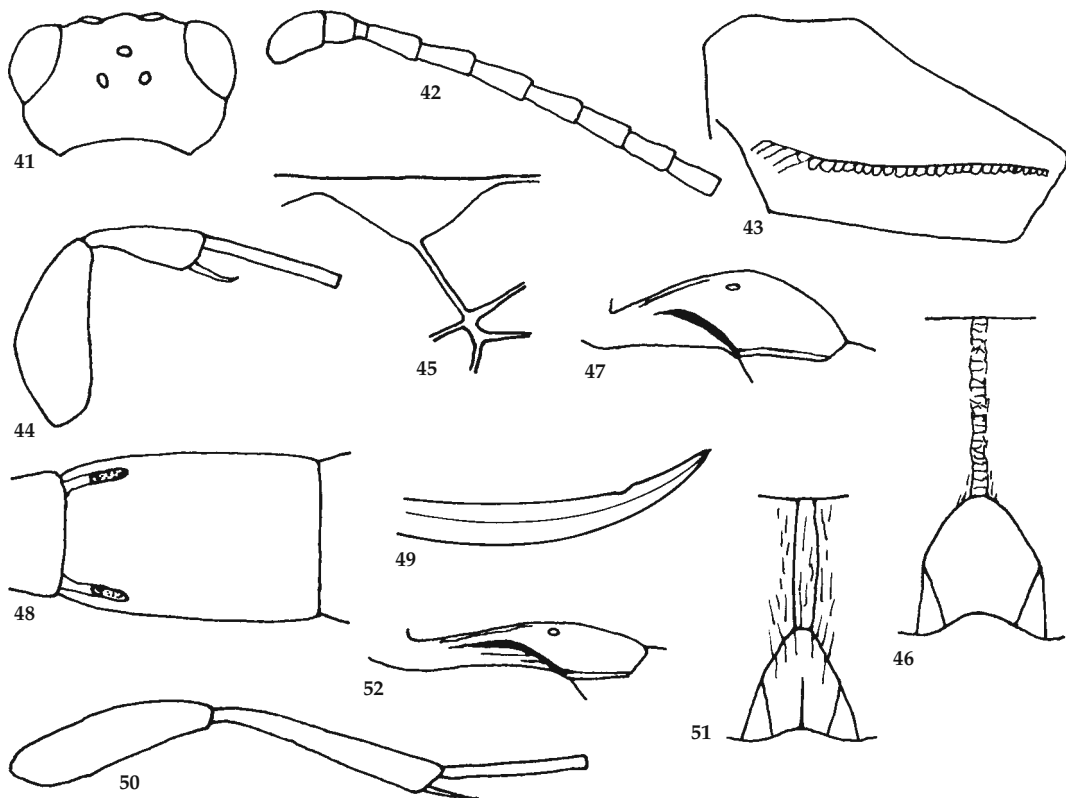
Variation: 1 ♀ from La Grande/Oregon (WAH) is conspicuously larger (body length 5.5 mm).

Taxonomic remark: *B. brevicauda* is similar to *B. tobiasi* Khalaim (from Eastern Russia). In the latter the vertex is distinctly raised (head as high as wide) and the hind femur is much stouter (about 2.9 times as long as high).

Barycnemis confusa Horstmann

♀: Body length 4-5 mm. Temples strongly constricted behind the eyes, 0.7 times as long as the width of an eye, tangential lines on eyes and temples intersect on the middle of the mesoscutum (Fig. 41). Ocellar index 2.4. Face 1.05 times as wide as the frons. Malar space index 0.9. Clypeus 2.8 times as wide as long, slightly convex dorsally, slightly concave subventrally, smooth, with a few punctures dorsally.

Glossa 0.6 times as long as the width of the clypeus. Face granulate, with very fine dispersed punctures, the central swelling shining. Frons and vertex finely granulate, a very fine punctation hardly visible. Temple finely granulate, shining, with fine dispersed punctures. Flagellum with 23-27 segments, filiform, 1st segment 2.2 times, 2nd segment 2.1 times, median segments 1.75 times, the penultimate segment 1.5 times as long as wide (Fig. 42). Thorax elongated, 3.1 times as long as the width of the mesoscutum. Pronotum granulate and with fine rather dense punctures dorsolaterally, with wrinkles ventrolaterally. Mesoscutum granulate, finely granulate and with fine dispersed punctures frontally and sublaterally. Notaulus as a distinct furrow, extending to 0.2 the length of the mesoscutum. Prescutellar groove with fine short striae. Scutellum bordered by carinae on the anterior 0.3, finely granulate and with fine dispersed punctures. Mesopleurum elongated, finely granulate, in small specimens with a smooth background, with fine dispersed punctures, speculum without punctures. Foveate groove as a long almost straight narrow furrow, almost parallel with the ventral edge of the mesopleurum, transversely striate (Fig. 43). Mesosternum with fine dispersed punctures on a very finely granulate background. Metapleurum finely granulate and with fine dispersed punctures. Hind leg stout, femur 2.3 times as long as high, 1.4 times as long as tibia, basitarsus as long as tibia. Longer hind tibial spur distinctly curved apically, 0.35 times as long as the basitarsus (Fig. 44). Hind tarsal claws slightly elongated, distinctly curved apically. Pterostigma 2.7 times as long as wide. Metacarpus reaching 0.7 times the distance to the tip of the wing. Intercubitus short, basad of the 2nd



Figs 41-52. *Barycnemis confusa* Horstmann. 41-49. ♀. 41. Head, top view. 42. Base of antenna. 43. Mesopleurum. 44. Hind femur, tibia and basitarsus. 45. Pterostigma and areolet. 46. Propodeum, top view. 47. 1st gastral segment, side view. 48. 2nd gastral tergite, top view. 49. Ovipositor, side view. 50-52. ♂. 50. Hind femur, tibia and basitarsus. 51. Propodeum, top view. 52. 1st gastral segment, side view.

recurrent vein (Fig. 45). Nervellus slightly reclivous. Propodeum elongated. Basal area as a long narrow furrow, often bordered by indistinct carinae, 7-8 times as long as wide, 1.5 times as long as the petiolar area, granulate and with fine wrinkles. Lateral area granulate and with fine dispersed punctures, rather dull dorsally, shining laterally. Petiolar area distinctly bordered laterally, with fine punctures and irregular wrinkles (Fig. 46). Propodeal spiracle connected with the pleural carina. 1st gastral tergite 2.4 times as long as wide. Petiole short, 1.1 times as long as postpetiole, flat or slightly rounded dorsally, sometimes with fine striae dorsally, with distinct dorsolateral carinae, with small or large glymmae, smooth laterally in front of the glymmae. Postpetiole 1.15 times as long as wide, rounded dorsally, smooth or with fine striae, with almost parallel contours laterally. 1st sternite slightly surpassing the spiracles (Fig. 47). 2nd tergite 1.4 times as long as wide. Thyridium elongated, distant from the anterior edge of the 2nd tergite, thyridial depression 3-4 times as long

as wide (Fig. 48). Gaster slightly clavate posteriorly. Gastral tergites from the 3rd tergite onwards emarginate posteriorly. Ovipositor 1.6-1.9 times as long as 1st gastral tergite, slightly bent upwards over its total length, stout, distinctly compressed, basally about twice as high as the width of a hind basitarsus, almost not tapered from base to middle, evenly tapered from middle to apex, with a very shallow rounded dorsal depression subapically (Fig. 49). Ovipositor sheath 0.8-1.1 times as long as 1st tergite.

Colour: Black. Palpi and mandible (teeth brown) yellowish brown. Clypeus apically and scape ventrally tinged with brown. Flagellum tinged with dark brown basally. Tegula reddish brown. Pterostigma medium brown, narrowly whitish basally and apically. Legs reddish brown, hind coxae black basally and medially, sometimes the front and mid coxae blackish basally. Hind femur often darkened. Gastral tergites from the 2nd tergite onwards for the greater part yellowish brown, with brown or black dorsal marks anteriorly.

♂: Temples less strongly constricted behind the eyes, tangential lines on eyes and temples intersect on the scutellum or propodeum. Temple very finely granulate and with fine punctures. Flagellum with 26-29 segments, long and slender, penultimate segment 1.9 times as long as wide. Mesopleurum granulate, sometimes granulate anteriorly and with a smooth background posteriorly. Metapleurum granulate, rather dull, with fine punctures. Hind leg slender, femur 4.1 times as long as high, 0.8 times as long as tibia, basitarsus 0.6 times as long as tibia. Longer hind tibial spur almost straight. (Fig. 50). Basal area of propodeum with distinct lateral carinae, about five times as long as wide, 1.3 times as long as petiolar area. Lateral area granulate and with wrinkles dorsally, finely granulate and with fine punctures and wrinkles laterally. Petiolar area usually with a distinct median longitudinal keel, with some strong wrinkles and with fine irregular wrinkles (Fig. 51). 1st gastral tergite 3.7 times as long as wide. Petiole 1.4 times as long as postpetiole, flat and smooth or with fine short striae dorsally, with large glymmae, with a rather long furrow and some fine striae laterally in front of the glymmae, smooth anteriorly (Fig. 52). Postpetiole sometimes with fine striae dorsally and laterally. 2nd tergite 3.1 times as long as wide. Gaster compressed medially and posteriorly. All coxae and trochanters and the hind femur brown or dark brown. Gaster almost completely black posteriorly, the 2nd to 4th tergites yellowish brown posteriorly and laterally, with black dorsal marks anteriorly.

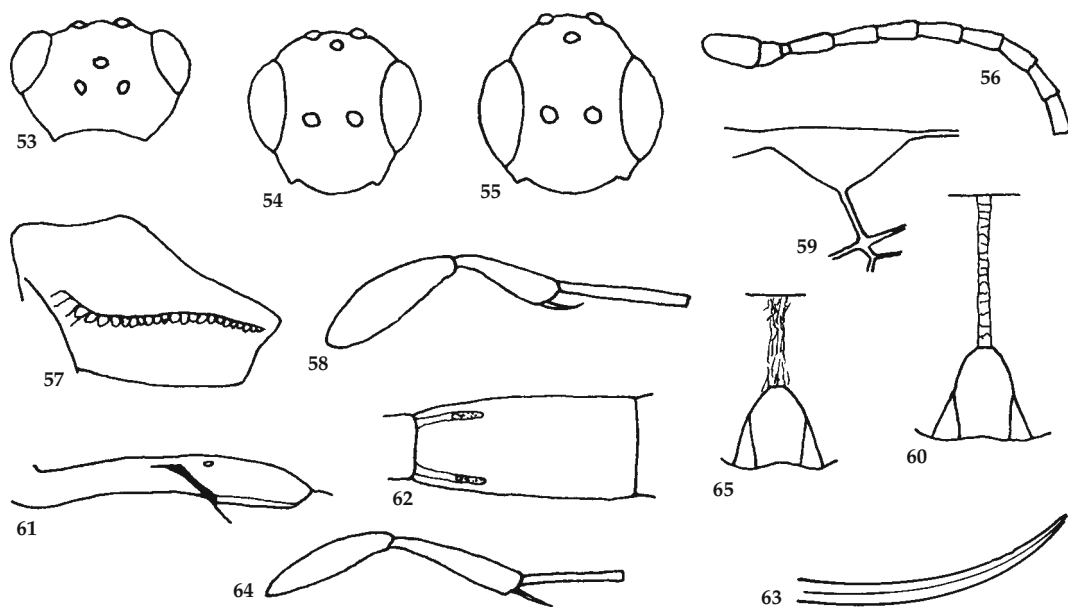
Variation: Some ♀♀ are less strongly granulate: temple, mesopleurum and ventral part of the lateral area of the propodeum sparsely punctate on a smooth background; metapleurum finely granulate. The dorsal part of the lateral area is always distinctly granulate.

Material (25♀♀, 72♂♂): Canada: Alberta (AEI, OTT, TEX); British Columbia (OTT, TEX); Northwest Territories (Tuktoyaktuk) (OTT); Saskatchewan (OTT); Yukon (OTT). USA: Alaska (AEI); Colorado (AEI, LAN, OTT); New Mexico (AEI); Oregon (AEI). Flight period: v-viii, with a peak in viii. Most probably the species is univoltine. Several specimens were collected in Colorado and New Mexico at 3000-3600 m a.s.l. (AEI, OTT).

Barycnemis dissimilis (Gravenhorst)

♀: Body length 3-4 mm. Temples strongly constricted behind the eyes, 0.9-1.0 times as long as the width of an eye, tangential lines on eyes and temples intersect on the middle of the mesoscutum (Fig. 53). Vertex sometimes conspicuously raised, head 0.85-0.97 times as high as wide (see below).

Ocellar index 2.5. Face 0.9 times as wide as the frons. Malar space index 0.7. Clypeus 2.7 times as wide as long, slightly convex, smooth, with few punctures dorsally. Glossa 0.6 times as long as the width of the clypeus. Face granulate, the central swelling smooth. Frons finely granulate, slightly shining. Vertex very finely granulate and with very fine dispersed punctures. Temple with a few very fine punctures on a smooth background. Flagellum with 21-22 segments, filiform, 1st segment 2.8 times, 2nd segment 2.5 times, median segments 1.9 times, the penultimate segment 1.6 times as long as wide (Fig. 56). Thorax 2.7 times as long as the width of the mesoscutum. Pronotum granulate dorsolaterally, with wrinkles ventrolaterally. Mesoscutum granulate, with very fine dispersed punctures. Notaulus as a distinct furrow, extending to 0.2 the length of the mesoscutum. Prescutellar groove with short striae. Scutellum bordered by carinae on the anterior 0.3, almost smooth. Mesopleurum for the greater part smooth, with a few fine punctures. Foveate groove as a long narrow furrow, almost parallel with the ventral edge of the mesopleurum, slightly S-shaped, with transverse wrinkles (Fig. 57). Mesosternum almost smooth, with fine very dispersed punctures. Metapleurum granulate, rather dull, with a few very fine punctures. Hind leg rather stout, femur 3.0-3.4 times as long as high, 1.2 times as long as tibia, basitarsus 1.15 times as long as tibia. Longer hind tibial spur distinctly curved apically, 0.3 times as long as the basitarsus (Fig. 58). Hind tarsal claws short, slightly curved. Pterostigma 2.4 times as long as wide. Metacarpus reaching 0.6 times the distance to the tip of the wing. Intercubitus very short or reduced, distinctly basad of the 2nd recurrent vein (Fig. 59). Nervellus distinctly reclivous. Basal area of propodeum about ten times as long as wide, 1.6-1.8 times as long as the petiolar area, bordered by longitudinal carinae, these carinae sometimes partly indistinct or covered with wrinkles. Lateral area finely granulate, slightly shining, with a few punctures, with short wrinkles posteriorly. Petiolar area bordered laterally, granulate or with fine irregular wrinkles (Fig. 60). Propodeal spiracle adjacent to the pleural carina. 1st gastral tergite 4.0 times as long as wide. Petiole 1.4 times as long as postpetiole, almost circular in cross-section, rounded and for the greater part smooth dorsally, with some short striae posteriorly, dorsolateral carinae indistinct, with rather small glymmae, smooth or almost smooth laterally in front of the glymmae. Postpetiole 1.7 times as long as wide, rounded dorsally, with almost parallel contours laterally. 1st sternite slightly surpassing the spiracles (Fig. 61). 2nd tergite 2.2 times as long as wide. Thyridium elongated, distant from the anterior edge of the 2nd tergite, thyridial depression about four times as long as wide (Fig. 62). Gaster



Figs 53-65. *Barycnemis dissimilis* (Gravenhorst). 53-63. ♀. 53. Head, top view. 54-55. Head, front view. 56. Base of antenna. 57. Mesopleurum. 58. Hind femur, tibia and basitarsus. 59. Pterostigma and areolet. 60. Propodeum, top view. 61. 1st gastral segment, side view. 62. 2nd gastral tergite, top view. 63. Ovipositor, side view. 64-65. ♂. 64. Hind femur, tibia and basitarsus. 65. Propodeum, top view.

slightly compressed posteriorly. Gastral tergites from the 3rd tergite onwards emarginate posteriorly. Ovipositor 1.4-1.5 times as long as 1st gastral tergite, slender, slightly compressed, slightly bent upwards proximally, distinctly bent upwards distally, with a small and indistinct dorsal incision subapically (Fig. 63). Ovipositor sheath 1.0-1.2 times as long as 1st tergite.

Colour: Black. Palpi and mandible (teeth brown) yellowish. Scape and pedicellus reddish brown ventrally. Flagellum dark brown or blackish. Tegula and legs light reddish brown, hind coxa dark brown or blackish basally and medially. Pterostigma medium brown, narrowly marked with whitish basally and apically. Gaster from the 2nd tergite onwards blackish, 2nd tergite reddish brown laterally and posteriorly, sometimes other tergites marked with brown laterally and posteriorly too.

♂: Temples less strongly constricted behind the eyes, tangential lines on eyes and temples intersect on the scutellum. Malar space index 0.6. Flagellum with 23-24 segments. Mesopleurum finely granulate and with fine dispersed punctures, often an anterior part distinctly, a posterior part very finely granulate. Hind leg slender, femur 3.8 times as long as high, 0.95 times as long as tibia, basitarsus 0.7 times as long as tibia. Longer hind tibial spur almost straight

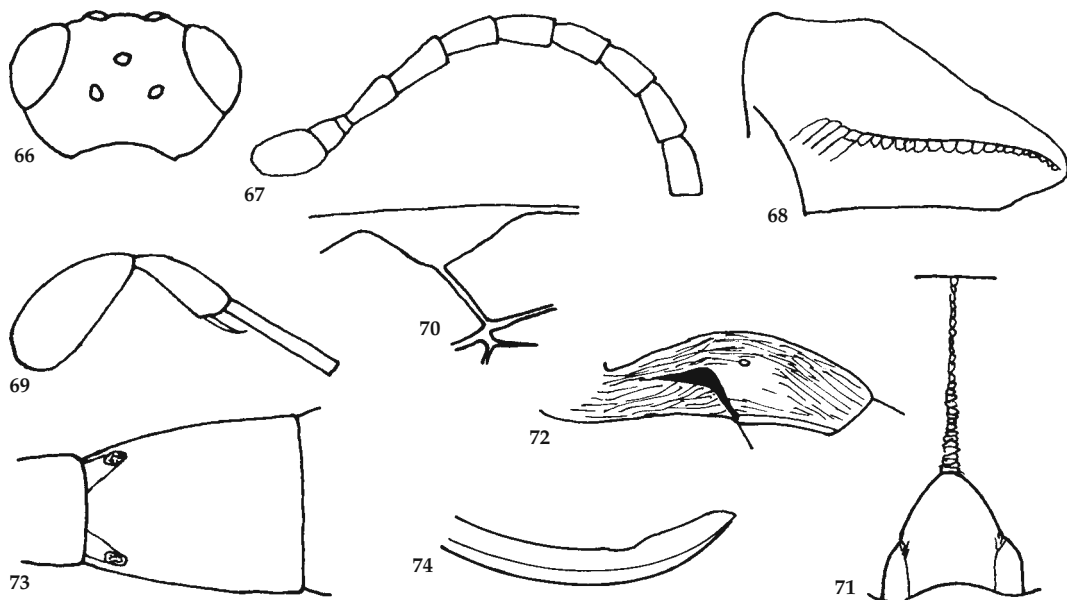
apically (Fig. 64). Basal area of propodeum 1.2-1.3 times as long as the petiolar area. Lateral area finely granulate, partly with fine wrinkles. Petiolar area without a median longitudinal keel (Fig. 65). Gaster slender, 1st tergite 4.5 times, 2nd tergite 3.3 times as long as wide. Petiole with some striae laterally in front of the glymmae, the anterior half smooth. In other characters similar to the ♀.

Variation: In European ♀♀ and in 1 ♀ from Yukon (OTT) the vertex is not conspicuously raised (head about 0.85 times as high as wide) (Fig. 54), but in other ♀♀ the vertex is raised and the head is about 0.95 times as high as wide (Fig. 55). No significant differences were found between ♂♂ from Europe and North America.

Material (8 ♀♀, 11 ♂♂): Canada: Alberta (AEI); Yukon (OTT). USA: Alaska (OTT), Colorado (TEX); Utah (TEX). Flight period: vi-viii, with a peak in vii. Most probably the species is univoltine.

Barycnemis frigida Schwarz

♀: Body length 4.5-5 mm. Temples distinctly constricted behind the eyes, 0.8 times as long as the width of an eye, tangential lines on eyes and temples intersect on the prescutellar groove (Fig. 66). Ocellar



Figs 66-74. *Barycnemis frigida* Schwarz (♀). 66. Head, top view. 67. Base of antenna. 68. Mesopleurum. 69. Hind femur, tibia and basitarsus. 70. Pterostigma and areolet. 71. Propodeum, top view. 72. 1st gastral segment, side view. 73. 2nd gastral tergite, top view. 74. Ovipositor, side view.

index 1.8-2.0. Face as wide as the frons. Malar space index 0.9. Clypeus twice as wide as long, slightly convex basally, flat subapically, smooth, with some punctures dorsally. Glossa 0.6 times as long as the width of the clypeus. Face finely granulate laterally, the central swelling smooth, with a few fine punctures. Frons smooth centrally, very finely granulate laterally. Vertex very finely granulate and with a few very fine punctures. Temple almost smooth, with a few very fine punctures. Flagellum with 19 segments, filiform, 1st segment 2.2 times, 2nd segment 2.2 times, median segments 1.9 times, the penultimate segment 1.3 times as long as wide (Fig. 67). Thorax 2.9 times as long as the width of the mesoscutum. Pronotum with fine dispersed punctures on a finely granulate background dorsolaterally, with wrinkles ventrolaterally. Mesoscutum in most parts finely granulate and with fine dispersed punctures, distinctly granulate and dull in front of the prescutellar groove. Notaulus as a distinct furrow, extending to 0.3 the length of the mesoscutum. Prescutellar groove with distinct longitudinal striae. Scutellum bordered by carinae on the anterior 0.2, almost smooth. Mesopleurum for the greater part smooth, with a few fine punctures, the upper anterior corner rugose and with fine wrinkles. Foveate groove as a long furrow, slightly S-shaped, with distinct transverse striae, almost parallel with the ventral edge of the mesopleurum (Fig. 68). Mesosternum smooth.

Metapleurum with fine sculpture centrally, shining, with distinct wrinkles near the edges. Hind leg stout, femur 2.5 times as long as high, 1.3 times as long as tibia, basitarsus 1.05 times as long as tibia. Longer hind tibial spur distinctly curved apically, 0.3 times as long as the basitarsus (Fig. 69). Hind tarsal claws short, slender. Pterostigma 2.6 times as long as wide. Metacarpus reaching half the distance to the tip of the wing. Intercubitus short and broad, distinctly basad of the 2nd recurrent vein (Fig. 70). Nervellus vertical. Basal area of propodeum as a fine narrow furrow, about ten times as long as wide, 1.7 times as long as the petiolar area, without lateral carinae, with fine transverse wrinkles. Lateral area smooth dorsally beside the basal area and ventrally, with a distinctly punctate and wrinkled band dorsolaterally and posteriorly. Petiolar area distinctly wrinkled, the lateral boundary distinct posteriorly, indistinct and covered with wrinkles anteriorly (Fig. 71). Propodeal spiracle separated from the pleural carina by its diameter, the spiracular carina broad. 1st gastral tergite 2.6 times as long as wide. Petiole 1.15 times as long as postpetiole, slightly depressed and almost smooth dorsally, with distinct dorsolateral carinae, with striae laterally, with distinct glymmae. Postpetiole 1.2 times as long as wide, rounded dorsally, with slightly rounded contours laterally, with fine striae dorsally and laterally. 1st sternite reaching the spiracles (Fig. 72). 2nd tergite 1.2 times as long

as wide. Thyridium oval, distant from the anterior edge of the 2nd tergite, thyridial depression about twice as long as wide (Fig. 73). Gaster slightly clavate posteriorly. Gastral tergites from the 3rd tergite onwards emarginate posteriorly. Ovipositor 1.3 times as long as 1st gastral tergite, almost not surpassing the apex of the gaster, stout, about twice as high basally as the width of a hind basitarsus, oval in cross-section, distinctly bent upwards over its total length, almost not tapered until short before the apex, with a very shallow rounded dorsal depression subapically (Fig. 74). Ovipositor sheath 0.7 times as long as 1st tergite.

Colour: Black. Palpi blackish, glossa brown. Mandible marked with brown medially. Clypeus tinged with brown ventrally. Tegula and Pterostigma medium brown. Legs reddish brown, coxae and trochanters blackish. Femora tinged with brown basally, tarsi tinged with brown apically. Gaster from the 2nd tergite onwards brown or blackish, 2nd tergite reddish brown posteriorly and laterally, sometimes other tergites marked with reddish brown too.

♂: unknown.

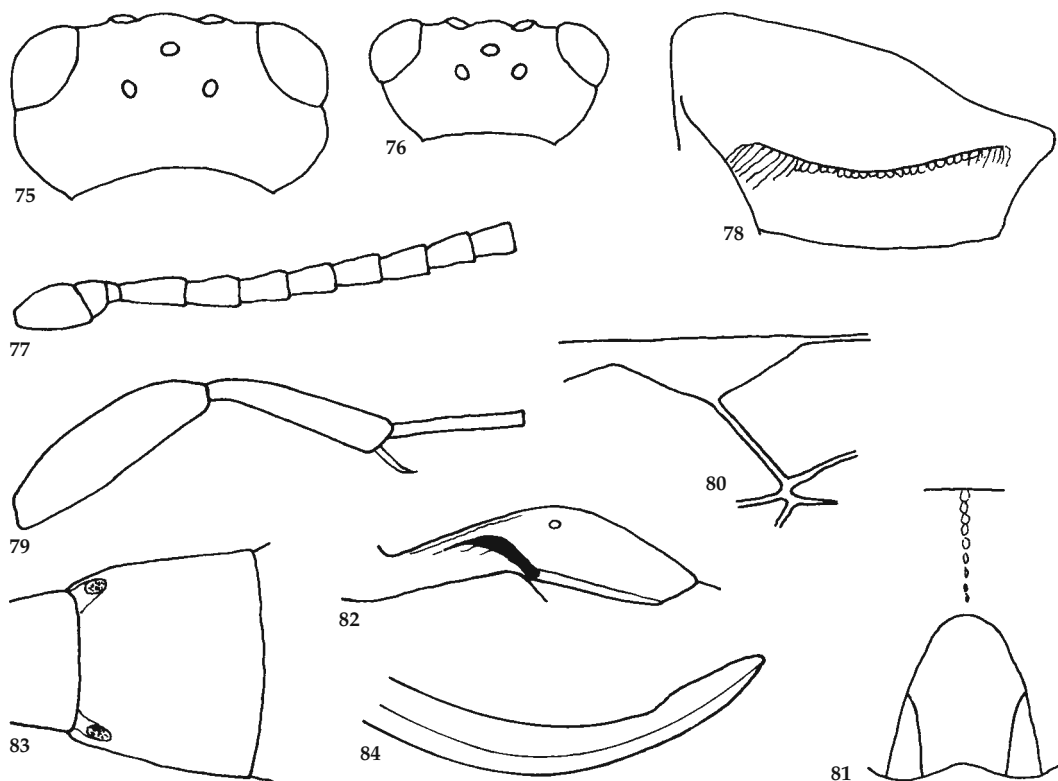
Material (1♀): Canada: Manitoba (Churchill) (FRA). Flight period: vi.

***Barycnemis gravipes* (Gravenhorst)**

(syn. *Porizon borealis* Provancher,
Thersilochus errabundus Provancher,
Notopygus americana Harrington)

♀: Body length 6–11 mm. Temples usually distinctly constricted behind the eyes, 1.1 times as long as the width of an eye, tangential lines on eyes and temples intersect on the prescutellar groove (about as Fig. 76). Ocellar index 2.3. Face 1.05 times as wide as the frons. Malar space index 1.15. Clypeus 2.4 times as wide as long, slightly convex basally, slightly concave medially and subapically, with distinct punctures dorsally, smooth medially and subapically. Glossa 0.4 times as long as the width of the clypeus. Face with distinct dense or rather dense punctures on a smooth or finely granulate background, central swelling with few punctures. Frons with distinct dense punctures. Vertex with distinct dense or rather dense punctures. Temple with distinct rather dense or dispersed punctures on a smooth background. Flagellum with 35–39 segments, filiform, 1st segment 2.4 times, 2nd segment 2.0 times, median segments 1.7 times, the penultimate segment 1.1 times as long as wide (Fig. 77). Thorax 2.7 times as long as the width of the mesoscutum. Thorax with punctures on a smooth background. Pronotum with distinct dense punctures dorsolaterally, with wrinkles ventrolater-

ally. Mesoscutum for the greater part with distinct dense punctures, dispersely punctate sublaterally, with wrinkles dorsally in front of the prescutellar groove. Notaulus as a distinct or indistinct groove, often not connected with the anterior edge of the mesoscutum, sometimes replaced by some wrinkles. Prescutellar groove with fine striae. Scutellum bordered by carinae on the anterior 0.3, with dispersed punctures. Mesopleurum with distinct dispersed punctures centrally and on the speculum, with dense punctures in the upper anterior corner. Foveate groove as a distinct long narrow furrow, almost straight or slightly S-shaped, almost parallel with the ventral edge of the mesopleurum, with distinct transverse striae (Fig. 78). Mesosternum with distinct rather dense punctures. Metapleurum with distinct very dense punctures. Hind leg rather slender, femur 3.6 times as long as high, 1.2 times as long as tibia, basitarsus 0.7 times as long as tibia. Longer hind tibial spur distinctly curved apically, 0.3 times as long as the basitarsus (Fig. 79). Hind tarsal claws slightly longer than empodium. Pterostigma 2.9 times as long as wide. Metacarpus reaching 0.6 times the distance to the tip of the wing. Intercubitus distinctly basad of the 2nd recurrent vein (Fig. 80). Nervellus slightly inclivous. Basal area of propodeum as a narrow transversely striate furrow or a long row of small pits, or partly obliterated and replaced by short wrinkles or by a smooth area, about 0.8 times as long as the petiolar area. Lateral area with distinct dense punctures on a smooth background dorsally and dorsolaterally, often with dispersed punctures ventrolaterally, sometimes with less dense punctures also dorsally beside the basal area. Petiolar area bordered laterally, sometimes not bordered dorsally (in specimens, in which the basal area is partly obliterated), densely rugose or rugose-punctate (Fig. 81). Propodeal spiracle separated from the pleural carina by half its diameter or adjacent to the pleural carina, the spiracular carina broad. 1st gastral tergite 2.1 times as long as wide. Petiole 1.3 times as long as postpetiole, flat or slightly depressed and smooth dorsally, sometimes with fine striae, with distinct dorsolateral carinae, with large glymmae, almost smooth laterally in front of the glymmae, often with a short furrow connected with the glymma, sometimes with some fine striae. Postpetiole 0.9 times as long as wide, rounded dorsally and laterally, with fine dispersed punctures, often with fine striae. 1st sternite almost reaching the spiracles (Fig. 82). 2nd tergite 0.8 times as long as wide. Thyridium oval, close to the anterior edge of the 2nd tergite, thyridial depression 1.5 times as long as wide (Fig. 83). Gaster slightly clavate posteriorly. Gastral tergites from the 3rd tergite onwards emarginate posteriorly. Ovipositor 1.6–1.8 times as long as 1st gastral tergite, stout,



Figs 75-84. *Barycnemis gravipes* (Gravenhorst). 75-76. ♂. Head, top view. 77-84. ♀. 77. Base of antenna. 78. Mesopleurum. 79. Hind femur, tibia and basitarsus. 80. Pterostigma and areolet. 81. Propodeum, top view. 82. 1st gastral segment, side view. 83. 2nd gastral tergite, top view. 84. Ovipositor, side view.

about twice as high basally as the width of a hind basitarsus, oval in cross-section, distinctly bent upwards over its total length, almost not tapered until short before the apex, with a very shallow rounded dorsal depression subapically (Fig. 84). Ovipositor sheath 0.9 times as long as 1st tergite.

Colour: Black. Palpi blackish, tongue brown. Mandible brownish medially. Clypeus black or tinged with brown ventrally. Scape blackish or tinged with brown ventrally. Tegula reddish brown. Pterostigma dark brown, narrowly marked with whitish basally and apically. Legs reddish brown, coxae and trochanters blackish, sometimes front coxa and front trochanter marked with brown. Gaster reddish brown from the 2nd tergite onwards, the 2nd tergite dorsally marked with black basally, the posterior tergites often marked with brown.

♂: Body length 5-9 mm. Temples constricted behind the eyes in small specimens (as described above for the ♀), not constricted or even widened in large specimens (Figs 75-76). Malar space index 0.7. Flagellum with 36-45 segments. Mesopleurum with

distinct rather dense or dense punctures centrally. Hind leg slender, femur 4.3 times as long as high, 0.9 times as long as tibia, basitarsus half as long as tibia. Longer hind tibial spur distinctly curved apically (less strongly as in the ♀). Propodeum completely covered with distinct irregular wrinkles. Basal area about four times as long as wide, 0.7 times as long as the petiolar area, bordered by carinae laterally, these carinae sometimes partly indistinct or covered with wrinkles. Petiolar area with distinct irregular or transverse wrinkles, with a distinct median longitudinal keel. 1st tergite 3.6 times as long as wide. Petiole 1.4 times as long as postpetiole, with fine striae dorsally and laterally. Postpetiole with almost parallel contours laterally, often with fine striae. 2nd tergite 2.6 times as long as wide. Gaster distinctly compressed. Posterior gastral tergites black. In other characters similar to the ♀.

Taxonomic remark: The interpretation of *B. gravipes* differs between the Palearctic and the Nearctic region. After Thomson (1889: 1363), two species are distinguished in the Palearctic region, mainly

by the shape of the head: *B. gravipes* with a broad head and the temples widened behind the eyes, and *B. angustipennis* (Holmgren) with a narrower head and the temples constricted behind the eyes (Horstmann 1981: 68; Khalaim 2004: 52). But these characters vary and may depend on body size, larger specimens tending to have a broader head than smaller ones. In the Nearctic region, only one species is accepted (Townes 1971: 39 f.), although the variation in the shape of the head is similar to that in Europe. At present, neither a convincing reason is known to synonymise the two taxa in the Palaearctic region, nor a reason to distinguish two species in the Nearctic region. Therefore the problem cannot be solved here. Most Nearctic specimens belong to the morph *angustipennis*. Carlson (1979: 693) incorrectly synonymised *B. gravipes* with *B. exhaustator* (Fabricius), a species unknown from North America.

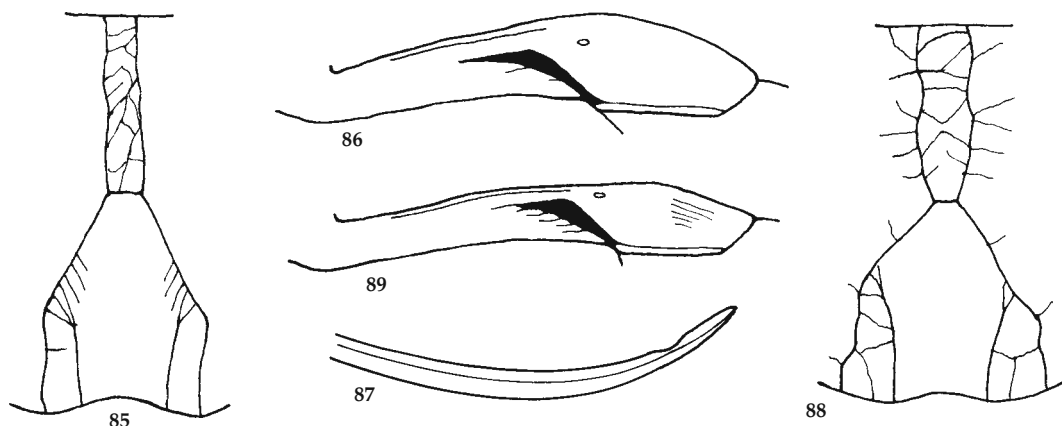
Material (12♀, 51♂): Canada: Alberta (OTT); British Columbia (AEI, ITH, OTT); Manitoba (OTT, WAS); Ontario (OTT); Quebec (LAV); Saskatchewan (AEI, OTT); Yukon (AEI, OTT). USA: Alaska (AEI, OTT); Colorado (OTT); Maine (AEI, WAS); Massachusetts (CAM, WAS); Michigan (AEI, LAN); New Hampshire (WAS); New Jersey (CAM); New York (AEI, FRA, ITH); Vermont (CAM). Flight period: vi-ix (2♀ in x), without a clear peak. Probably the species is univoltine. In Colorado, 1♀ was collected at 2900 m a.s.l. (OTT).

***Barycnemis harpura* (Schrank)**

(syn. *Cremastus angularis* Provancher,
Mesoleptus micans Provancher,
Porizon elongatum Provancher,
Atractodes politus Ashmead,
Porizon canaliculatus Viereck)

♀: Body length 6-8 mm. Temples strongly constricted behind the eyes, 0.75 times as long as the width of an eye, tangential lines on eyes and temples intersect on the middle of the mesoscutum. Ocellar index 1.8. Face 1.05 times as wide as the frons. Malar space index 1.0-1.3. Clypeus 2.5 times as wide as long, slightly convex dorsally, flat subapically, smooth, with a few distinct punctures dorsally. Glossa 0.8 times as long as the width of the clypeus. Face finely granulate and with fine rather dense or dense punctures, the central swelling shining. Frons finely granulate and with fine rather dense punctures. Vertex very finely granulate, with fine punctures, partly with fine longitudinal striae. Temple with fine dispersed punctures on a smooth background. Flagellum with 27-29 segments, filiform, 1st segment 2.6 times, 2nd segment 2.6 times, median segments 1.4 times, the penultimate segment 1.2 times as long as wide. Thorax 2.4 times as long as the width of the

mesoscutum. Pronotum with fine dense punctures on a finely granulate background dorsolaterally, with wrinkles ventrolaterally. Mesoscutum for the greater part distinctly granulate, dull, with fine dispersed punctures, shining sublaterally, with fine wrinkles dorsally in front of the prescutellar groove. Notaulus distinct, as a wrinkled furrow, extending to 0.2 the length of the mesoscutum. Prescutellar groove with fine striae. Scutellum bordered by carinae on the anterior 0.6, with fine dense punctures, shining. Mesopleurum with distinct rather dense or dispersed punctures on a smooth background. Foveate groove as a rather long narrow transversely striate furrow, slightly bent upwards and not parallel with the ventral edge of the mesopleurum anteriorly. Mesosternum with fine dispersed punctures on a smooth background. Metapleurum finely granulate and with distinct dense punctures. Hind leg slender, femur 4.2 times as long as high, 1.05 times as long as tibia, basitarsus 0.6 times as long as tibia. Longer hind tibial spur distinctly curved apically, 0.3 times as long as the basitarsus. Hind tarsal claws slightly longer than empodium, slender and distinctly curved apically. Pterostigma 3.2 times as long as wide. Metacarpus reaching 0.7 times the distance to the tip of the wing. Intercubitus rather short, distinctly basad of the 2nd recurrent vein. Nervellus almost vertical. Basal area of propodeum 5.5 times as long as wide, 0.9-1.0 times as long as the petiolar area, with lateral carinae which sometimes are partly indistinct or covered with wrinkles, with transverse or irregular wrinkles between the carinae. Lateral area densely rugose-punctate or rugose on a finely granulate background dorsally and dorsolaterally, slightly sculptured and shining laterally. Petiolar area bordered by complete or incomplete lateral carinae, with irregular or transverse wrinkles (Fig. 85). Propodeal spiracle separated from the pleural carina by its diameter, the spiracular carina broad. 1st gastral tergite 3.3 times as long as wide. Petiole 1.5 times as long as postpetiole, flat or slightly rounded and smooth or with some short striae dorsally, with distinct dorsolateral carinae, with rather large glymmae, for the greater part smooth laterally, with a short groove and a few short striae in front of the glymmae. Postpetiole 1.3 times as long as wide, rounded dorsally, with slightly rounded contours laterally, smooth. 1st sternite slightly surpassing the spiracles (Fig. 86). 2nd tergite 1.9 times as long as wide. Thyridium elongated, clearly distant from the anterior edge of the 2nd tergite, thyridial depression about four times as long as wide. Gaster elongated, slightly compressed posteriorly. Gastral tergites from the 3rd tergite onwards emarginate posteriorly. Ovipositor 1.7-1.9 times as long as 1st gastral tergite, slender, slightly compressed, slightly bent upwards



Figs 85-89. *Barycnemis harpura* (Schränk) 85-87. ♀. 85. Propodeum, top view. 86. 1st gastral segment, side view. 87. Ovipositor, side view. 88-89. ♂. 88. Propodeum, top view. 89. 1st gastral segment, side view.

proximally, distinctly bent upwards distally, with a shallow rounded dorsal depression subapically (Fig. 87). Ovipositor sheath 1.0-1.3 times as long as 1st tergite.

Colour: Black. Palpi, mandible (teeth brown), scape, base of flagellum (to a variable extent), tegula and legs reddish brown. Clypeus brown ventrally. Pterostigma medium brown. Hind coxa black basally and medially. Gaster from the 2nd tergite onwards reddish brown. In light specimens base of antenna, legs and gaster from the 2nd tergite onwards yellowish, tip of antenna and base of hind coxa brown. In dark specimens antenna, all coxae and gaster from the 2nd tergite onwards dark brown.

♂: Flagellum with 27-33 segments. Malar space index 0.7. Mesopleurum with distinct and rather dense or dense punctures on a smooth or finely granulate background. Metapleurum very densely punctate or rugose-punctate or rather finely rugose. Hind leg slender, femur 4.3 times as long as high, 0.9 times as long as tibia, basitarsus half as long as tibia. Basal area of propodeum 3-4 times as long as wide, 0.9-1.1 times as long as petiolar area, bordered by carinae which sometimes are indistinct, wrinkled between the carinae. Lateral area rather coarsely wrinkled. Petiolar area distinctly wrinkled, without a median longitudinal keel (Fig. 88). Gaster slender and distinctly compressed posteriorly, 1st tergite 4.8 times, 2nd tergite 3.4 times as long as wide. Petiole almost as described for the ♀, with slightly longer striae laterally in front of the glymmae (but the anterior half smooth or almost smooth). Postpetiole sometimes with fine striae dorsolaterally (Fig. 89). Colour pattern similar to that of the ♀, with a similar variability. Hind femur often brown or tinged with brown. Hind gastral tergites marked with brown or black.

Taxonomic remark: In European ♀♀ of this species, the malar space is slightly shorter than the width of the mandibular base (Horstmann 1981: 58). The significance of this difference is unknown.

Material (289♀♀, 627♂♂): Canada: Alberta (AEI, OTT, TEX, WAS); British Columbia (AEI, CAM, FRA, ITH, OTT, WAH, WAS); Labrador (OTT); Manitoba (OTT); Newfoundland (AEI, OTT); Northwest Territories (OTT); Nova Scotia (ITH); Ontario (AEI, ITH, OTT); Quebec (ITH, LAN, LAV, OTT); Saskatchewan (AEI, OTT); Yukon (AEI, OTT). USA: Alaska (AEI, OTT); Arizona (AEI, FRAU, TEX); California (CAM); Colorado (AEI, CAM, LAN, OTT, TEX, WAS); Connecticut (OTT); Idaho (AEI, CAM, LAN, TEX, WAS); Iowa (WAS); Louisiana (WAS); Maine (AEI, CAM, ITH, WAS); Massachusetts (CAM, LAN, WAS); Michigan (AEI, LAN, WAS); Montana (AEI, CAM, WAS); New Hampshire (AEI, CAM, WAS); New Mexico (AEI, WAH); New York (AEI, CAM, OTT, WAS); North Dakota (LAN); Oregon (AEI, CAM, WAH); Pennsylvania (AEI); Rhode Island (AEI); South Dakota (WAS); Utah (AEI, CAM, TEX); Vermont (CAM, WAS); Washington (AEI, CAM, OTT, TEX); Wyoming (CAM, LAN, OTT, TEX). Flight period: vi-ix, with a distinct peak in vii and viii. Most probably the species is univoltine. Several specimens were collected in Colorado and Utah at 3000-3600 m a.s.l. (AEI, OTT, TEX) and in Alberta and British Columbia at 1200-1400 m a.s.l. (AEI, OTT).

Barycnemis linearis Ashmead

(syn. *Zasternaualax simplicicornis* Viereck)

♀: Body length 2-4 mm. Temples strongly constricted behind the eyes, 0.7 times as long as the width of an eye, tangential lines on eyes and temples intersect on the middle of the mesoscutum (Fig. 90). In some specimens vertex much raised. Head 0.9-1.1 times

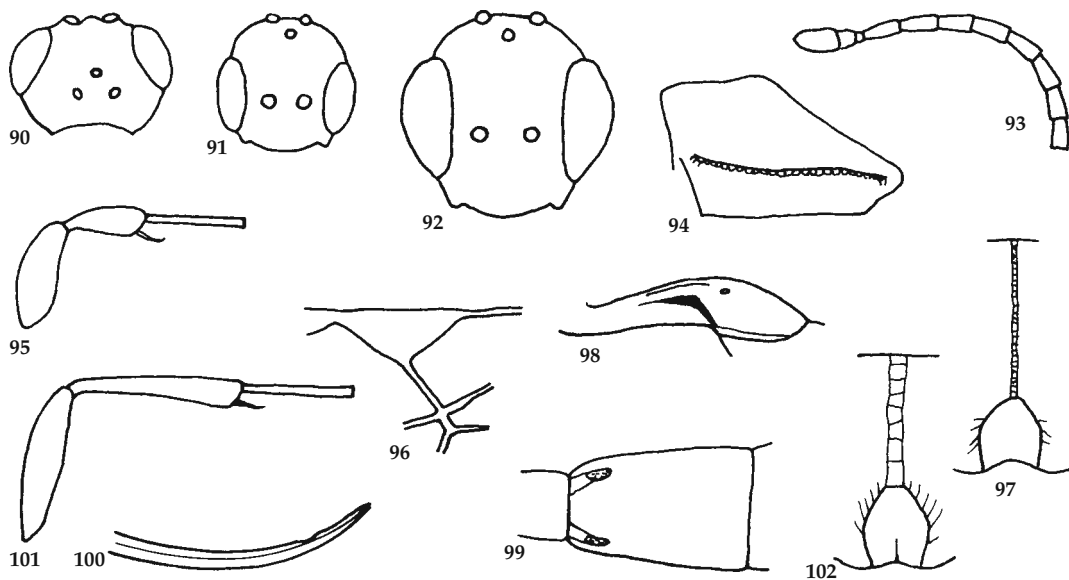
as high as wide (Figs 91-92). Ocellar index 3.0. Face 0.95-1.0 times as wide as the frons. Malar space index 0.6. Clypeus 2.9 times as wide as long, slightly convex dorsally, flat medially and subventrally, smooth, with fine dispersed punctures dorsally. Glossa 0.6 times as long as the width of the clypeus. Face finely granulate, the central swelling almost smooth, with very fine punctures. Frons very finely granulate or smooth, with very fine dispersed punctures. Vertex and temple smooth, with very fine dispersed punctures. Flagellum with 19-24 segments, filiform, sometimes slightly claviform, 1st segment 2.2 times, 2nd segment 2.2 times, median segments 1.7 times, the penultimate segment 1.3 times as long as wide (Fig. 93). Thorax elongated, 3.1 times as long as the width of the mesoscutum. Pronotum with fine rather dense or dense punctures on a smooth background dorsolaterally, with wrinkles ventrolaterally. Mesoscutum finely granulate, in small specimens almost smooth, with fine dispersed punctures. Notaulus as a distinct furrow, extending to 0.25 the length of the mesoscutum. Prescutellar groove with very fine striae. Scutellum bordered by carinae on the anterior 0.2, smooth or almost smooth. Mesopleurum for the greater part smooth, with a few fine punctures, with fine wrinkles in the upper anterior corner. Foveate groove as a long narrow furrow, almost straight, parallel with the ventral edge of the mesopleurum (Fig. 94). Mesosternum with very fine dispersed punctures on a smooth background. Metapleurum with fine dispersed or rather dense punctures on a smooth or finely granulate background. Hind leg rather stout, femur 2.5-3.6 times as long as high, 1.3 times as long as tibia, basitarsus 1.05-1.1 times as long as tibia. Longer hind tibial spur distinctly curved apically, 0.3 times as long as the basitarsus (Fig. 95). Hind tarsal claws short, slender. Pterostigma 2.3 times as long as wide. Metacarpus reaching half the distance to the tip of the wing. Intercubitus short or reduced, distinctly basad of the 2nd recurrent vein (Fig. 96). Nervellus distinctly reclivous. Propodeum elongated. Basal area as a very narrow furrow, 10-15 times as long as wide, 2.0-2.6 times as long as the petiolar area, not bordered by lateral carinae. Lateral area for the greater part smooth, with fine dispersed punctures, with wrinkles posteriorly. Petiolar area small, bordered laterally, with fine irregular wrinkles (Fig. 97). Propodeal spiracle separated from the pleural carina by half its diameter, the spiracular carina broad. 1st gastral tergite 3.5 times as long as wide. Petiole 1.6 times as long as postpetiole, flat and smooth dorsally, sometimes slightly depressed and with fine striae in front of the postpetiole, with distinct dorsolateral carinae, with rather small glymmae, usually smooth in front of the glymmae, sometimes with fine or distinct striae later-

ally. Postpetiole 1.3 times as long as wide, rounded and smooth dorsally, with almost straight contours laterally. 1st sternite reaching or slightly surpassing the spiracles (Fig. 98). 2nd tergite 1.2-1.5 times as long as wide. Thyridium elongated, distant from the anterior edge of the 2nd tergite, thyridial depression about three times as long as wide (Fig. 99). Gaster long, slightly clavate posteriorly. Gastral tergites from the 3rd tergite onwards emarginate posteriorly. Ovipositor 1.6-1.9 times as long as 1st gastral tergite, slender, slightly compressed, slightly bent upwards proximally, distinctly bent upwards distally, with a very shallow rounded dorsal depression subapically (Fig. 100). Ovipositor sheath 1.0-1.2 times as long as 1st tergite.

Colour: Black. Palpi, mandible (teeth brown), tegula and legs yellowish brown or reddish brown. Ventral parts of clypeus and scape tinged with yellowish brown or brown. Pterostigma medium brown or dark brown. Hind coxa dark brown or blackish basally and medially. Gaster from the 2nd tergite onwards brown or blackish (rarely yellowish brown). Some very small specimens (body length 2 mm) are completely yellowish brown, only the head is dark brown.

♂: Temples less strongly constricted behind the eyes, tangential lines on eyes and temples intersect on the scutellum or propodeum. Vertex not raised, head 0.85 times as high as wide. Flagellum with 23-27 segments. Mesopleurum with fine dispersed or rather dense punctures on a smooth or very finely granulate background. Metapleurum with fine or distinct punctures on a granulate background, sometimes rugose-punctate. Hind leg slender, femur 4.8 times as long as high, 0.90-0.95 times as long as tibia, basitarsus 0.7 times as long as tibia. Longer hind tibial spur slightly curved apically, 0.25 times as long as basitarsus (Fig. 101). Basal area of propodeum 7-10 times as long as wide, 1.4-2.0 times as long as petiolar area, bordered by longitudinal carinae, these sometimes partly indistinct or covered with wrinkles, wrinkled between the longitudinal carinae. Lateral area smooth or almost smooth centrally, sometimes with fine dispersed punctures, with wrinkles posteriorly. Petiolar area small, wrinkled, sometimes with a short median longitudinal keel (Fig. 102). Gaster compressed. 1st gastral tergite 3.6 times as long as wide. Petiole as described for the ♀. 2nd tergite 2.7 times as long as wide. Colour pattern as described for the ♀, but posterior gastral tergites always black. Hind femur sometimes brown. In other characters similar to the ♀.

Variation: The ♀♀ are variable in body size, shape of the head (vertex slightly or distinctly raised), shape of the hind femur and sculpture of the petiole



Figures 90-102. *Barycnemis linearis* Ashmead. 90-100. ♀. 90. Head, top view. 91-92. Head, front view. 93. Base of antenna. 94. Mesopleurum. 95. Hind femur, tibia and basitarsus. 96. Pterostigma and areolet. 97. Propodeum, top view. 98. 1st gastral segment, side view. 99. 2nd gastral tergite, top view. 100. Ovipositor, side view. 101-102. ♂. 101. Hind femur, tibia and basitarsus. 102. Propodeum, top view.

(smooth or striate laterally). In a few ♀♀ the lateral area of the propodeum is slightly granulate and/or the ovipositor sheath is 1.3 times as long as the 1st gastral tergite or even longer. These specimens are only tentatively placed to *B. linearis*.

Taxonomic remark: The material from northern Europe incorrectly determined as *B. linearis* by Horstmann (1981: 57) belongs to *B. deserta* Schwarz (Schwarz 2003: 1112).

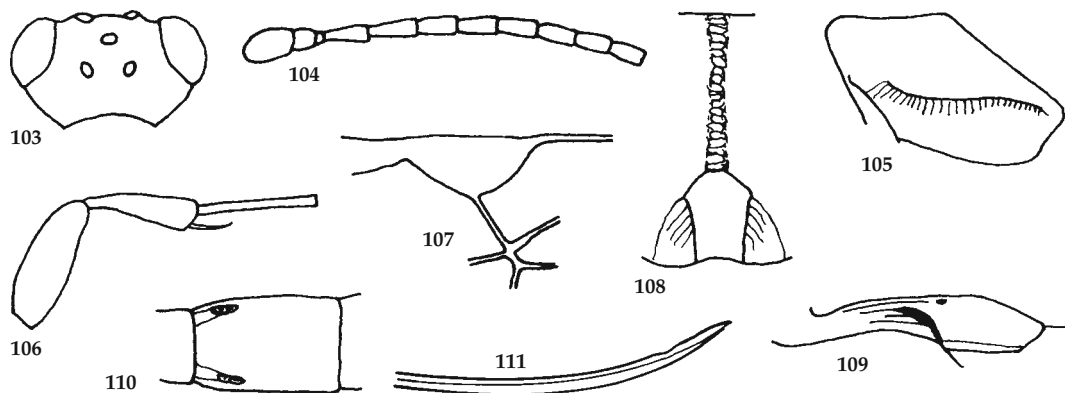
Material (365♀♀, 577♂♂): Canada: Alberta (AEI, OTT, TEX); British Columbia (AEI, CAM, ITH, OTT, TEX, WAH, WAS); Labrador (OTT); Manitoba (OTT, WAS); Northwest Territories (OTT); Nova Scotia (ITH); Ontario (TEX); Quebec (AEI, OTT); Saskatchewan (OTT); Yukon (AEI, OTT). USA: Alaska (AEI, FRA, OTT, WAS); Arizona (AEI); California (AEI); Colorado (AEI, CAM, LAN, OTT, TEX, WAH, WAS); Idaho (CAM, TEX, WAS); Iowa (WAS); Kansas (AEI); Michigan (LAN); Missouri (OTT); Montana (AEI, CAM, TEX, WAS); Nevada (AEI); New Hampshire (AEI); New Mexico (TEX); North Carolina (OTT); Oregon (AEI, CAM, FRA, LAN, OTT, TEX, WAS); Texas (AEI); Virginia (WAS); Washington (AEI, CAM, LAN, TEX, WAS); Wyoming (CAM, LAN). Flight period: v-x, with an indistinct peak in vi-viii. Probably the species is univoltine, but the possibility that it is at least partly plurivoltine cannot be ruled out. Several specimens were collected in Colorado at 3000-3600 m a.s.l. and in Alberta and British Columbia at 2000-2400 m a.s.l. (AEI, OTT).

Host: The species was reared from *Pissodes* spec. indet. (Curculionidae) (Viereck 1912: 648) (2 ♂♂ in WAS).

Barycnemis longicauda spec. nov.

Holotype (♀): "Lexington Pk. Md. VIII.21-XI.16. 85, Janet Rupp" (Maryland, USA) (AEI). – **Paratypes** (3♀♀): Canada: New Brunswick: Kouchibouguac National Park (OTT); Ontario: Southampton (OTT). USA: Pennsylvania: Mercer (AEI). Flight period: viii-ix.

♀: Body length 3-3.5 mm. Temples strongly constricted behind the eyes, 0.7 times as long as the width of an eye, tangential lines on eyes and temples intersect on the middle of the mesoscutum (Fig. 103). Ocellar index 1.6-1.8. Face 0.95 times as wide as the frons. Malar space index 0.7. Clypeus 3.0 times as wide as long, distinctly convex dorsally, almost flat medially and subventrally, smooth, with some punctures dorsally. Glossa half as long as the width of the clypeus. Face finely granulate, the central swelling almost smooth. Frons and vertex very finely granulate and with very fine dispersed punctures. Temple smooth, with few very fine punctures. Flagellum with 23-24 segments, filiform, 1st segment 2.8 times, 2nd segment 2.5 times, median segments 2.0 times, the penultimate segment 1.5 times as long as wide (Fig. 104). Thorax 2.6 times as long as the width of the mesoscutum. Pronotum very finely granulate



Figs 103-111. *Barycnemis longicauda* spec. nov. (♀). 103. Head, top view. 104. Base of antenna. 105. Mesopleurum. 106. Hind femur, tibia and basitarsus. 107. Pterostigma and areolet. 108. Propodeum, top view. 109. 1st gastral segment, side view. 110. 2nd gastral tergite, top view. 111. Ovipositor, side view.

and with fine rather dense punctures dorsolaterally, with wrinkles ventrolaterally. Mesoscutum for the greater part finely granulate and with fine dispersed punctures, finely sculptured and shining sublaterally, distinctly granulate and dull dorsally in front of the prescutellar groove. Notaulus as a distinct furrow, extending to 0.35 the length of the mesoscutum. Prescutellar groove with fine striae. Scutellum bordered by carinae on the anterior 0.2, with few punctures on a smooth background. Mesopleurum for the greater part with fine dispersed punctures on a smooth background, finely wrinkled in the upper anterior corner, speculum almost smooth. Foveate groove as a long transversely striate furrow, slightly S-shaped, almost parallel with the ventral edge of the mesopleurum (Fig. 105). Mesosternum with very fine sculpture, shining. Metapleurum finely granulate and with fine punctures and wrinkles. Hind leg rather stout, femur 3.5 times as long as high, 1.1 times as long as tibia, basitarsus 0.95 times as long as tibia. Longer hind tibial spur curved apically, 0.3 times as long as the basitarsus (Fig. 106). Hind tarsal claws short, slender and curved apically. Pterostigma 2.2 times as long as wide. Metacarpus reaching half the distance to the tip of the wing. Intercubitus short, distinctly basad of the 2nd recurrent vein (Fig. 107). Nervellus distinctly reclivous. Basal area of propodeum as a narrow furrow, almost not bordered laterally by carinae, about eight times as long as wide, 1.6-1.8 times as long as the petiolar area, with fine transverse wrinkles. Lateral area for the greater part with few punctures on a smooth background, with wrinkles posteriorly. Petiolar area bordered laterally, with fine irregular wrinkles (Fig. 108). Propodeal spiracle separated from the pleural carina by half its diameter, the spiracular carina broad. 1st gastral tergite 3.3 times as long as

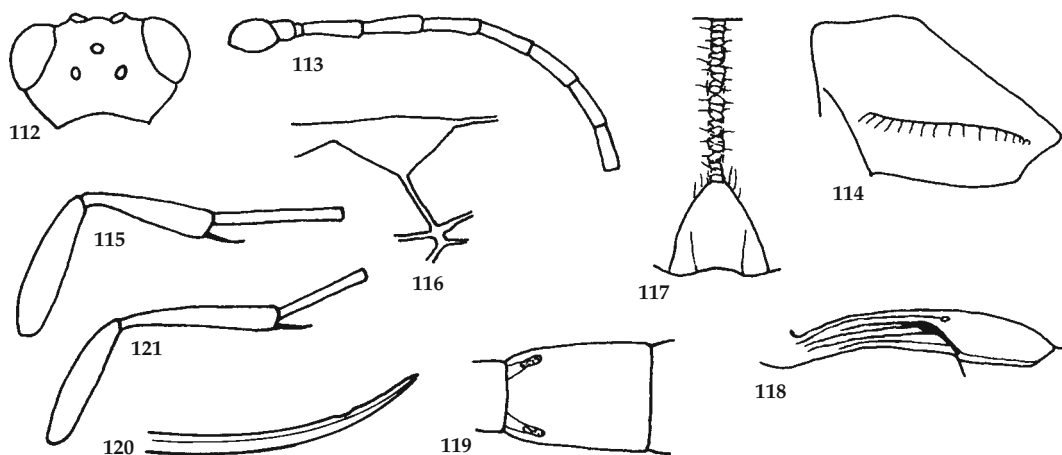
wide. Petiole 1.5 times as long as postpetiole, flat dorsally, with a depression posteriorly in front of the postpetiole, with distinct dorsolateral carinae, with rather large glymmae and with a few fine striae laterally in front of the glymmae, the anterior third smooth. Postpetiole 1.3 times as long as wide, smooth, rounded dorsally, with slightly rounded contours laterally. 1st sternite slightly surpassing the spiracles (Fig. 109). 2nd tergite 1.5 times as long as wide. Thyridium elongated, distant from the anterior edge of the 2nd tergite, thyridial depression about three times as long as wide (Fig. 110). Gaster slightly clavate posteriorly. Gastral tergites from the 3rd tergite onwards emarginate posteriorly. Ovipositor 2.0-2.2 times as long as 1st gastral tergite, slender, slightly compressed, evenly bent upwards over its total length, with a shallow rounded dorsal depression subapically (Fig. 111). Ovipositor sheath 1.4-1.5 times as long as 1st tergite.

Colour: Black. Palpi and mandible (teeth dark brown) yellowish brown. Clypeus medially and ventrally, scape and pedicellus reddish brown. Flagellum tinged with reddish brown basally. Tegula and legs yellowish red, hind coxa tinged with brown basally. Pterostigma dark brown, with small whitish marks basally and apically. Gaster from the 2nd tergite onwards yellowish brown or dark brown, 2nd tergite dorsally marked with black basally.

♂: unknown.

Barycnemis rufipes spec. nov.

Holotype (♀): "Myakka River State Park, Fla., 1-IV-1955. John C. Martin" (Florida, USA) (OTT). – Paratypes (20♀, 13♂): Canada: Alberta: Writing-on-Stone Province Park (AEI); Ontario: Chatterton (OTT), Port



Figs 112-121. *Barycnemis rufipes* spec. nov. 112-120. ♀. 112. Head, top view. 113. Base of antenna. 114. Mesopleurum. 115. Hind femur, tibia and basitarsus. 116. Pterostigma and areolet. 117. Propodeum, top view. 118. 1st gastral segment, side view. 119. 2nd gastral tergite, top view. 120. Ovipositor, side view. 121. ♂. Hind femur, tibia and basitarsus.

Pelee (OTT); Saskatchewan: Willow Bunch (OTT). USA: Arizona (WAS); California: Lake Wohlford (AEI); Delaware: Mt. Cuba (WAS); District of Columbia: Washington (WAS); Florida: Paradise Key (AEI); Illinois: Champaign (HOR); Indiana (WAS); Kentucky: General Burnside Island State Park (AEI); Louisiana: Tallulah (WAS); Maryland: Laurel (OTT), Patuxent Research Station (WAH); Missouri: Scott Co. (WAS); North Carolina: Pisgoh Mt., Wake Co. (AEI); Ohio: New Concord (AEI), Jefferson State Park (AEI), Senecaville (AEI); Texas: Stephenville (TEX); Utah: Lytle Ranch (AEI); Wyoming: Guernsey (LAN). Flight period: iii-iv and vi-x, with a weak peak in ix-x. The species has two or three generations a year. No specimen was labelled as having been collected at higher altitudes.

♀: Body length 2-3.5 mm. Temples strongly constricted behind the eyes, 0.7 times as long as the width of an eye, tangential lines on eyes and temples intersect on the middle of the mesoscutum (Fig. 112). Ocellar index 1.9. Face 0.95 times as wide as the frons. Malar space index 0.6. Clypeus 2.9 times as wide as long, slightly convex over its total length, smooth, with few punctures dorsally. Glossa half as long as the width of the clypeus. Face granulate, dull. Frons finely granulate, slightly shining. Vertex very finely granulate. Temple very finely granulate or smooth, with very fine dispersed punctures. Flagellum with 20-21 segments, slender, filiform, 1st segment 3.7 times, 2nd segment 3.0-3.5 times, median segments 2.3 times, the penultimate segment 1.8 times as long as wide (Fig. 113). Thorax 2.5 times as long as the width of the mesoscutum. Pronotum granulate dorsolaterally, with wrinkles ventrolaterally.

Mesoscutum granulate. Notaulus as a fine furrow or rather shallow depression, extending to 0.2 the length of the mesoscutum. Prescutellar groove with very fine striae. Scutellum bordered by carinae on the anterior 0.2, finely granulate, shining. Mesopleurum for the greater part finely granulate, slightly shining, sometimes very finely granulate or partly smooth and strongly shining. Foveate groove as a long transversely striate furrow, slightly S-shaped, almost parallel with the ventral edge of the mesopleurum (Fig. 114). Mesosternum distinctly or finely granulate. Metapleurum granulate, dull. Hind leg rather slender, femur 4.1 times as long as high, as long as tibia, basitarsus 0.9-1.0 times as long as tibia. Longer hind tibial spur distinctly curved apically, 0.3 times as long as the basitarsus (Fig. 115). Hind tarsal claws slender, slightly longer than empodium. Pterostigma 2.3 times as long as wide. Metacarpus reaching half the distance to the tip of the wing. Intercubitus short or reduced, distinctly basad of the 2nd recurrent vein (Fig. 116). Nervellus distinctly reclivous. Basal area of propodeum bordered by fine carinae laterally, which are often indistinct or covered with wrinkles, 7-10 times as long as wide, 1.7-2.1 times as long as the petiolar area, with transverse wrinkles between the carinae. Lateral area for the greater part granulate, rather dull or slightly shining, with some wrinkles posteriorly, sometimes with some wrinkles beside the basal area. Petiolar area small, bordered by fine carinae laterally, which are sometimes partly obliterated, granulate and with fine wrinkles (Fig. 117). Propodeal spiracle separated from the pleural carina by 0.5-1.0 times its diameter, the spiracular

carina broad. 1st gastral tergite 3.5 times as long as wide. Petiole 1.2 times as long as postpetiole, almost circular in cross-section, smooth or with fine striae or with a fine elongated depression dorsally, dorsolateral carinae weak or obliterated, with small glymmae, with fine striae laterally in front of the glymmae, the anterior third of the petiole usually smooth laterally. Postpetiole 1.6 times as long as wide, rounded dorsally, smooth, sometimes finely granulate or with fine striae anteriorly, with almost straight contours laterally. 1st sternite slightly surpassing the spiracles (Fig. 118). 2nd tergite 1.2 times as long as wide. Thyridium elongated, distant from the anterior edge of the 2nd tergite, thyridial depression 2-3 times as long as wide (Fig. 119). Gaster slender, slightly clavate posteriorly. Gastral tergites from the 3rd tergite onwards emarginate posteriorly. Ovipositor 1.7-1.9 times as long as 1st gastral tergite, slender, slightly compressed, slightly bent upwards proximally, distinctly bent upwards distally, with a very shallow rounded dorsal depression subapically (Fig. 120). Ovipositor sheath 1.1-1.2 times as long as 1st tergite.

Colour: Black. Palpi and mandible (teeth brown) yellowish. Clypeus medially and ventrally, scape, pedicellus, tegula and legs light reddish brown. Flagellum reddish brown proximally (up to the 4th segment), dark brown distally. Pterostigma light brown to medium brown, with small whitish marks basally and apically. Hind coxa sometimes slightly darkened basally. Gaster from the 2nd tergite onwards dark brown or blackish, the 2nd tergite tinged with reddish brown dorsally and laterally, sometimes the following tergites tinged with reddish brown laterally.

♂: Temples less strongly constricted behind the eyes, 0.9 times as long as the width of an eye, tangential lines on eyes and temples intersect on the scutellum. Flagellum with 25-28 segments, slightly stouter, 1st segment 2.9 times, 2nd segment 2.3 times, median segments 1.8 times, penultimate segment 1.5 times as long as wide. Malar space index 0.5. Mesopleurum usually with fine dispersed punctures on a smooth background, rarely finely granulate. Mesosternum smooth or finely granulate. Hind leg slender, femur 3.8-4.5 times as long as high, 0.9 times as long as tibia, basitarsus 0.6 times as long as tibia (Fig. 121). Basal area of propodeum 1.8-2.0 times as long as petiolar area. Lateral area finely granulate and with fine very dispersed punctures centrally, with wrinkles at the edges. Petiolar area sometimes with a short median longitudinal keel. Gaster distinctly compressed, 1st tergite 3.5 times, 2nd tergite 2.5 times as long as wide. Petiole for the greater part smooth dorsally, with fine striae laterally, the anterior third smooth. Glymma

small, usually not connected with the ventrolateral furrow of the postpetiole, sometimes almost obliterated. Hind coxa sometimes marked with brown dorsally. 2nd to 4th gastral tergite usually dark brown anteriorly, reddish brown posteriorly, posterior tergites black. In other characters similar to the ♀.

Barycnemis rugosa (Provancher)

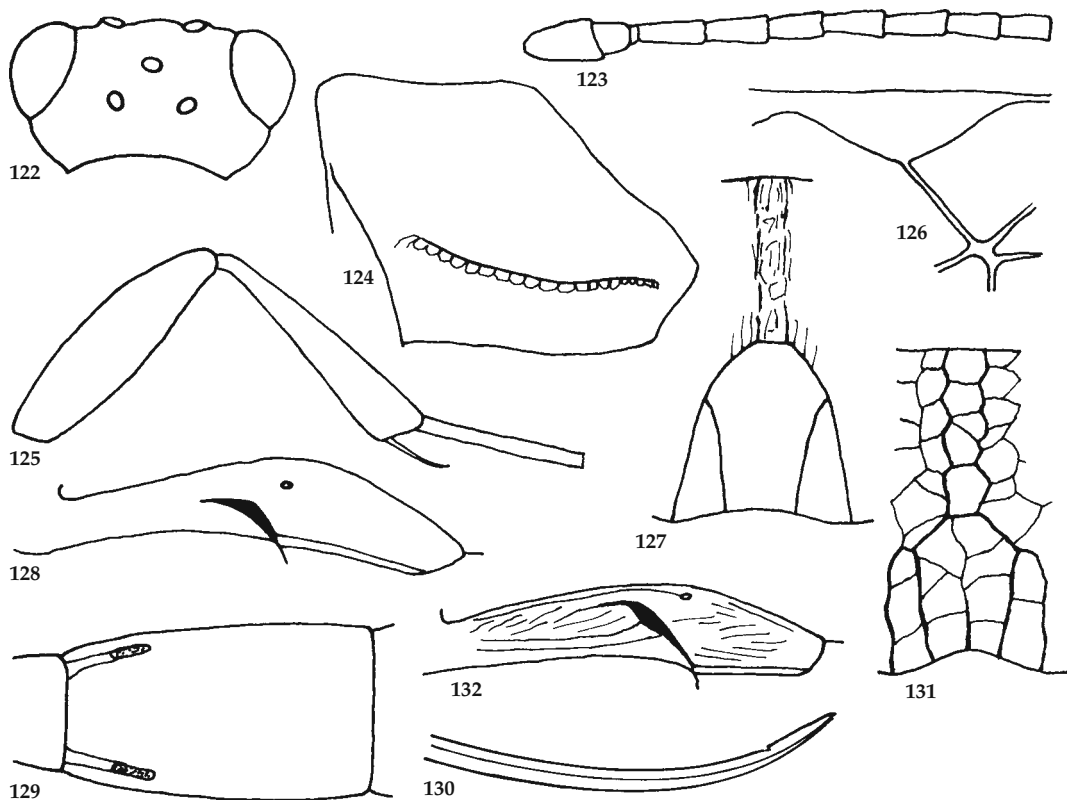
This species is subdivided in two subspecies, which differ in their colour pattern, distribution and reproductive biology.

***B. rugosa rugosa* (Provancher) (♀,♂):** Base of flagellum (up to the middle), legs and gaster from the 2nd tergite onwards yellowish red or reddish brown. Apex of flagellum brown. Hind coxa brown or black basally. Posterior gastral tergites marked with black in the ♂. This light-coloured morph occurs mainly in the eastern parts of Canada and the United States (6♀ and 22♂ collected in Alaska, British Columbia, Colorado and Montana). Obviously the subspecies is arrhenotokous, and both sexes agree in general colour pattern and in their distribution.

***B. rugosa occidentalis* subsp. nov. (♀):** Flagellum dark brown also basally. Hind coxa predominantly dark brown or black. Mid coxa and hind femur tinged with brown. Gaster from the 2nd tergite onwards reddish brown or dark brown or black (with considerable variation). This darker morph occurs mainly in the western parts of Canada and the United States (1♀ collected in Maine). Obviously the subspecies is thelytokous.

Barycnemis rugosa rugosa (Provancher) (syn. *Porizon boreale* Provancher)

♀: Body length 5-7 mm. Temples strongly constricted behind the eyes, 0.7 times as long as the width of an eye, tangential lines on eyes and temples intersect on posterior half of the mesoscutum (Fig. 122). Ocellar index 2.0. Face 1.05 times as wide as the frons. Malar space index 1.15. Clypeus 2.2 times as wide as long, slightly convex dorsally, slightly concave ventrally, smooth, with few punctures dorsally. Glossa 0.7 times as long as the width of the clypeus. Face finely granulate and with fine rather dense punctures sublaterally, smooth on the central swelling, almost smooth laterally. Frons with fine dispersed or rather dense punctures on a finely granulate or smooth background. Vertex and temple with very fine dispersed punctures on an almost smooth background, temple partly smooth.



Figs 122-132. *Barycnemis rugosa rugosa* (Provancher). 122-130. ♀. 122. Head, top view. 123. Base of antenna. 124. Mesopleurum. 125. Hind femur, tibia and basitarsus. 126. Pterostigma and areolet. 127. Propodeum, top view. 128. 1st gastral segment, side view. 129. 2nd gastral tergite, top view. 130. Ovipositor, side view. 131-132. ♂. 131. Propodeum, top view. 132. 1st gastral segment, side view.

Flagellum with 26-28 segments, filiform, 1st segment 2.7 times, 2nd segment 2.3 times, median segments 1.8 times, the penultimate segment 1.4 times as long as wide (Fig. 123). Thorax 2.5 times as long as the width of the mesoscutum. Pronotum with fine dense punctures on a slightly granulate background dorsolaterally, with wrinkles ventrolaterally. Mesoscutum for the greater part with fine rather dense or dispersed punctures on a granulate background, slightly shining sublaterally, rugose-punctate dorsally in front of the prescutellar groove. Notaulus as a distinct wrinkled furrow, extending to 0.2 the length of the mesoscutum. Prescutellar groove with fine striae. Scutellum with lateral carinae on the anterior 0.7, with fine punctures on a smooth background. Mesopleurum with distinct rather dense or dispersed punctures on a smooth background. Foveate groove as a long furrow, slightly bent upwards and not parallel with the ventral edge of the mesopleurum anteriorly, with distinct transverse striae (Fig. 124). Mesosternum with rather dense or

dispersed punctures on a smooth background. Metapleurum densely punctate or rugose-punctate. Hind leg slender, femur 4.0 times as long as high, 0.95 times as long as tibia, basitarsus 0.6 times as long as tibia. Longer hind tibial spur distinctly curved apically, 0.4 times as long as the basitarsus (Fig. 125). Hind tarsal claws slightly longer than empodium, slender. Pterostigma 2.5 times as long as wide. Metacarpus reaching 0.7 times the distance to the tip of the wing. Intercubitus short or reduced, distinctly basad of the 2nd recurrent vein (Fig. 126). Nervellus vertical. Basal area of propodeum 5-6 times as long as wide, 0.85-1.0 times as long as the petiolar area, bordered by carinae laterally, which are sometimes indistinct or covered with wrinkles, with wrinkles between the carinae. Lateral area rugose or rugose-punctate on a slightly granulate background dorsally and dorsolaterally, sometimes sparsely punctate on an almost smooth and shining background ventrolaterally. Petiolar area bordered by carinae laterally, which are sometimes partly indistinct, with irregular wrinkles

(Fig. 127). Propodeal spiracle situated close to the pleural carina, the spiracular carina broad. 1st gastral tergite 3.5 times as long as wide. Petiole 1.4 times as long as postpetiole, flat or slightly rounded and smooth dorsally, with distinct dorsolateral carinae, with distinct glymmae, almost smooth laterally in front of the glymmae. Postpetiole 1.5 times as long as wide, rounded dorsally, smooth, with slightly rounded contours laterally. 1st sternite reaching or slightly surpassing the spiracles (Fig. 128). 2nd tergite 1.7 times as long as wide. Thyridium elongated, distant from the anterior edge of the 2nd tergite, thyridial depression about four times as long as wide (Fig. 129). Gaster slender and slightly clavate posteriorly. Gaster tergites from the 3rd tergite onwards emarginate posteriorly. Ovipositor 2.1 times as long as 1st gastral tergite, slender, slightly compressed, slightly bent upwards proximally, distinctly bent upwards distally, with a distinct triangular dorsal incision subapically (Fig. 130). Ovipositor sheath 1.3-1.4 times as long as 1st tergite.

Colour: Black. Palpi, mandible (teeth brown), ventral half of clypeus, scape, base of flagellum (up to the middle), tegula, legs and gaster from the 2nd tergite onwards yellowish red or reddish brown. Apex of flagellum brown. Hind coxa brown or black basally. Pterostigma medium brown, with small whitish marks basally and apically.

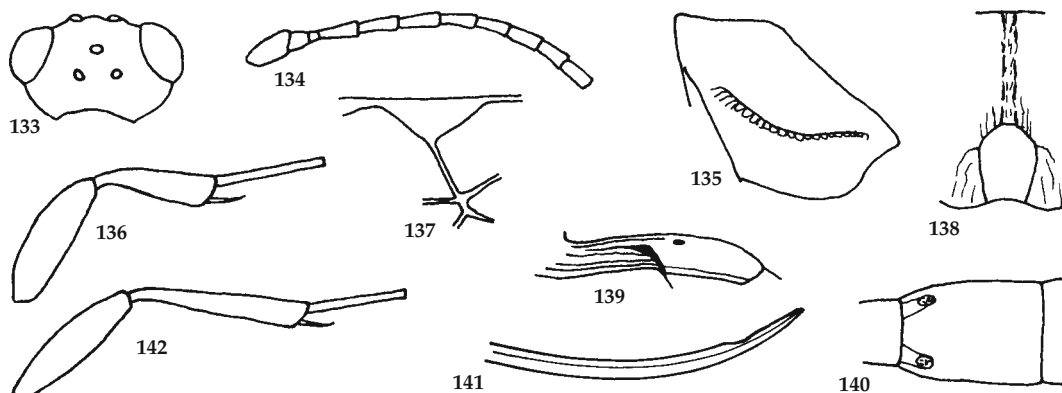
♂: Temples less strongly constricted behind the eyes, 0.85 times as long as the width of an eye, tangential lines on eyes and temples intersect on the postscutellum or the propodeum. Malar space index 0.7. Flagellum with 30-34 segments, slightly attenuated distally, penultimate segment 1.5 times as long as wide. Metapleurum coarsely rugose. Hind leg as described for the ♀. Propodeum very coarsely rugose. Basal area indicated, about 3.8 times as long as wide, 1.2-1.3 times as long as the petiolar area, but the lateral carinae almost indiscernible and covered with wrinkles. Lateral area completely rugose. Petiolar area bordered by carinae, but these are sometimes covered with wrinkles, a median longitudinal keel often indicated posteriorly (Fig. 131). Petiole 1.4-1.6 times as long as postpetiole, for the greater part smooth dorsally, with longitudinal striae posteriorly, almost completely striate laterally, rarely the anterior half almost smooth. Postpetiole sometimes with longitudinal striae dorsally, often with longitudinal striae laterally (Fig. 132). Gaster slender and distinctly compressed, 1st tergite 4.2 times as long as wide, 2nd tergite 2.7 times as long as wide. Legs reddish brown, hind coxae marked with dark brown basally. Gaster from the 2nd tergite onwards reddish

brown, hind tergites blackish dorsally or dorsally and laterally, often 2nd tergite marked with black anteriorly. In other characters similar to the ♀.

Material (60♀♀, 205♂♂): Canada: Alberta (OTT); British Columbia (AEI, OTT); Manitoba (OTT); New Brunswick (ITH, OTT, WAS); Newfoundland (OTT); Northwest Territories (OTT); Nova Scotia (AEI, ITH, OTT); Ontario (AEI, ITH, OTT); Prince Edward Island (OTT); Quebec (OTT); Saskatchewan (OTT). USA: Alaska (WAS); Colorado (OTT, WAS); Connecticut (AEI); Idaho (WAS); Kentucky (AEI); Maine (AEI, CAM, WAS); Maryland (AEI, WAH); Massachusetts (CAM); Michigan (AEI, CAM, LAN); Missouri (OTT); Montana (AEI); New Hampshire (AEI, OTT); New York (AEI, ITH, OTT, WAS); Ohio (AEI); Pennsylvania (AEI, ITH); South Carolina (AEI); West Virginia (AEI); Virginia (WAS); Wisconsin (AEI). Flight period: vi-x, with a distinct peak in vii-viii. Most probably the subspecies is univoltine. Few specimens were collected in Colorado at 3700 m a.s.l. (OTT) and in British Columbia at 1400 m a.s.l. (OTT).

Barycnemis rugosa occidentalis subspec. nov.

Holotype (♀): "Arizona: Cochise Co., Barfoot Meadow, Coronado Natl. Forest, Chiricahua Mts.", "21.viii.2000, M. L. Buffington, sweep of ravine" (USA) (TEX). – Paratypes (146♀♀): Canada: Alberta: Bow Valley Province Park (AEI), Calgary (OTT), Cameron Lake (OTT), Irwing (OTT), Lethbridge (OTT), Morley (OTT), Scandia (OTT); British Columbia: Jesmond (OTT), Ketchum Lake (OTT), Moyle Mountain (FRA), Robson (OTT), Vernon (OTT); Manitoba: Shilo (OTT); Saskatchewan: Cypress Hills Province Park (AEI), Lloydminster (AEI), Saskatoon (OTT); Yukon: Carmacks (AEI). USA: Arizona: Chiricahua Mountains (HOR, TEX), Huachuca Mountains (OTT), Jacob Lake (AEI), Mt. Graham (AEI); Colorado: Estes Park (AEI, OTT), Deer Creek Canyon (LAN), Glen Haven (LAN), Gould (AEI), Mt. Evans (AEI, OTT), Phantom Valley (AEI), Rabbit Ears Pass (AEI), Rocky Mountain National Park (OTT), Tennessee Pass (TEX), Ward (LAN, OTT); Idaho: Bliss (WAS), Chatcolet Lake (CAM), Hollister (WAS), Hubbs Butte (WAS), Lowman (AEI), Stanley (AEI); Maine: Southwest Harbor (WAS); Minnesota: Mt. Spohane (CAM); Montana: Boheman (AEI, TEX), Choteau (TEX), Glacier Park (CAM), Gold Creek (CAM); Oregon: Aldrich Mountains (AEI), Mt. Hood (CAM), Ochoco Creek (AEI); South Dakota: Custer State Park (LAN); Utah: Vernal (TEX); Washington: Gallatin Ranger Station (CAM); Wyoming: Albany Co. (LAN), Burgess Junction (TEX), Jackson Hole Biological Station (CAM), Snowy Range (LAN), Yellowstone Park (CAM). Flight period: vi-x, with a distinct peak in vii-viii. Most probably the subspecies is univoltine. Several specimens were collected in Colorado at 3000-3900 m a.s.l. (AEI, OTT, TEX) and in British Columbia at 2000 m a.s.l. (FRA).



Figs 133-142. *Barycnemis striata* spec. nov. 133-141. ♀. 133. Head, top view. 134. Base of antenna. 135. Mesopleurum. 136. Hind femur, tibia and basitarsus. 137. Pterostigma and areolet. 138. Propodeum, top view. 139. 1st gastral segment, side view. 140. 2nd gastral tergite, top view. 141. Ovipositor, side view. 142. ♂. Hind femur, tibia and basitarsus.

***Barycnemis striata* spec. nov.**

Holotype (♀): "Quebec: 50°03'N, 77°07'W; VI.12-VI.11.1987; Leblanc" (near Matagami; Quebec, Canada) (AEI). – Paratypes: 14♀♀, 2♂♂ with the same data (AEI, HOR). Flight period: vi-viii.

♀: Body length 2.5-3 mm. Temples strongly constricted behind the eyes, 0.8 times as long as the width of an eye, tangential lines on eyes and temples intersect on the middle of the mesoscutum (Fig. 133). Ocellar index 2.3. Face 0.95 times as wide as the frons. Malar space index 0.7. Clypeus 2.7 times as wide as long, distinctly convex dorsally, slightly convex subventrally, smooth, with very dispersed fine punctures. Glossa half as long as the width of the clypeus. Face finely granulate, the central swelling small, shining and almost smooth. Frons and vertex finely granulate, shining. Temple smooth, with fine very dispersed punctures. Flagellum with 21 segments, slender, filiform, 1st segment 2.9 times, 2nd segment 2.5 times, median segments 1.7 times, the penultimate segment 1.4 times as long as wide (Fig. 134). Thorax 2.6 times as long as the width of the mesoscutum. Pronotum finely granulate and with fine rather dense punctures dorsolaterally, with wrinkles ventrolaterally. Mesoscutum finely granulate and with fine dispersed punctures. Notaulus as a short furrow, extending to 0.25 the length of the mesoscutum. Prescutellar groove with fine striae. Scutellum bordered by carinae on the anterior 0.3, with fine dispersed punctures on a smooth background. Mesopleurum smooth, with a few very fine punctures. Foveate groove as a long furrow, slightly bent upwards anteriorly (Fig. 135). Mesosternum smooth. Metapleurum shining, very finely granulate and with fine dispersed punctures

and wrinkles. Hind leg rather stout, femur 3.2 times as long as high, 1.2 times as long as tibia, basitarsus 0.9 times as long as tibia. Longer hind tibial spur curved apically, 0.3 times as long as the basitarsus (Fig. 136). Hind tarsal claws small, slender, distinctly curved apically. Pterostigma 2.4 times as long as wide. Metacarpus reaching 0.4 times the distance to the tip of the wing. Intercubitus short or reduced, distinctly basad of the 2nd recurrent vein (Fig. 137). Nervellus distinctly reclivous. Basal area of propodeum narrow, bordered by indistinct carinae laterally, about eight times as long as wide, 1.2 times as long as the petiolar area, covered with fine wrinkles. Lateral area almost smooth anteriorly and medially, with a few fine punctures, with longitudinal striae posteriorly. Petiolar area bordered by distinct carinae laterally, with fine irregular wrinkles (Fig. 138). Propodeal spiracle separated from the pleural carina by half its diameter, the spiracular carina broad. 1st gastral tergite 2.8 times as long as wide. Petiole 1.3 times as long as postpetiole, flat and with a few longitudinal striae and a posterior depression dorsally, dorsolateral carinae distinct, with small glymmae, with distinct long longitudinal striae laterally in front of the glymmae. Postpetiole 1.2 times as long as wide, smooth, rounded dorsally, with almost parallel contours laterally. 1st sternite not or almost reaching the spiracles (Fig. 139). 2nd tergite 1.4 times as long as wide. Thyridium oval, distant from the anterior edge of the 2nd tergite, thyridial depression about twice as long as wide (Fig. 140). Gaster slightly clavate, slightly compressed posteriorly. Gastral tergites from the 3rd tergite onwards emarginate posteriorly. Ovipositor 2.2 times as long as 1st gastral tergite, slender, slightly higher than wide, slightly bent upwards proximally, distinctly

bent upwards distally, with a very shallow rounded dorsal depression subapically (Fig. 141). Ovipositor sheath 1.4 times as long as 1st tergite.

Colour: Black. Palpi and mandible (teeth dark brown) yellowish brown. Clypeus brown or dark brown medially and apically. Scape and pedicellus yellowish brown or dark brown. Flagellum tinged with brown basally. Pterostigma dark brown. Legs yellowish brown, hind coxa dark brown or black basally and medially. Gaster from the 2nd tergite onwards for the greater part black dorsally, yellowish brown or brown laterally, the 2nd tergite dorsally tinged with brown posteriorly.

♂: Temples less strongly constricted behind the eyes, tangential lines on eyes and temples intersect on the scutellum. Flagellum with 26-27 segments, 1st segment 3.7 times, 2nd segment 2.7 times as long as wide. Hind femur 4.2 times as long as high, 0.9 times as long as tibia, basitarsus 0.6 times as long as tibia (Fig. 142). Basal area of propodeum 1.3 times as long as the petiolar area. 1st gastral tergite 3.7 times, 2nd tergite 2.1 times as long as wide. 2nd and 3rd gastral tergites for the greater part yellowish brown, tinged with brown anteriorly. Posterior gastral tergites dark brown dorsally, yellowish brown laterally. In other characters similar to the ♀.

Ctenophion gen. nov.

Type species: *Ctenophion niger* spec. nov.

The new genus belongs to the *Tersilochus*-group (Horstmann 1981: 5) and is similar to *Probles* Förster in general appearance. It is characterized by pectinate tarsal claws, an intercubitus subopposite to the 2nd recurrent vein, a coarsely wrinkled propodeum and a short and stout ovipositor. One species is known.

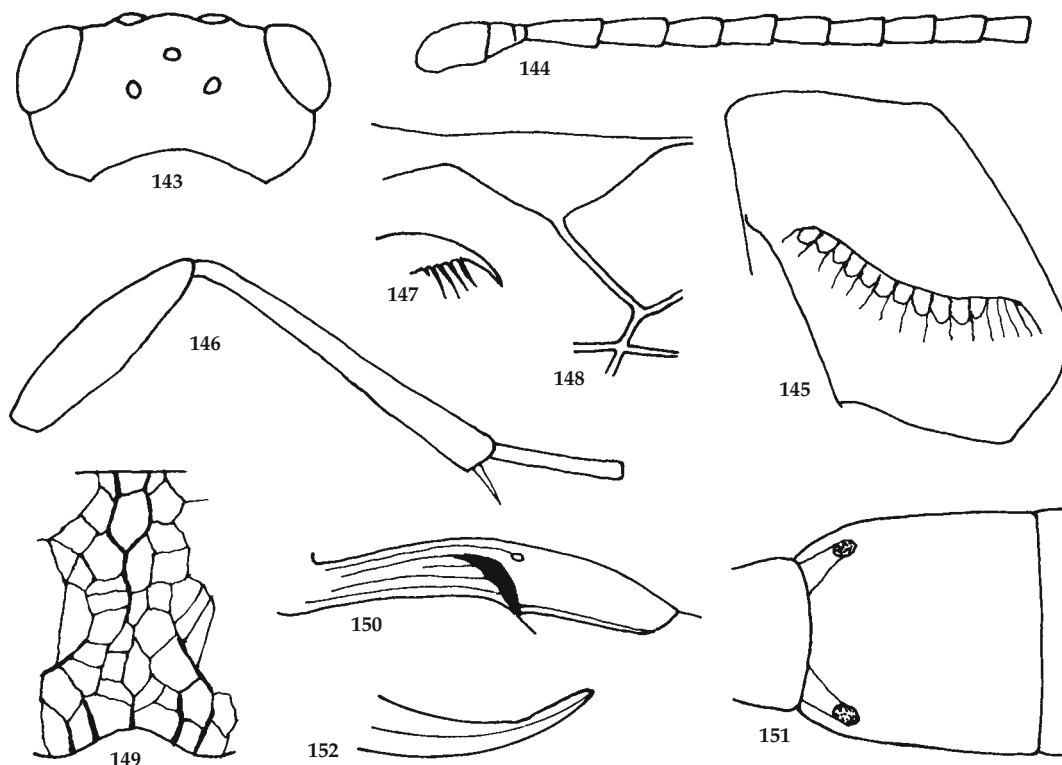
Diagnosis: Oral carina obliterated. Glossa short. Upper end of prepectal carina curved forwards and almost reaching the front margin of the mesopleurum below the middle of the hind margin of the pronotum. Foveate groove extending almost over the total length of the mesopleurum, distinct, oblique (Fig. 145). Hind tibia unusually long, hind tarsus short (see below). Longer hind tibial spur straight, 0.3 times as long as the basitarsus (Fig. 146). All tarsal claws elongated, longer than empodium, slender and slightly curved distally, with 4-5 long pectinate teeth situated basally and medially (Fig. 147). Intercubitus of fore wing rather long, subopposite to the 2nd recurrent vein (Fig. 148). First brachial cell closed at its lower distal corner. Propodeum coarsely wrinkled, carinae partly covered with wrinkles (Fig. 149). Propodeal spiracle small, separated

from the pleural carina by 1.5 times its diameter, the spiracular carina narrow. Glymma distinct, situated at the posterior end of the petiole, connected with the ventrolateral furrow of the postpetiole (Fig. 150). Thyridium oval, distant from the anterior edge of the 2nd tergite, thyridial depression about twice as long as wide (Fig. 151). Ovipositor short, not surpassing the apex of the gaster, very stout basally, almost evenly tapered from base to apex (Fig. 152).

Ctenophion niger spec. nov.

Holotype (♀): "Doolittle Ranch, Mt. Evans, Colo, 9800', July 1 1964, C. Dasch" (Colorado, USA) (AEI). – Paratypes (5♀, 1♂): Canada: Alberta: Sunwapta Pass, Banff National Park, 7400' (HOR, OTT); Yukon: Dempster Highway, Mile 51 (OTT). USA: Alaska: Tsaina (AEI); Colorado: Phantom Valley, 9400' (AEI). Flight period: vii-viii.

♀: Body length 4-5.5 mm. Temples slightly constricted behind the eyes, 0.9 times as long as the width of an eye, tangential lines on eyes and temples intersect on the postpetiole (Fig. 143). Ocellar index 2.8. Face 1.05 times as wide as the frons. Malar space index 1.0. Clypeus 2.4 times as wide as long, distinctly convex dorsally, almost flat subventrally, with fine punctures dorsally, smooth without punctures medially and subventrally, its apex rounded, blunt, with a transverse row of small punctures. Mandible distinctly punctate basally, teeth of almost equal length. Glossa half as long as the width of the clypeus. Face granulate, rather dull, with rather dense or dense punctures, the central swelling and the orbits slightly shining. Frons granulate, dull, with fine punctures. Vertex finely granulate, shining, with very fine dispersed punctures. Temple with very fine dispersed punctures on a smooth background. Flagellum with 24-25 segments, filiform, 1st segment 3.2 times, 2nd segment 2.4 times, median segments 1.8 times, the penultimate segment 1.2 times as long as wide (Fig. 144). Thorax 2.0 times as long as the width of the mesoscutum. Pronotum with fine and dense punctures on a smooth background dorsolaterally, with distinct wrinkles ventrolaterally. Mesoscutum for the greater part with fine rather dense or dense punctures on a smooth background, distinctly wrinkled dorsally in front of the prescutellar groove. Notaulus as a distinct wrinkled furrow, extending to 0.3 the length of the mesoscutum. Prescutellar groove with distinct striae. Scutellum bordered by carinae on the anterior 0.6, with fine wrinkles. Mesopleurum for the greater part with distinct irregular wrinkles, speculum and sometimes a small central area almost smooth and shining, the ventral part (below the foveate groove) strongly wrinkled. Mesosternum with



Figs 143–152. *Ctenophion niger* spec. nov. (♀). 143. Head, top view. 144. Base of antenna. 145. Mesopleurum. 146. Hind femur, tibia and basitarsus. 147. Hind tarsal claw. 148. Pterostigma and areolet. 149. Propodeum, top view. 150. 1st gastral segment, side view. 151. 2nd gastral tergite, top view. 152. Ovipositor, side view.

fine dispersed or rather dense punctures on a smooth background, shining. Metapleurum with distinct irregular wrinkles. Hind leg rather slender, femur 4.1 times as long as high, 0.7 times as long as tibia, tarsus 0.85 times and basitarsus 0.35 times as long as tibia (Fig. 146). Pterostigma 2.4 times as long as wide. Metacarpus reaching 0.6 times the distance to the tip of the wing. Nervellus almost vertical. Basal area of propodeum partly covered with wrinkles, sometimes indicated anteriorly and replaced by a longitudinal keel posteriorly, about 1.1 times as long as the petiolar area. Petiolar area slightly rounded, sometimes with a longitudinal keel, the lateral carinae present or partly covered with wrinkles (Fig. 149). 1st gastral tergite 2.6 times as long as wide. Petiole 1.2 times as long as postpetiole, flat and smooth or with fine sculpture dorsally, dorsolateral carinae indicated, almost completely striate laterally. Postpetiole 1.2 times as long as wide, rounded dorsally, with a few punctures and partly with fine sculpture, the lateral contours divergent. 1st sternite reaching the spiracles (Fig. 150). 2nd tergite 0.9 times as long as wide. Thyridium oval, thyridial depression about twice as long

as wide (Fig. 151). Gaster slightly clavate. Posterior gastral tergites slightly emarginate posteriorly, with rather long setae. Ovipositor 0.6 times as long as 1st gastral tergite, basally about twice as high as the width of a hind basitarsus, slightly bent upwards and tapered from base to apex, with a very shallow rounded dorsal depression subapically (Fig. 152). Ovipositor sheath 0.3 times as long as 1st tergite.

Colour: Black. Palpi dark brown. Mandible broadly reddish brown medially. Scape tinged with brown ventrally. Tegula brown or black. Fore leg reddish brown from the trochantellus onwards, sometimes trochantellus and femur marked with dark brown ventrally. Mid and hind legs reddish brown from the apex of the femur onwards, sometimes mid femur tinged with brown ventrally or medially and ventrally. Pterostigma dark brown or blackish.

♂: Very similar to the ♀, differing in the following characters: Temples not constricted behind the eyes, 1.0 times as long as the width of an eye. Lower mandibular tooth slightly the longer. Flagellum with

29 segments, long and slender, slightly attenuated distally, 1st segment 3.4 times, 2nd segment 2.2 times, median segments 1.8 times, the penultimate segment 1.4 times as long as wide. Basal area of propodeum about 1.9 times as long as the petiolar area, partly replaced by strong irregular or longitudinal wrinkles. 1st gastral tergite 2.7 times, 2nd tergite 1.05 times as long as wide. 2nd gastral tergite with two reddish brown marks laterally close to the posterior margin.

Sathropterus Förster

Sathropterus Förster, 1869. Type species: *Thersilochus pumilus* Holmgren.

Sathropterus pumilus (Holmgren)

The genus and its type species were re-described and figured by Horstmann (1971: 58 ff.), Townes (1971: 49 and 266), Gauld (1984: 307 and 314) and Khalaim (2007: 592 f.). The species is known from the Palaearctic region (Horstmann 1971: 59; Khalaim 2007: 592), Brazil and South Africa (Coll. Townes, AEI) and Australia (Gauld 1984: 314).

Material (3♀♀): USA: Arizona (TEX); North Carolina (NUH); Texas (TEX). Flight period: vii and x.

Spinolochus Horstmann

Spinolochus Horstmann, 1971. Type species: *Thersilochus laevifrons* Holmgren

This is a small genus. It was described and figured by Horstmann (1971: 77 ff.) and re-described by Townes (1971: 38 and 259). The type species is known from Europe (Horstmann 1971: 78) and the eastern Palaearctic region (Khalaim 2007: 592), and it occurs in North America too. A second species was described from Alaska. The two species are very similar and differ only in the characters noted in the key.

Key to females

1. Ovipositor about 3.5 times as long as 1st gastral tergite, about as wide as high, with a shallow rounded dorsal depression subapically (Fig. 162). Ovipositor sheath 2.2 times as long as 1st gastral tergite. Longer hind tibial spur slightly curved distally. Posterior end of petiole rounded dorsally and without dorsolateral carinae (flat or slightly convex in lateral view).
.....*distolatus* Torgersen

- Ovipositor 3.0-3.1 times as long as 1st gastral tergite, distinctly wider than high proximally and medially, without a dorsal depression subapically (Fig. 161). Ovipositor sheath about 1.7 times as long as 1st gastral tergite. Longer hind tibial spur straight distally (Fig. 156). Posterior end of petiole flat dorsally and with dorsolateral carinae (flat or slightly depressed in lateral view).*laevifrons* (Holmgren)

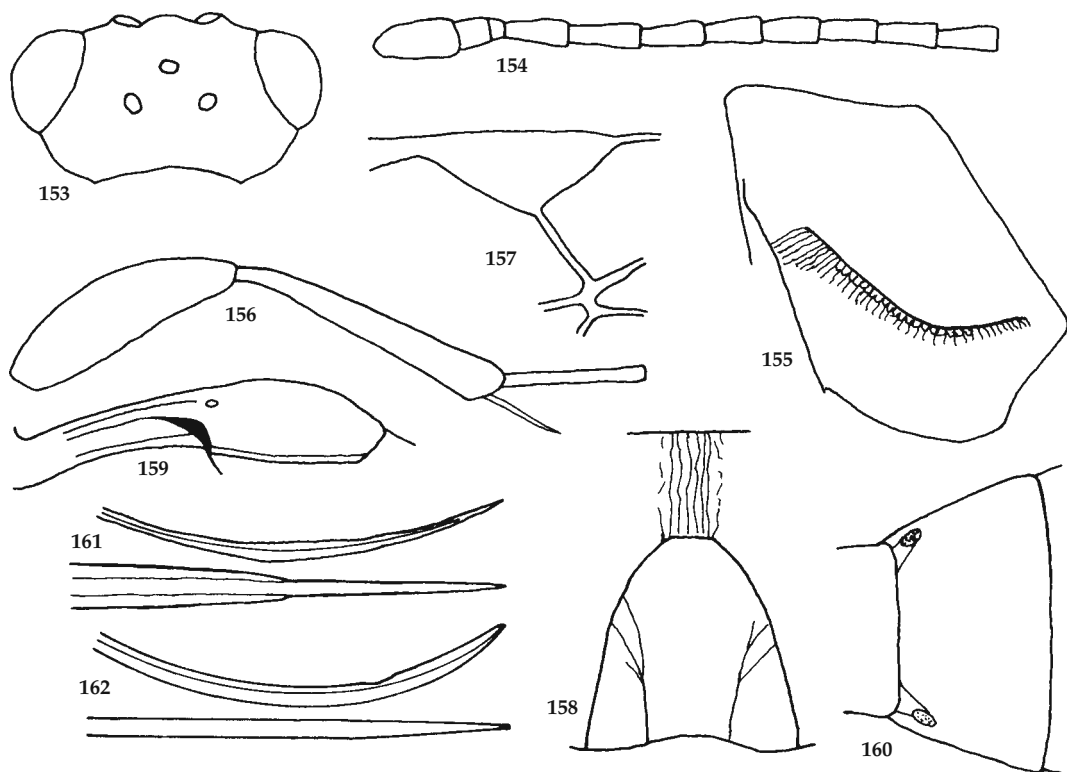
Spinolochus distolatus Torgersen

Torgersen (1973: 124 f.) described the species. The ♀ agrees with the description of *S. laevifrons* (except in the characters mentioned above). I was unable to find the differences in the shape and the colour of the clypeus and in the setation of the ovipositor sheath mentioned by Torgersen. The ♂ is unknown.

Material (3♀♀): USA: Alaska (AEI, OTT, WAS). Flight period: viii.

Spinolochus laevifrons (Holmgren)

♀: Body length 3.5-5 mm. Temples distinctly constricted behind the eyes, 0.7 times as long as the width of an eye, tangential lines on eyes and temples intersect on the posterior half of the mesoscutum (Fig. 153). Ocellar index 2.0. Face as wide as the frons. Malar space index 1.1. Clypeus 2.7 times as wide as long, rather flat, smooth, with few punctures on a smooth background dorsally, smooth without punctures subventrally, its apex rounded, blunt, with a transverse row of small punctures. Glossa half as long as the width of the clypeus. Face with fine dispersed punctures on a very finely granulate background, central swelling almost smooth. Frons with very fine dispersed punctures on a very finely granulate background, partly the background smooth. Vertex and temple with very fine dispersed punctures on a smooth background. Flagellum with 24-26 segments, filiform, 1st segment 3.1 times, 2nd segment 2.6 times, median segments 2.0 times, the penultimate segment 1.5 times as long as wide (Fig. 154). Thorax 2.3 times as long as the width of the mesoscutum. Pronotum with fine dispersed punctures on a finely granulate background dorsolaterally, with wrinkles ventrolaterally. Mesoscutum with fine dispersed punctures on a finely granulate background. Notaulus as a distinctly wrinkled area, extending to 0.25 the length of the mesoscutum. Prescutellar groove with a few distinct striae. Scutellum bordered by carinae on the anterior half, finely granulate and with fine punctures. Mesopleurum distinctly stri-



Figs 153-161. *Spinolochus laevifrons* (Holmgren) (♀). 153. Head, top view. 154. Base of antenna. 155. Mesopleurum. 156. Hind femur, tibia and basitarsus. 157. Pterostigma and areolet. 158. Propodeum, top view. 159. 1st gastral segment, side view. 160. 2nd gastral tergite, top view. 161. Ovipositor, side view and top view. **Fig. 162.** *Spinolochus distolatus* Torgersen (♀). Ovipositor, side view and top view.

ate in the dorsal anterior corner, a central area and the speculum finely granulate and with a few fine punctures (sometimes partly smooth), with more distinct punctures posteriorly. Foveate groove long, curved, distinctly bent upwards anteriorly (Fig. 155). Mesosternum with very fine dispersed punctures on an almost smooth background. Metapleurum finely granulate and with fine punctures and wrinkles. Hind leg rather slender, femur 3.4 times as long as high, 0.9 times as long as tibia, basitarsus half as long as tibia. Longer hind tibial spur straight, 0.6 times as long as the basitarsus (Fig. 156). Hind tarsal claws slightly elongated, slender and slightly curved distally, not pectinate. Pterostigma 2.4 times as long as wide. Metacarpus reaching half the distance to the tip of the wing. Intercubitus broad, distinctly basad of the 2nd recurrent vein (Fig. 157). Nervellus slightly reclivous. Basal area of propodeum as a rather broad and shallow furrow, distinctly wrinkled, without lateral carinae, about 1.5 times as long as wide, half as long as the petiolar area. Lateral area shining and with few punctures and wrinkles anteriorly, with

longitudinal wrinkles posteriorly. Petiolar area flat, with fine wrinkles, the lateral carinae obliterated anteriorly (Fig. 158). Propodeal spiracle separated from the pleural carina by 1.5-2.0 times its diameter, the spiracular carina broad. 1st gastral tergite 2.0 times as long as wide. Petiole 1.2 times as long as postpetiole, wider than high, flat dorsally, with some longitudinal wrinkles and with a shallow groove dorsally in front of the postpetiole, with distinct dorsolateral carinae, with large glymmae, which are connected with the ventrolateral furrow of the postpetiole, with longitudinal striae laterally in front of the glymmae. Postpetiole 0.9 times as long as wide, rounded and with a few punctures dorsally, with divergent contours laterally. 1st sternite reaching the spiracles (Fig. 159). 2nd tergite about half as long as wide. Thyridium small, oval, close to the anterior edge of the 2nd tergite, thyridial depression slightly longer than wide (Fig. 160). Gaster slightly clavate posteriorly. Gastral tergites from the 5th tergite onwards incised posteriorly (only the sclerotised parts of the tergites are incised, the posterior unsclerotised edges are

almost straight). Ovipositor 3.0-3.1 times as long as 1st gastral tergite, bent upwards over its total length, distinctly wider than high proximally and medially, the distal 0.2 not distinctly widened, without a dorsal depression subapically (Fig. 161). Ovipositor sheath about 1.7 times as long as 1st tergite.

Colour: Black. Palpi, mandible (teeth brown), scape, pedicellus and tegula yellowish brown. Clypeus blackish or marked with reddish brown or brown distally. Pterostigma dark brown or blackish. Legs yellowish red, hind coxa blackish basally. Gaster from the 2nd tergite onwards yellowish red, the 2nd and 3rd tergites tinged with black anteriorly, sometimes the posterior tergites tinged with black too.

♂: Very similar to the ♀.

Variation: In 1♀ from Quebec (OTT) parts of the thorax are almost smooth and not granulate (dorsolateral part of pronotum, greater part of mesoscutum, central area of mesopleurum and speculum, mesosternum).

Material (13♀♀, 2♂): Canada: British Columbia (OTT); Northwest Territories (Yellowknife) (OTT); Quebec (OTT). USA: Colorado (TEX); Idaho (AEI); New Hampshire (AEI); New York (WAS); Oregon (AEI). Flight period: vi-ix, with a peak in viii. Most probably the species is univoltine. No specimen was labelled as having been collected at higher altitudes.

Stethantyx Townes

Stethantyx Townes, 1971. Type species *Stethantyx nearctica* Townes.

Stethantyx is a large genus with most species occurring in the Neotropical region (most of them undescribed). It was described by Townes (1971: 42f.) and re-described by Gauld (1984: 315). The type species was described from the United States and northern Mexico; another species was originally reared from its host in Argentina and Uruguay and later introduced into the United States, where it became established; a third species is described here as new. The species are quite different from each other and probably belong to different species groups.

Key to species

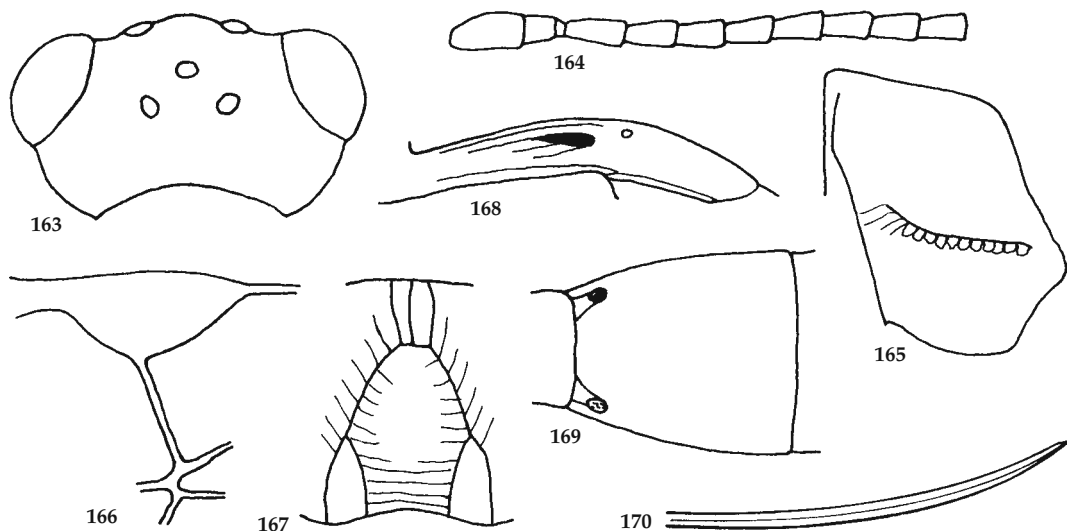
1. Head, thorax and propodeum with dense punctures on a granulate and dull background, temple and mesopleurum slightly shining. Ovipositor 1.1 times, ovipositor sheath 0.6 times as long as 1st gastral tergite. ♂ unknown in the Nearctic region.....*parkeri* (Blanchard) ♀

- Head, thorax and propodeum with fine punctures on a smooth or slightly granulate background, shining. Ovipositor longer..... 2.
- 2. Clypeus convex subventrally. Flagellum with 17-19 segments. Ovipositor 1.8 times, ovipositor sheath 0.9 times as long as 1st gastral tergite. Body length 4.5-5 mm.*crassa* spec. nov. ♀♂
- Clypeus flat or slightly depressed subventrally. Flagellum with 33-38 segments. Ovipositor 2.9 times, ovipositor sheath 2.1 times as long as 1st gastral tergite. Body length 6.5-9 mm.*nearctica* Townes ♀♂

Stethantyx crassa spec. nov.

Holotype (♀): "Highlands, N.C., June 26, 1977", H. + M. Townes (North Carolina, USA) (AEI). – Paratypes (25♀♀, 9♂♂): Canada: Nova Scotia: Smith's Cove (OTT); Ontario: Aldershot (OTT), Ottawa (OTT), Trenton (OTT); Quebec: Aylmer (OTT), Georgeville (OTT). USA: Illinois: Robertson (WAS); Massachusetts: Holliston (CAM); Michigan: Ann Arbor (AEI), Midland Co. (AEI, LAN); Mississippi: Stoneville (WAS); New Jersey: Moorestown (AEI); New York: Ithaca (AEI), Poughkeepsie (AEI); North Carolina: Highlands (HOR); Pennsylvania: Arendtsville (ITH), Gaines (AEI); Rhode Island: Westerly (AEI); West Virginia: Bowden (AEI). Flight period: v-vii, with a peak in vi. Most probably the species is univoltine. No specimen was labelled as having been collected at higher altitudes.

♀: Body length 4.5-5 mm. Temples distinctly constricted behind the eyes, 0.75 times as long as the width of an eye, tangential lines on eyes and temples intersect on the scutellum (Fig. 163). Ocellar index 1.8. Face 0.95 times as wide as the frons. Malar space index 0.85. Clypeus 3.0 times as wide as long, convex (also subventrally), smooth, with fine rather dense punctures dorsally, its apex rounded, blunt, with a transverse row of small punctures. Mandible slender, upper tooth distinctly the longer. Glossa 0.2 times as long as the width of the clypeus. Oral carina replaced by several fine striae. Face and frons with fine and dense punctures on a smooth background. Vertex and temple with very fine and dispersed punctures on a smooth background. Flagellum with 17-19 segments, almost filiform, 1st segment 2.8 times, 2nd segment 1.9 times, median segments 1.5 times, the penultimate segment 1.3 times as long as wide (Fig. 164). Thorax 1.9 times as long as the width of the mesoscutum. Pronotum with fine rather dense punctures on a smooth background dorsolaterally, with striae ventrolaterally. Mesoscutum with fine rather dense punctures on a finely granulate background medially, with fine dispersed punctures

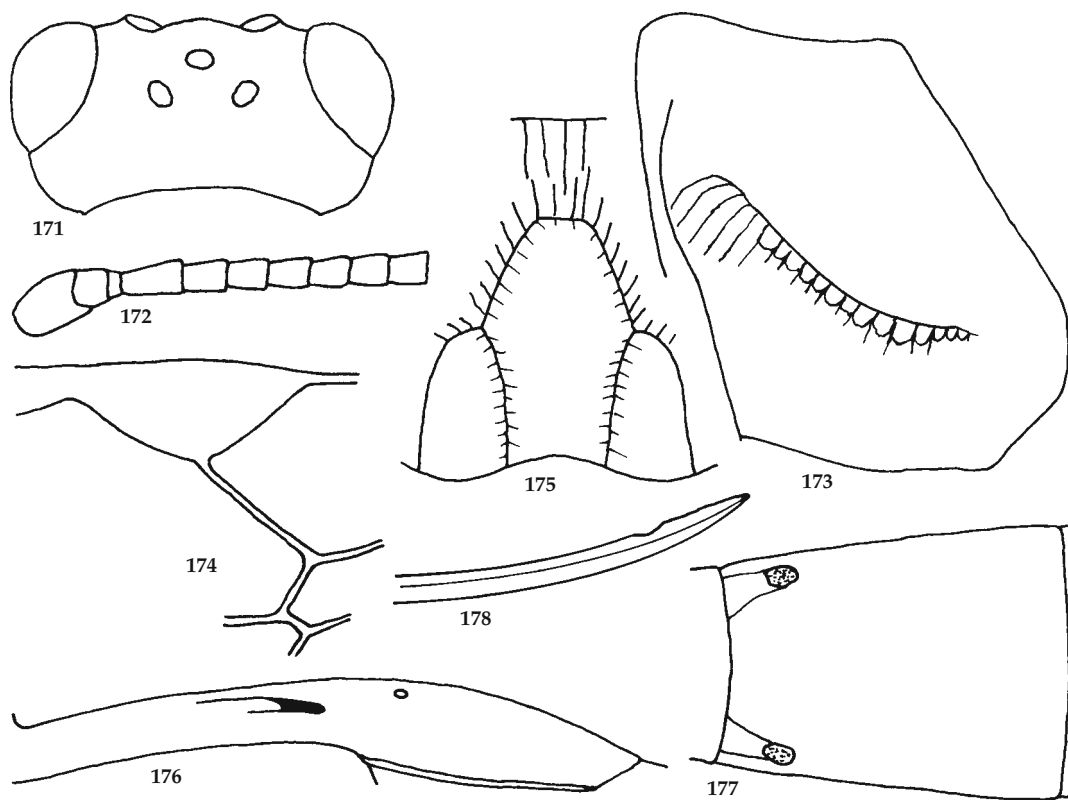


Figs 163-170. *Stethantyx crassa* spec. nov. (♀). 163. Head, top view. 164. Base of antenna. 165. Mesopleurum. 166. Pterostigma and areolet. 167. Propodeum, top view. 168. 1st gastral segment, side view. 169. 2nd gastral tergite, top view. 170. Ovipositor, side view.

on a smooth background sublaterally. Notaulus as a distinct furrow, which is connected with the anterior edge of the mesoscutum, extending to 0.2 the length of the mesoscutum. Prescutellar groove with distinct striae. Scutellum bordered by carinae on the anterior 0.4, with fine punctures on a smooth background. Mesopleurum with fine dispersed or rather dense punctures on a smooth background centrally. Speculum almost smooth, with a few fine punctures. Foveate groove as a long narrow furrow, slightly curved, with distinct transverse striae (Fig. 165). Mesosternum with fine dispersed punctures on a smooth background. Metapleurum with fine dense punctures on an almost smooth background. Hind leg slender, femur 4.6 times as long as high, 0.8 times as long as tibia, basitarsus half as long as tibia. Longer hind tibial spur almost straight distally, 0.3 times as long as the basitarsus. Hind tarsal claws long, slender and slightly curved distally, not pectinate. Pterostigma 2.0 times as long as wide. Metacarpus reaching 0.8 times the distance to the tip of the wing. Intercubitus rather long, basad of the 2nd recurrent vein (Fig. 166). Nervellus almost vertical. Basal area of propodeum about 1.5 times as long as wide, often replaced by three longitudinal carinae, often the median carina more distinct than the lateral ones (often covered with wrinkles), 0.4 times as long as the petiolar area. Lateral area with dispersed punctures on a smooth background anteriorly and medially, with wrinkles posteriorly. Petiolar area slightly depressed, bordered by distinct carinae

laterally, with fine sculpture and shining anteriorly, with transverse wrinkles posteriorly (Fig. 167). Propodeal spiracle separated from the pleural carina by 1.0-1.5 times its diameter, the spiracular carina narrow or slightly widened. 1st gastral tergite 2.9 times as long as wide. Petiole 1.4 times as long as postpetiole, rather flat dorsally, rugose or with fine striae and/or with a longitudinal furrow, dorsolateral carinae present, with distinct striae laterally. Glymma as an elongated furrow, which is not connected with the ventrolateral furrow of the postpetiole. Postpetiole 1.2 times as long as wide, rounded dorsally, often with a narrow longitudinal furrow, the lateral contours divergent. 1st sternite almost reaching the spiracles (Fig. 168). 2nd tergite about 1.1 times as long as wide. Thyridium oval, close to the anterior edge of the 2nd tergite, thyridial depression 1.5-2.0 times as long as wide (Fig. 169). Gaster slightly compressed posteriorly. Gastral tergites from the 5th tergite onwards incised posteriorly. Ovipositor 1.8 times as long as 1st gastral tergite, slender, almost not bent upwards proximally, slightly bent upwards distally, without a dorsal depression subapically (Fig. 170). Ovipositor sheath 0.9 times as long as 1st tergite.

Colour: Black. Palpi, mandible (teeth dark brown), ventral half of clypeus, scape, pedicellus, tegula and legs yellowish red, sometimes the apices of the femora and the tibiae yellowish. Flagellum dark brown, sometimes yellowish basally. Pterostigma dark brown, with a yellowish stripe behind the anterior edge. Sometimes prothorax, mesopleu-



Figs 171-178. *Stethantyx nearctica* Townes (♀). 171. Head, top view. 172. Base of antenna. 173. Mesopleurum. 174. Pterostigma and areolet. 175. Propodeum, top view. 176. 1st gastral segment, side view. 177. 2nd gastral tergite, top view. 178. Ovipositor, side view.

rum and metapleurum tinged with reddish brown. Posterior part of postpetiole and 2nd gastral tergite reddish brown or brown, 3rd to 5th tergites blackish dorsally, reddish brown laterally, posterior tergites reddish brown.

♂: Very similar to the ♀. Sometimes gaster for the greater part black dorsally.

Host: The species was reared in Stoneville/Mississippi from larvae of *Cryptarcha* spec. and/or *Lobiopa undulata* Say (Nitidulidae) at sap spots on oak (*Quercus nuttalli* Palmer and *Q. lyrata* Walt.; Fagaceae) (Solomon 1976: 29; Williams et al. 1984: 55 and 58) (two pairs in WAS).

Stethantyx nearctica Townes

♀: Body length 6.5-9 mm. Temples distinctly constricted behind the eyes, 0.65 times as long as the width of an eye, tangential lines on eyes and temples intersect on the scutellum (Fig. 171). Ocellar index

1.7. Face about as wide as the frons. Malar space index 0.5. Clypeus 3.0 times as wide as long, slightly convex dorsally, flat or slightly depressed subventrally, with distinct dense punctures dorsally, smooth medially and subventrally, its apex rounded, sometimes slightly emarginate medially, blunt, with a transverse row of distinct punctures. Mandible slender, upper tooth distinctly the longer. Glossa 0.4 times as long as the width of the clypeus. Face, frons, vertex and temple with fine and dense punctures on a smooth background, central swelling of face smooth. Flagellum with 33-35 segments, filiform, 1st segment 2.6 times, 2nd segment 1.3 times, median segments 1.2 times, the penultimate segment 1.0 times as long as wide (Fig. 172). Thorax 2.0 times as long as the width of the mesoscutum. Pronotum very finely granulate and with fine dense punctures dorsolaterally, with some striae ventrolaterally. Mesoscutum shining, finely granulate and with fine rather dense or dense punctures, with very dense punctures dorsally in front of the prescutellar groove. Notaulus as a short furrow, usually not connected with the anterior

edge of the mesoscutum. Prescutellar groove with distinct striae. Scutellum bordered by carinae on the anterior 0.6, very finely granulate and with dense or rather dense punctures. Mesopleurum for the greater part with fine rather dense or dense punctures on a smooth background, a small area on the speculum and a large area above the foveate groove without punctures. Foveate groove rather long, very oblique, as a distinct row of small pits (Fig. 173). Mesosternum and metapleurum with fine rather dense punctures on a smooth background. Hind leg slender, femur 4.7 times as long as high, 0.75 times as long as tibia, basitarsus 0.45 times as long as tibia. Longer hind tibial spur straight, 0.3 times as long as the basitarsus. Hind tarsal claws distinctly elongated, slender and distinctly curved distally, not pectinate. Pterostigma 2.5 times as long as wide. Metacarpus reaching 0.6 times the distance to the tip of the wing. Intercubitus long, slender, basad of the 2nd recurrent vein (Fig. 174). Nervellus distinctly inclivous. Basal area of propodeum rectangular or slightly trapezoid, about 1.5 times as long as wide, 0.45 times as long as the petiolar area, with longitudinal striae, sometimes the lateral carinae indistinct. Lateral area with fine rather dense punctures on an almost smooth background anteriorly and medially, with distinct longitudinal striae posteriorly. Petiolar area flat, bordered by distinct carinae laterally, with fine rather dense punctures on an almost smooth background, sometimes with a few transverse wrinkles posteriorly (Fig. 175). Propodeal spiracle separated from the pleural carina by 0.5-1.0 times its diameter, the spiracular carina broad. 1st gastral tergite 3.0 times as long as wide. Petiole 1.6 times as long as postpetiole, circular or slightly wider than high in cross-section, rounded and almost smooth dorsally, sometimes with a narrow dorsal furrow, dorsolateral carinae indistinct or obliterated, almost smooth laterally, with elongated glymmae, which are not connected with the ventrolateral furrow of the postpetiole. Postpetiole 1.4 times as long as wide, rounded and with a few fine punctures dorsally, with rounded and slightly divergent contours laterally. 1st sternite not reaching the spiracles (Fig. 176). 2nd tergite 1.3 times as long as wide. Thyridium oval, distant from the anterior edge of the 2nd tergite, thyridial depression about 2.5 times as long as wide (Fig. 177). Gaster slightly compressed posteriorly. Gastral tergites from the 3rd tergite onwards incised posteriorly. Ovipositor 2.9 times as long as 1st gastral tergite, slender, slightly bent upwards proximally, distinctly bent upwards distally, with a shallow rounded dorsal depression subapically (Fig. 178). Ovipositor sheath 2.1 times as long as 1st tergite.

Colour: Black. Palpi, mandible (teeth dark brown), ventral 0.8 of clypeus, scape, pedicellus,

tegula and legs yellowish red. Flagellum dark brown or black. Pterostigma brownish black. Sometimes lateral part of pronotum and parts of the mesopleurum tinged with reddish brown. Gastral tergites from the 2nd tergite onwards light reddish brown, the 2nd tergite marked with black anteriorly (to a variable extend) and on its posterior edge.

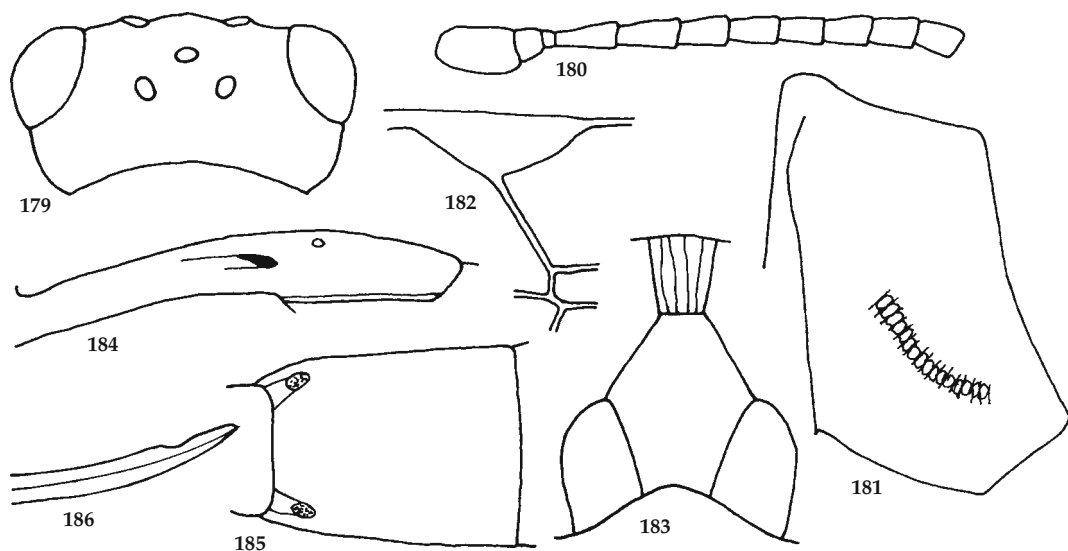
♂: Flagellum with 36-38 segments. Clypeus yellowish red also dorsally. Pronotum usually yellowish red laterally. Mesopleurum and Metapleurum often tinged with reddish brown. Gastral tergites marked with black dorsally. In other characters similar to the ♀.

Material (65♀, 48♂): USA: Arizona (AEI, TEX); District of Columbia (AEI); Florida (AEI); Iowa (WAS); Maryland (AEI, OTT, TEX, WAS); North Carolina (AEI); South Carolina (AEI); Texas (TEX); Virginia (WAS). Mexico: Nuevo Leon (AEI). Flight period: vii-xii, with a peak in x. Most probably the species is univoltine. No specimen was labelled as having been collected at higher altitudes.

Host: The species was reared 26 October in Arlington/Virginia from *Balaninus* spec. (Curculionidae) on *Quercus alba* Linnaeus (Fagaceae) (probably from acorns) (1♀ in WAS).

Stethantyx parkeri (Blanchard) (thelytokous strain)

♀: Body length 5.5-6.5 mm. Temples slightly constricted behind the eyes, 0.8 times as long as the width of an eye, tangential lines on eyes and temples intersect on the propodeum (Fig. 179). Ocellar index 2.0. Face 0.95 times as wide as the frons. Malar space index 0.7. Clypeus 2.9 times as wide as long, slightly convex, finely granulate and with distinct dense punctures dorsally, flat or slightly depressed and smooth subventrally, its apex rounded, blunt, with a transverse row of punctures. Mandible slender, upper tooth distinctly the longer. Glossa 0.4 times as long as the width of the clypeus. Face, frons and vertex granulate, dull, with fine dense punctures. Temple similar, slightly more shining. Flagellum with 26 segments, filiform, 1st segment 2.7 times, 2nd segment 2.1 times, median segments 1.3 times, the penultimate segment 1.2 times as long as wide (Fig. 180). Thorax 1.9 times as long as the width of the mesoscutum. Pronotum granulate, dull and with fine dense punctures dorsolaterally, with a few wrinkles ventrolaterally. Mesoscutum granulate, dull and with fine dense punctures, densely rugose-punctate and finely rugose dorsally in front of the prescutellar groove. Notaulus as a small oval groove or a small wrinkled area, distinctly distant from the



Figs 179–186. *Stethantyx parkeri* (Blanchard) (♀). 179. Head, top view. 180. Base of antenna. 181. Mesopleurum. 182. Pterostigma and areolet. 183. Propodeum, top view. 184. 1st gastral segment, side view. 185. 2nd gastral tergite, top view. 186. Ovipositor, side view.

anterior edge of the mesoscutum. Prescutellar groove with fine striae. Scutellum bordered by carinae on the anterior 0.7, finely granulate and with very fine punctures. Mesopleurum finely or distinctly granulate, finely rugose and with fine dense or rather dense punctures, dull or slightly shining. Foveate groove distinct, as a curved row of pits, rather short, very oblique (Fig. 181). Mesosternum with fine rather dense punctures on an almost smooth background. Metapleurum granulate, dull, with fine dense punctures. Hind leg slender, femur 4.9 times as long as high, 0.8 times as long as tibia, basitarsus 0.45 times as long as tibia. Longer hind tibial spur almost straight distally, 0.3 times as long as the basitarsus. Hind tarsal claws rather short, distinctly curved distally, not pectinate. Pterostigma 2.5 times as long as wide. Metacarpus reaching 0.6 times the distance to the tip of the wing. Intercubitus rather long, slender, basad of the 2nd recurrent vein (Fig. 182). Nervellus vertical. Basal area of propodeum trapezoid, as long as or slightly longer than wide, half as long as the petiolar area, lateral carinae distinct or partly covered with wrinkles, often with longitudinal wrinkles between the lateral carinae. Lateral area granulate, dull, with fine dense punctures. Petiolar area flat, bordered by distinct carinae laterally, granulate and finely rugose, dull (Fig. 183). Propodeal spiracle separated from the pleural carina by 1.5 times its diameter, the spiracular carina broad. 1st gastral tergite 3.3 times as long as wide. Petiole 1.9 times as long as postpetiole, almost circular in cross-section, convex and smooth dorsally,

dorsolateral carinae obliterated, with fine sculpture or almost smooth laterally, with elongated glymmae, which are not or scarcely connected with the ventrolateral furrow of the postpetiole. Postpetiole 1.1 times as long as wide, rounded and very finely granulate dorsally, with parallel or slightly divergent contours laterally. 1st sternite not reaching the spiracles (Fig. 184). 2nd tergite 1.3 times as long as wide. Thyridium oval, distant from the anterior edge of the 2nd tergite, thyridial depression about 2.0 times as long as wide (Fig. 185). Gaster compressed posteriorly. Gastral tergites from the 3rd tergite onwards slightly or distinctly incised posteriorly. Ovipositor 1.1 times as long as 1st gastral tergite, rather stout, slightly bent upwards, with a distinct rounded dorsal depression subapically (Fig. 186). Ovipositor sheath 0.6 times as long as 1st tergite.

Colour: Black. Palpi, mandible (teeth brown) and ventral half of clypeus yellowish. Scape brown. Flagellum reddish brown proximally, dark brown distally. Tegula and greater parts of the legs reddish brown. Front and mid coxae marked with dark brown proximally. Hind coxae black. Hind femur tinged with brown medially. Hind tarsus brownish. Pterostigma medium to dark brown, narrowly marked with whitish basally and apically. Gastral tergites from the 2nd tergite onwards marked with yellowish red posteriorly, the posterior tergites tinged with brown laterally (to a variable extend).

♂: unknown in Nearctic populations.

Taxonomic remark: This taxon is interpreted here as a thelytokous strain of *S. parkeri*, following Kerrich (1961: 502f.). The material studied by Kerrich was re-examined (NHM, WAS). The two arrhenotokous species originally reared in Argentina and Uruguay and unsuccessfully released in California, *S. argentinensis* (Blanchard) and *S. parkeri*, can easily be separated by the characters noted by Kerrich (in particular: proportion of 1st flagellar segment of the ♀, size of notaulus, shape of foveate groove, colour of thorax and gaster). The thelytokous strain agrees with *S. parkeri*, except that the gaster behind the 1st segment is predominantly black, whereas it is predominantly reddish brown in the arrhenotokous strain. But this character is found to be variable in a series of 19♀♀ and 2♂♂ of *S. parkeri* with a predominantly black gaster reared by Wilson & Wearne (1962) (NHM, WAS). In addition, the population in the United States probably originates from a few thelytokous ♀♀ with a reduced genetic variation. Therefore, it is difficult to interpret the colour differences between the two strains and the taxon from the United States is not described here as new.

Material (43♀♀): USA: Arizona (AEI); California (AEI, WAS); Texas (AEI). Flight period: iii-v. Earliest collection date in California (Lake Wohlford) 24.iv.1974, in Arizona (Phoenix) 13.iv.1981, in Texas (Fredericksburg) 30.iv.1988 (AEI). These dates are in accord with the hypothesis by Clancy (1969), that this thelytokous strain was accidentally released in 1943-1946 by Parker et al. (1950) in California together with the arrhenotokous strain of *S. parkeri* (which did not become established).

Host: ♀♀ were reared January 1967 in California (Riverside, Orange Co.) from field-collected larvae of *Listroderes costirostris* Schönherr (Curculionidae) (Clancy 1969) (WAS). The ♀♀ hatch in late winter or early spring, diapause in their cocoons or somewhere in the field, and oviposit into the next generation of host larvae in autumn or early winter. Interestingly, ♀♀ were collected in the field only in spring.

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Buchbesprechungen

4. Baur, B., Billen, W. & Burckhardt, D. (Hrsg.) 2008. Vielfalt zwischen den Gehegen: wildlebende Tiere und Pflanzen im Zoo Basel. Monographien der Entomologischen Gesellschaft Basel 3. – 462 Seiten, 172 Abbildungen, 43 Tabellen. ISBN 3-9522647-2-5.

Zoologische Gärten sind definitionsgemäß Orte großer Artenvielfalt. Insbesondere seltene und exotische Tiere werden hier gezielt gehalten, gezüchtet und zur Schau gestellt. So beherbergen die Gehege, Häuser, Terrarien und Aquarien des 1874 gegründeten "Zolli" in Basel über 600 Tierarten. Das vorliegende Buch ist einzig der Artenvielfalt eben dieses Zoos gewidmet, und doch finden Löwe, Elefant und Zebu höchstens en passant Erwähnung. Statt dessen befasst es sich mit der sehr viel artenreicheren, aber weitestgehend unbekannten und unbeachteten Vielzahl der zwischen den Gehegen wildlebenden Tier- und Pflanzenarten. Es führt die ungeahnte Vielfalt des hier Einheimischen und "Gewöhnlichen" vor Augen, hebt das Seltene oder gar Exotische hervor.

Basierend auf einer dreijährigen, mit einer Vielzahl von Sammel-Methoden durchgeführten, Materialerhebung auf dem Gelände hat ein 48-köpfiges Wissenschaftlerteam 3110 Arten wissenschaftlich bestimmt, detailliert zusammengestellt und erörtert. Dabei wurden teilweise auch Ergebnisse vorheriger Langzeituntersuchungen mit berücksichtigt. Blütenpflanzen und Farne, Vögel und Amphibien können als praktisch vollständig erfasst angesehen werden. Flechten, Moose, Landschnecken, Spinnen, Hundertfüßer, Ohrwürmer, Schaben, Heuschrecken, Fische, Reptilien und Säugetiere sind gut, die Pilze, Schnabelkerfe, Käfer und Schmetterlinge relativ gut erfasst, auch wenn immer noch sehr viele weitere Arten nicht bestimmt werden konnten. Hauptsächlich aufgrund des bekannten Mangels an entsprechenden Fachleuten wurden die übrigen Gruppen jedoch leider nur ungenügend oder gar nicht erfasst. Die tatsächliche Artenzahl dürfte fast doppelt so hoch sein. Doch schon unter den erfassten Arten sind über 75 neu für Basel und 31 neu

für die Schweiz. 113 sind auf den nationalen Roten Listen zu finden, was auf den hohen Naturschutzwert des nachhaltig gepflegten Zoos hinweist.

Das handliche und optisch ansprechende Buch ist übersichtlich durchkonzipiert, wobei der Aufbau der Kapitel, die Tabellen- und Grafikformate, usw. einheitlich gehalten sind. Jedes der den einzelnen Organismengruppen gewidmeten Kapitel ist eine in sich vollständige faunistische oder floristische Abhandlung mit kurzer allgemeiner Einleitung, Methoden, Ergebnissen, Diskussion und weiterführender Literaturliste. Außerdem enthält jedes eine Tabelle der gefundenen Arten mit wissenschaftlichem und deutschen Namen, Standort im Gelände, und teilweise zusätzlichen Angaben etwa zu Nachweiszeitraum, Lebensformen oder Rote Liste Status. Hervorzuheben ist das abschließende Kapitel, das die Ergebnisse zusammenfasst und noch einmal die wesentlichen Besonderheiten heraushebt. Etliche Farbfotografien, Lagepläne und Diagramme lockern den Text auf.

Natürlich ist das Buch in allererster Linie für das Basler Publikum interessant, das hier seinen "Zolli" noch einmal ganz neu entdecken kann. Aber es stellt auch generell einen wichtigen wissenschaftlichen Beitrag dar. Mit seinem Ansatz, im Sinne eines "all taxa biodiversity inventory" die faunistische und floristische Diversität eines stadtparkartigen Geländes ganzheitlich zu erfassen, nimmt das beschriebene Projekt eine Pionierrolle ein, da vergleichbare Studien bislang fehlten. Die Ergebnisse belegen nicht zuletzt den Naturschutzwert solcher Areale und können als wissenschaftliche Grundlage für die Empfehlung von Pflege- und Erhaltungsmaßnahmen dienen.

Ein Lob den Herausgebern, denen es gelang so viele Wissenschaftler zur Mitarbeit zu motivieren, trotzdem ein homogenes und gut lesbares Ergebnis zu erzeugen, und dieses schließlich zu einem in Anbetracht der Qualität außerordentlich erschwinglichen Preis zu produzieren.

Marion Kotrba