

# On the genus *Pentatermus* Hedqvist (Hymenoptera: Braconidae)

S.A. Belokobylskij

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Composition of the genus *Pentatermus* is discussed. Description of a new Australian species, *P. austini* sp. n., redescrptions of *P. carinatus* Hedqvist, *P. striatus* (Szépl.), *P. concolor* (Szépl.), and key to the genus are given. *P. carinatus* is considered as valid species. *P. medvedevi* Blkb. and *P. parnarae* He & Chen are synonymized with *P. striatus*. A new combination *P. concolor* (Szépl.) (from *Rhaconotus*) is given.

S.A. Belokobylskij, Zoological Institute, Russian Academy of Sciences, St.Petersburg 199034, Russia.

## Introduction

The genus *Pentatermus* was described by Hedqvist (1963) with the type species *P. carinatus* Hedqvist from Africa. The second species of this genus, *P. medvedevi* Blkb., was described from Vietnam more than 25 years later (Belokobylskij, 1990). On the basis of morphological structure of abdomen (five visible tergites with 5th tergite enlarged), this genus was placed in the tribe Pentatermini (Belokobylskij, 1990). Achterberg (1991) synonymized *P. carinatus* Hedqv. with *Chremylus striatus* Szépligeti (Indonesia) after examination of the types of these species. One more species, *P. parnarae* He & Chen, was described from China as a parasite of *Parnara guttaia* (He & Chen, 1997).

Szépligeti (1914) described *Rhaconotus concolor* from Kenya, which was later recorded from Madagascar (Granger, 1949). Reexamination of all the specimens identified as *Rh. concolor* at the Paris Museum showed that all of them belong to the genus *Pentatermus*, and all specimens identified *Rh. concolor* by Granger belong to *P. striatus*, except for the type specimen. Additionally, the examination of all the types of *Pentatermus* species allowed us to conclude that *P. medvedevi* and *P. parnarae* are junior synonyms of *P. striatus* (new synonymy), but *P. carinatus* is not a synonym of *P. striatus*. Considering *P. austini* sp. n. described in this paper, four valid species are known in the genus *Pentatermus* Hedqvist.

The biological information about *Pentatermus* is rather poor. Species of this genus were reared

from Hesperidae and Noctuidae (Lepidoptera). *P. carinatus* was reared from pupa of Noctuidae, but the data on rearing from a pupa are apparently erroneous; the conditions of parasite development are unknown.

The terms of wing venation are used as defined by Belokobylskij & Tobias (1998). The following abbreviations are used: POL, post-ocellar line; OOL, ocular-ocellar line; Od, maximum diameter of lateral ocellus; ANIC, Australian National Insect Collection (Canberra, Australia); CNC, Canadian National Collection (Ottawa, Canada); HNHM, Hungarian Natural History Museum (Budapest, Hungary); MNP, Museum National d'Histoire Naturelle (Paris, France); ZSS, Zoologische Staatssammlung (München, Germany); NIAES, National Institute of Agro-Environmental Sciences (Tsukuba, Japan); TAMU, Texas A&M University (College Station, USA); USNM, United States National Museum (Washington, USA); ZISP, Zoological Institute, Russian Academy of Sciences (St.Petersburg, Russia); ZUH, Zhejiang University (Hangzhou, China).

## Systematic part

### Genus *Pentatermus* Hedqvist, 1963

Type species: *Pentatermus carinatus* Hedqvist, 1963

*Description.* Head distinctly transverse. Ocelli almost in equilateral triangle. Occipital carina present, shortly absent ventrally and not fused with hypostomal carina. Eyes large, glabrous,

without emarginations opposite antennal sockets. Subocular suture more or less distinct. Maxillary palpi 6-segmented, labial palpi 4-segmented. 1st flagellar segment of antenna longer than 2nd segment. Pronotal neck short. Propleural lobe small. Mesoscutum almost perpendicularly raised above pronotum. Notauli complete. Prepectal carina present. Subalar depression shallow, wide, transversely striate. Sternauli distinct. Radial cell usually slightly shortened. Recurrent vein postfurcal (sometimes weakly). 2nd radiomedial cell usually short. Discoidal cell petiolate. Nervulus postfurcal. Parallel vein interstitial or almost interstitial. Hind wing with three hamuli. Submedial cell medium in size. Hind legs narrow. Spurs of hind tibia straight, short, shortly setose or glabrous, 0.2-0.25 times as long as hind basitarsus. 1st abdominal tergite short and wide, with small dorsope. 2nd suture deep and wide. 5th tergite enlarged, concealing the succeeding ones, with rather wide posterior fringe. Tergites from 2nd to 5th with separate laterotergites.

***Pentatermus carinatus* Hedqvist, stat. res.**

Hedqvist, 1963: 40; Shenefelt, 1975: 1153; Belokobylskij, 1990: 128; Achterberg, 1991: 14 [as synonym of *P. striatus* (Szépl.)].

*Material.* 1 ♀, "S. Nigeria: Ilorin, 3.III.1921, Thos. Thornton", "Ex pupa of *Earias* sp.", "Holotypus *Pentatermus carinatus* sp. n. K.-J. Hedqvist det 19", "Type No 66280 U.S.N.H.", "♀ *Pentatermus carinatus* Hedqv., C. van Achterberg 1989, type series checked" (USNM).

*Description.* Female. Body length 3.0 mm; forewing length 2.2 mm.

Head width almost twice its median length. Temple weakly rounded and strongly narrowed behind eye. Transverse diameter of eye 2.5 times the length of temple (2.8 times if lengths of eye and temple are measured along straight line). Ocelli small; POL 0.8 times Od, 0.3 times OOL. Eye glabrous, 1.25 times as high as broad. Cheek rather long, its height 0.25 times eye height, 0.8 times basal width of mandible. Face width 1.1 times eye height and 1.6 times height of face and clypeus combined. Malar suture present. Hypoclypeal depression oval, its width equal to distance from edge of depression to eye. Occipital carina weakly curved dorsally. Head below eyes strongly and almost linearly narrowed.

Antennae slender, filiform, more than 14-segmented (apical segments missing). Scapus 1.5 times as long as its maximum width, about twice as long as pedicellus. 1st flagellar segment 3.5 times as long as its apical width, 1.1 times as long as 2nd segment.

Thorax 1.7 times as long as high. Neck of prothorax weakly convex anteriorly (see from above). Notauli rather deep, crenulate. Median lobe of mesoscutum without median longitudinal furrow. Prescutellar depression deep, rather long, almost smooth, with three carinae, 0.45 times as long as scutellum. Scutellum weakly convex, with distinct lateral carinae. Metanotum without median tooth. Subalar depression shallow and strongly longitudinally striate. Sternauli almost straight, long, densely crenulate.

Wing. Length of fore wing 2.9 times its width. Metacarpus 1.2 times as long as pterostigma, about 8 times as long as distance from apex of radial cell to apex of wing. Pterostigma long and rather wide, 3.2 times as long as wide. Radial vein arising shortly after the middle of pterostigma. 2nd radial abscissa 0.6 times 1st abscissa, 0.17 times 3rd abscissa, about 0.5 times 1st radiomedial vein. Length of 2nd radiomedial cell 1.8 times its maximum width. Distance from nervulus to basal vein equal to nervulus length. Parallel vein interstitial. Brachial cell closed slightly before recurrent vein. Hind wing 4.0 times as long as wide. 1st costal abscissa 0.75 times 2nd abscissa. 1st abscissa of mediocubital vein 1.4 times as long as 2nd abscissa. Recurrent vein of hind wing strongly desclerotised.

Legs long and slender. Hind femur 4.5 times as long as wide. Hind tarsus 1.2 times as long as hind tibia. Hind basitarsus 0.75 times as long as 2nd-5th segments combined. 2nd tarsal segment 0.45 times as long as basitarsus, 1.6 times as long as 5th segment (without pretarsus).

Abdomen 1.1 times as long as thorax and head combined, 1.8 times as long as wide. 1st tergite strongly, regularly, convexo-roundly widened toward apex; spiracular tubercles indistinct, with spiracles in basal 1/3; dorsal carinae indistinct. Apical width of 1st tergite 2.4 times its minimum width, its length 0.6 times apical width. Length of 2nd tergite 0.7 times its basal width, 1.7 times median length of 3rd tergite. 5th tergite rather enlarged, weakly convex medioposteriorly, 0.8 times as long as 4th tergite, and about 0.7 times as long as 3rd tergite. Ovipositor sheath 0.8 times as long as 1st abdominal tergite.

Sculpture and pubescence. Vertex finely granulate; frons finely granulate with several fine striae; temple finely granulate, smooth below; face almost smooth. Mesoscutum finely and densely granulate, with wide rugulose medioposterior area. Scutellum smooth. Mesopleura smooth. Propodeum coarsely and irregularly rugose, smooth basally, without distinctly marginate areola. Hind legs smooth. Tergites from 1st

to 4th densely longitudinally striate, 3rd and 4th tergites rugulose-granulate posteriorly. 5th tergite with rather fine longitudinal striae in basal 2/3, rugulose in posterior 1/3, without concentric striae. Mesoscutum entirely shortly and densely setose.

Colour. Body light reddish brown. Palpi pale yellow. Antennae brownish yellow, darkened toward apex. Legs yellow. Ovipositor sheath almost black. Wings hyaline. Pterostigma yellow, infuscated marginally.

Male unknown.

*Distribution.* Africa (Nigeria).

*Host.* *Earias* sp. (Noctuidae) (Hedqvist, 1963).

*Remarks.* The detailed figures of this species were published by Achterberg (1991: 97).

### *Pentatermus striatus* (Szépligeti)

(Figs 1-9)

Szépligeti, 1908: 224 (*Chremylus*); Shenefelt, 1975: 1158; Achterberg, 1991: 14.

*Pentatermus medvedevi* Belokobyl'skij, 1990: 128, **syn. n.**; Achterberg, 1991: 14 (*medvedewi*); He & Chen, 1995: 225, 227 (*medvedewi*).

*Pentatermus parnarae* He & Chen, 1995: 226, **syn. n.**

*Material. Type material examined.* Lectotype (Shenefelt, 1975) of *Ch. striatus*: ♀, "E. Jacobson, Semarang, Java, 1905", "Lectotypus ♀ *Chremylus striatus* Szépl. 1908", "*Chremylus striatus* m." [Szépligeti's handwriting], "Hym. Typ. No 1649 Mus. Budapest" (HNHM). Holotype and paratype of *Pentatermus medvedevi*: ♀, "Vietnam, prov. Bac Thai, Phu Luong, Quang Chu (20 km N Thai Nguyen), 16-23.04.1986, A.V. Sharkov", "Holotypus *Pentatermus medvedevi* Belokobyl'skij, 1990" (ZISP); ♀, "Vietnam, Hanoi, meadow, I.XI.1988, Sharkov", "Paratypus *Pentatermus medvedevi* Belokobyl'skij, 1990" (ZISP). Holotype of *Pentatermus parnarae*: ♀, "Guangzhou, Guangdong, 1980.8", "Sun Zhihong, 810171", "*Pentatermus parnarae* He, sp. nov., He, III.8.1983", "*Pentatermus parnarae* He & Chen, 1995" (ZUH).

*Other material examined.* **Malaysia:** 1 ♀, Sarawak, 20 km S of Kuching, Semengo, 29-30.XI.1979 (Wiese & Söderland) (ZSS). **Japan:** 1 ♀, *Ishigaki Is.*, Omoto-dake, 14.XI.1963 (Hasegawa) (NIAES); 1 ♀, same locality, Malaise trap, 13-15.X.1999 (K. Konishi) (NIAES); 1 ♀, *Ishigaki Is.*, Shiramizu, 13-15.X.1999 (S. Belokobyl'skij) (ZISP). **India:** 1 ♀, *Karnataka*, Bangalore, 930 m, 1-24.I.1989 (Carroll) (TAMU). **Oman:** 1 ♀, Mazara, 6.IV.1985 (Ardo) (HNHM). **Somalia:** 2 ♀, Mogadiscio, Afgoi-Shabelli Valley, Malaise trap, 17-24.V.1978 (Bin) (CNC, ZISP). **Niger:** 1 ♀, Maradi, Tarna, 8-12.VIII.1985 (Steck) (TAMU). **Madagascar:** 1 ♀, Bekily, V.1937 (Seyrig); 1 ♀, same label, but IX.1936 (MNP); 1 ♀, same label, but VII.1936 (MNP); 1 ♀, Ranomafana, X.1938 (Seyrig) (MNP); 1 ♀, *Prov. d'Analalava*, Maromandia, 1923 (Decary) (MNP). **S. Africa:** 1 ♀, *Transvaal*, Pilgrim's Rest Distr., Newington, 16-19.IV.1964 (Haeselerbarth) (ZSS).

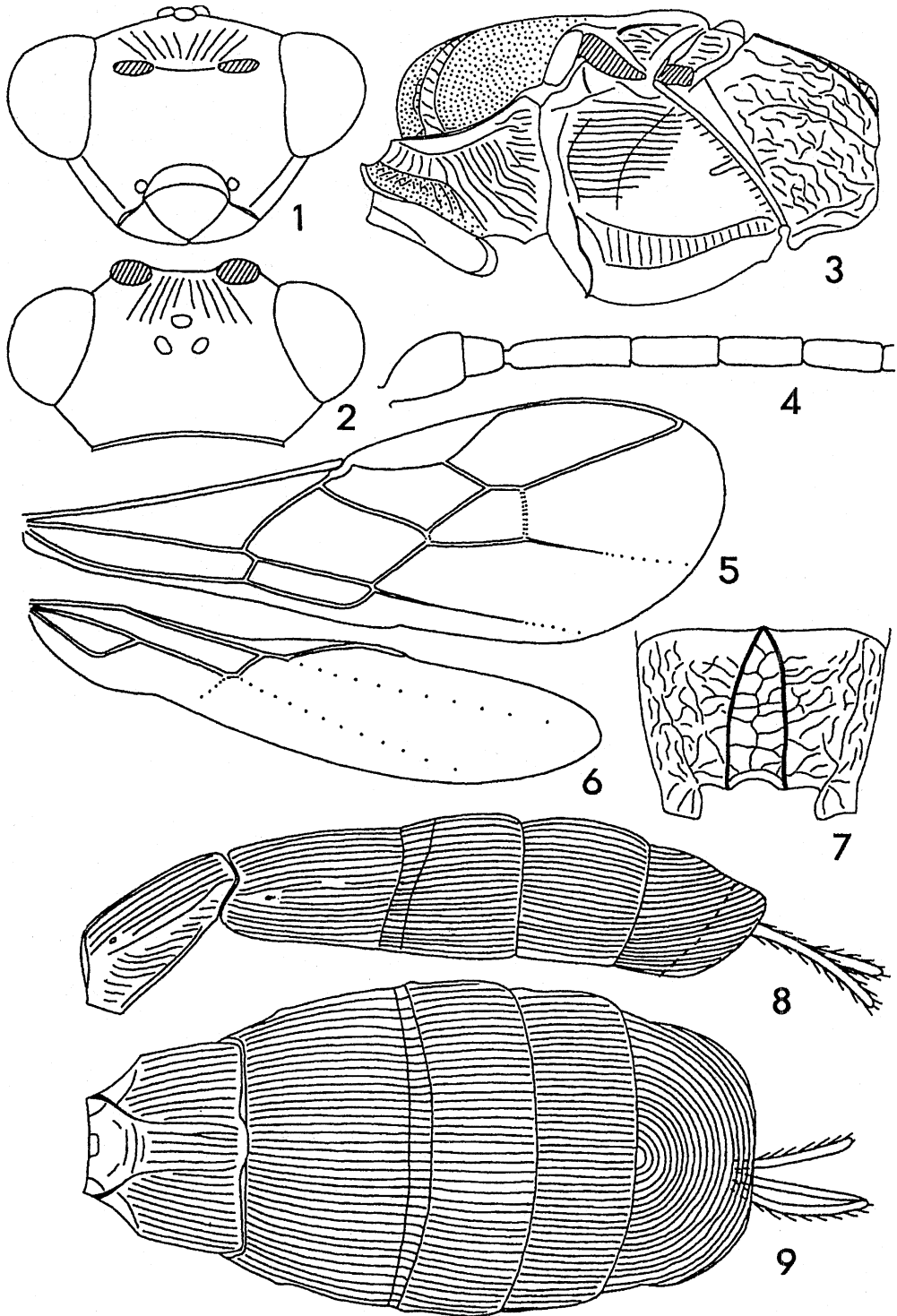
*Description.* Female. Body length 2.6-4.1 mm; forewing length 2.2-2.9 mm.

Head width 1.9-2 times its median length, 1.2-1.3 times the width of mesoscutum. Temple very strongly and linearly narrowed behind eye, rarely weakly roundly narrowed. Transverse diameter of eye 1.9-2.2 (sometimes 1.7) times the length of temple (2.4-2.7 times, rarely twice at straight line). Ocelli small, POL 0.6-1 times Od, 0.25-0.3 times OOL. Eye glabrous, 1.3 times as high as broad. Cheek long, its height 0.4-0.45 times eye height, 1-1.3 times basal width of mandible. Face width 1.1-1.3 times eye height and 1.4-1.5 times height of face and clypeus combined. Malar suture present. Hypoclypeal depression round, its width 0.8-1 times the distance from edge of depression to eye. Occipital carina weakly curved dorsally. Head below eyes strongly and almost linearly narrowed.

Antennae slender, filiform, 29-34-segmented, 1.1 times as long as body. Scapus 1.5-1.8 times as long as its maximum width, about twice as long as pedicellus. 1st flagellar segment 3.6-4.2 times as long as its apical width, 1.15-1.3 (rarely, 1.1) times as long as 2nd segment. Penultimate segment 2.8-3 times as long as wide, 0.5-0.6 times as long as 1st segment, 0.8-0.9 times as long as apical segment; the latter weakly pointed apically.

Thorax 1.6-1.8 times as long as high. Neck of prothorax weakly convex anteriorly (see from above). Notauli rather shallow, crenulate. Median lobe of mesoscutum without median longitudinal furrow. Prescutellar depression shallow, rather long, finely rugulose, with 3-5 carinae, about half as long as scutellum. Scutellum weakly convex, with distinct lateral carinae in anterior 2/3. Metanotum with distinct, but short, obtuse and flat median tooth. Subalar depression shallow, strongly longitudinally striate. Sternauli weakly curved or straight, long, distinctly or sometimes finely crenulate.

Wing. Length of fore wing 2.8-3.3 times its width. Metacarpus 1.1-1.3 times as long as pterostigma, 5-6.5 (rarely, 4.5) times as long as the distance from apex of radial cell to apex of wing. Pterostigma long and rather narrow, 3.2-4 times as long as wide. Radial vein arising shortly after the middle of pterostigma. 2nd radial abscissa 0.7-0.9 (very rarely, 1.15-1.2) times 1st abscissa, 0.2 times 3rd abscissa, 0.5-0.85 times 1st radiomedial vein. Length of 2nd radiomedial cell 1.6-2 times its maximum width. Distance from nervulus to basal vein 0.5-1 times nervulus length. Parallel vein interstitial or almost interstitial. Brachial cell closed at or slightly behind



**Figs 1-9.** *Pentatermus striatus* (Szépl.). 1, head, frontal view; 2, head, dorsal view; 3, thorax, lateral view; 4, six basal segments of antenna; 5, fore wing; 6, hind wing; 7, propodeum; 8, abdomen, lateral view; 9, abdomen, dorsal view.

recurrent vein (rarely, distinctly behind). Hind wing 4.5-4.7 times as long as wide. 1st costal abscissa 0.7-0.9 times 2nd abscissa. 1st abscissa of mediocubital vein 1-1.1 times as long as 2nd abscissa. Recurrent vein of hind wing strongly desclerotised.

Legs long and slender. Hind femur 4.5-5.5 times as long as wide. Hind tarsus 1-1.1 times as long as hind tibia. Hind basitarsus 0.7-0.8 times as long as 2nd-5th segments combined. 2nd tarsal segment 0.4 times as long as basitarsus, 1.4-1.6 times as long as 5th segment (without pretarsus).

Abdomen 1.1-1.2 times as long as thorax and head combined, 1.8-2 times as long as wide. 1st tergite strongly raised basally, strongly and almost linearly widened toward spiracular tubercles and distinctly, linearly or weakly roundly widened toward apex, or in all length distinctly roundly widened from base to apex. Spiracular tubercles in basal 1/3 of 1st tergite; dorsal carinae long, complete, narrowed basally, parallel-sided in apical 2/3. Apical width of 1st tergite 1.3-1.4 times its width at the level of spiracles, 2.3-2.7 times its minimum width, its length 0.6-0.7 times apical width. Length of 2nd tergite 0.7-0.8 times its basal width, 1.7-1.8 times median length of 3rd tergite. 5th tergite enlarged, almost straight medioposteriorly, 1-1.1 times as long as 4th tergite, 1.1-1.2 times as long as 3rd tergite. Ovipositor sheath 1-1.4 times as long as 1st tergite, 1-1.4 times as long as hind basitarsus, 0.17-0.2 times as long as fore wing.

Sculpture and pubescence. Head smooth, sometimes partly finely coriaceous; in large specimens, vertex sometimes finely striate at short distance; frons distinctly longitudinally striate. Mesoscutum finely (sometimes, very finely) and densely granulate, rarely median lobe finely transversely rugulose in anterior half, with rather wide rugulose medioposterior area. Scutellum smooth. Mesopleura smooth, sometimes finely rugulose in small median part. Propodeum coarsely and irregularly rugose, smooth or finely and densely punctulate basally; areola long and narrow, sometimes widened posteriorly, beginning from base of propodeum. Hind legs smooth. Tergites from 1st to 4th densely longitudinally striate, with rugulosity between striae on 1st and 2nd tergites. 5th tergite semicircularly and densely striate, rarely rugulose-striate in basal 1/3 and densely semicircularly striate in the other part. Mesoscutum entirely shortly and densely setose or sometimes partly glabrous latero-posteriorly.

Colour. Body light reddish brown. Two basal segments of antenna brownish yellow, other segments reddish brown. Palpi pale yellow. Legs yellow, 5th segments infuscated. Ovipositor sheath almost black, lighter basally. Wings hyaline or very faintly infuscated. Pterostigma yellow or brownish yellow, infuscated marginally, paler basally.

Male unknown.

*Distribution.* Indonesia, Malaysia (Borneo), Vietnam, China, Japan, India, Oman, Niger, Somalia, Madagascar, South Africa.

*Host.* *Parnara guttata* Bremer (Hesperiidae) (He & Chen, 1995).

***Pentatermus concolor* (Szépligeti, 1914), comb. n.**

(Figs 10-21)

Szépligeti, 1914: 178 (*Hormiopterus*); Granger, 1949: 129 (*Rhaconotus*); Shenefelt & Marsh, 1976: 1336 (*Rhaconotus*).

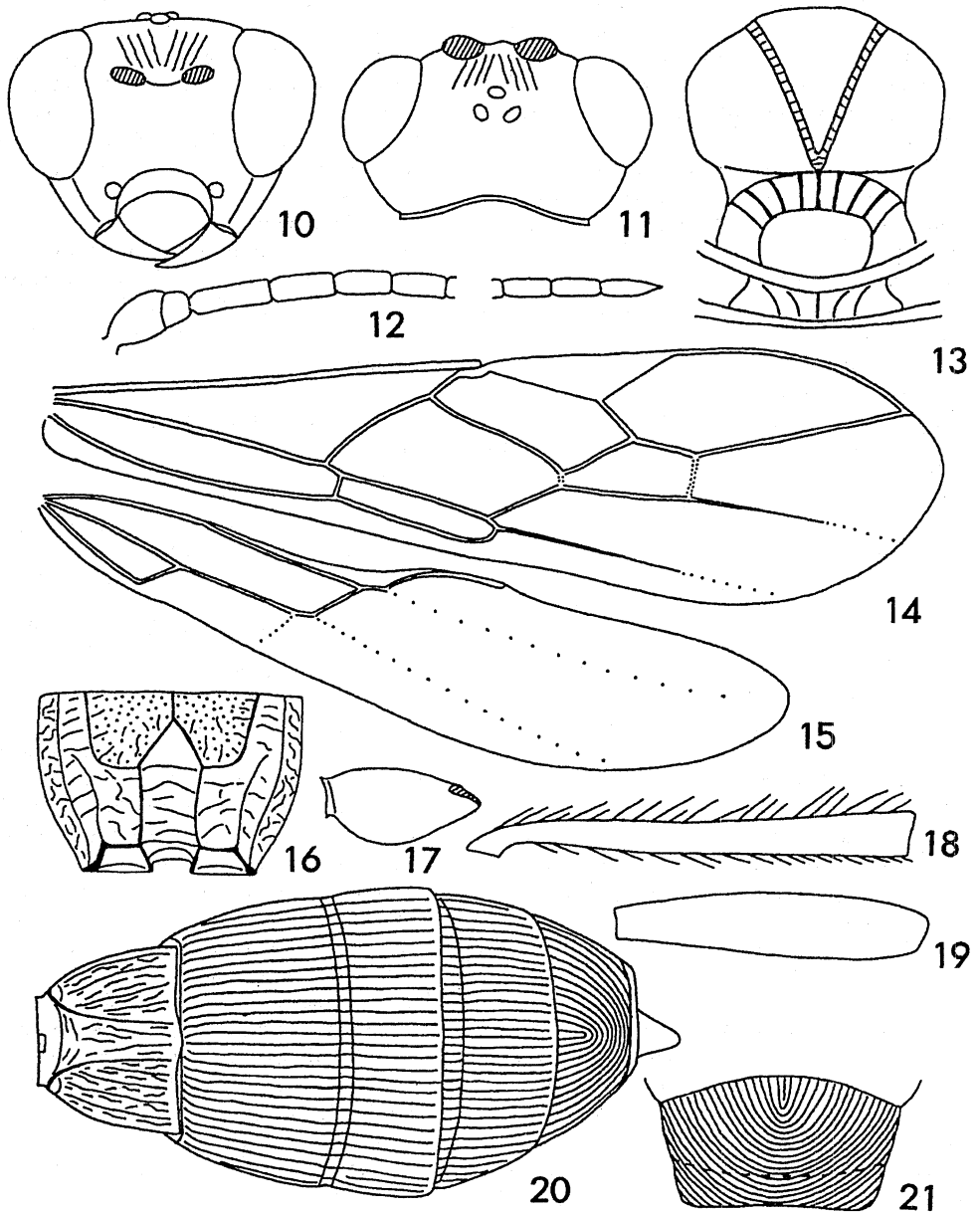
*Material.* *Lectotype* (designated here): ♀, Kenya, "9. 9.XI-[19]11", "Type", "*Hormiopt. concolor* m." [Szépligeti's handwriting] (MNP).

*Description.* Female. Body length 3.1 mm; forewing length 2.5 mm.

Head width almost twice its median length, 1.3 times the width of mesoscutum. Temple distinctly and weakly-roundly narrowed behind eye. Transverse diameter of eye 1.8 times the length of temple. Ocelli small, POL almost equal to Od, 0.3 times OOL. Eye glabrous, 1.3 times as high as broad. Cheek long, its height 0.3 times eye height, equal to basal width of mandible. Face width slightly less than eye height, 1.4 times height of face and clypeus combined. Malar suture distinct. Hypoclypeal depression round, its width 1.4 times the distance from edge of depression to eye. Occipital carina weakly curved dorsally. Head below eyes distinctly and almost linearly narrowed.

Antennae slender, filiform, 32-segmented, 1.1 times as long as body. Scapus 1.7 times as long as its maximum width, 2.2 times as long as pedicellus. 1st flagellar segment 3.8 times as long as its apical width, 1.2 times as long as 2nd segment. Penultimate segment 2.8 times as long as wide, 0.7 times as long as apical segment; the latter distinctly pointed apically.

Thorax 1.7 times as long as high. Neck of prothorax weakly convex anteriorly (see from above). Notauli rather shallow, crenulate. Median lobe of mesoscutum without median longitudinal furrow. Prescutellar depression shallow, rather long, almost smooth, with seven carinae,



**Figs 10-21.** *Pentatermus concolor* (Szépl.). 10, head, frontal view; 11, head, dorsal view; 12, basal and apical segments of antenna; 13, mesoscutum; 14, fore wing; 15, hind wing; 16, propodeum; 17, hind coxa; 18, hind tibia; 19, hind femur; 20, abdomen, dorsal view; 21, 5th tergite.

about half as long as scutellum. Scutellum weakly convex and without lateral carinae. Metanotum with distinct but shallow, obtuse, flat median tooth. Subalar depression shallow and distinctly longitudinally striate. Sternauli straight, long, crenulate.

Wing. Length of fore wing 3.1 times its width. Metacarpus 1.3 times as long as pterostigma, almost 7 times as long as distance from apex of radial cell to apex of wing. Pterostigma long and rather narrow, 4.3 times as long as wide. Radial vein arising shortly after the middle of ptero-

stigma. 2nd radial abscissa 1.2 times 1st abscissa, 0.3 times 3rd abscissa, 0.8 times 1st radiomedial vein. Length of 2nd radiomedial cell almost twice its maximum width. Recurrent vein distinctly postfurcal. Distance from nervulus to basal vein 0.75 times nervulus length. Parallel vein not interstitial, arising from anterior 1/3 of distal vein of brachial cell. Brachial cell closed distinctly behind recurrent vein. Hind wing 4.5 times as long as wide. 1st costal abscissa almost as long as 2nd abscissa. 1st abscissa of mediocubital vein as long as 2nd abscissa. Recurrent vein of hind wing strongly desclerotised.

Legs long and slender. Hind femur 5 times as long as wide. Hind tarsus slightly longer than hind tibia. Hind basitarsus 0.85 times as long as 2nd-5th segments combined. 2nd tarsal segment 0.35 times as long as basitarsus, 1.4 times as long as 5th segment (without pretarsus).

Abdomen 1.1 times as long as thorax and head combined, almost twice as long as wide. 1st tergite strongly, uniformly and roundly widened toward apex, without spiracular tubercles. Spiracles situated before the middle of tergite; dorsal carinae distinct, long, complete, slightly narrowed basally, parallel-sided at most of length. Apical width of 1st tergite 2.3 times its minimum width, its length 0.7 times apical width. Length of 2nd tergite 0.7 times its basal width, twice median length of 3rd tergite. 5th tergite enlarged, almost straight medioposteriorly, 1.1 times as long as 4th tergite, 1.3 times as long as 3rd tergite. Ovipositor sheath 1.5 times as long as 1st tergite, 1.5 times as long as hind basitarsus.

Sculpture and pubescence. Head smooth; frons with fine longitudinal striae submedially. Mesoscutum finely and densely granulate, with wide rugulose medioposterior area. Scutellum smooth. Mesopleura very finely granulate-coriaceous. Propodeum coarsely and irregularly rugose, granulate-rugulose basally, with rather short and narrow areola, with median carina in basal 1/5, and with rather distinctly marginate basal areas. Hind legs smooth. Tergites from 1st to 4th densely longitudinally striate. 5th tergite semicircularly and densely striate. Mesoscutum entirely, shortly and densely setose.

Colour. Body light reddish brown. Antenna light reddish brown, darker apically. Palpi pale yellow. Legs yellow, 5th segments infuscated. Ovipositor sheath almost black. Wings hyaline. Pterostigma yellow, infuscated marginally.

Male unknown.

*Distribution.* Kenya.

*Host.* Unknown.

### *Pentatermus austini* sp. n.

(Figs 22-30)

*Holotype.* ♀, Australia, "12.44S 143.13E, Qld, 2 km NE by E Mt. Tozer, 1 July 1986, J.C. Cardale, at MV light" (ANIC).

*Paratypes.* Australia: 2 ♀, "12.43S 143.17E, Qld, 9 km ENE Mt. Tozer, 5-10 July 1986, J.C. Cardale, at MV light" (ANIC, ZISP); 1 ♀, "12.44S 143.13E, 2 km NE by E Mt. Tozer, Qld, 1 July 1986, T. Weir & J.C. Cardale" (ANIC).

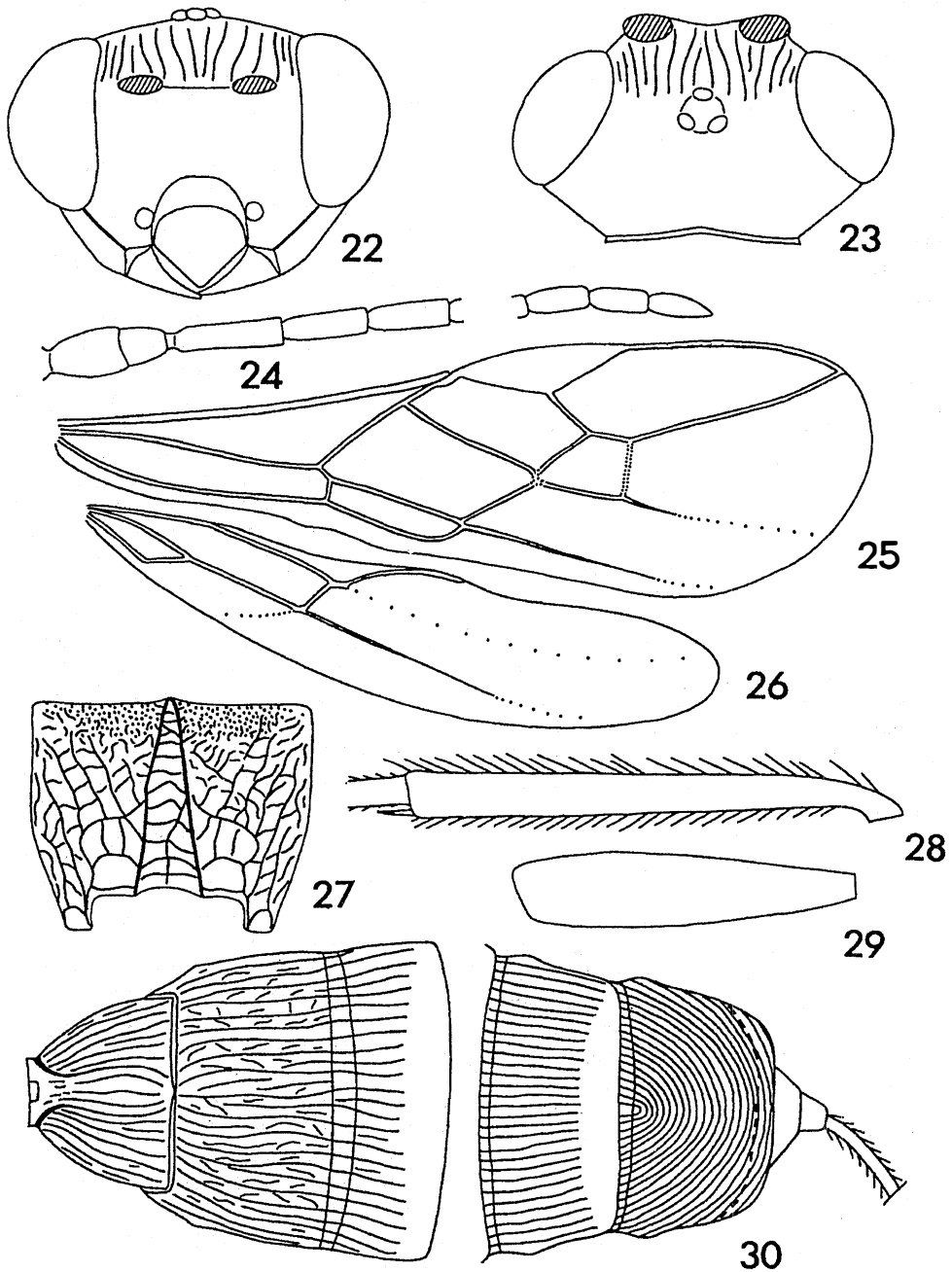
*Description.* Female. Body length 3.2-3.5 mm; forewing length 2.2-2.6 mm.

Head width about twice its median length, 1.2-1.3 times the width of mesoscutum. Temple very strongly and linearly narrowed behind eye. Transverse diameter of eye 1.8-2 times the length of temple (2.3-2.5 times at straight line). Ocelli small, POL 0.7-0.8 times Od, 0.2-0.25 times OOL. Eye glabrous, 1.2 times as high as broad. Cheek rather long, its height 0.4 times eye height, 1.1-1.3 times basal width of mandible. Face width 1.1 times eye height, 1.5 times height of face and clypeus combined. Malar suture distinct. Hypoclypeal depression almost round, its width equal to the distance from edge of depression to eye. Occipital carina dorsally weakly bended, obtuse-angled. Head below eyes strongly and almost linearly narrowed.

Antennae rather slender, filiform, 31-32-segmented. Scapus 1.5 times as long as its maximum width, 1.5 times as long as pedicellus. 1st flagellar segment 3.7-4.2 times as long as its apical width, 1.1-1.2 times as long as 2nd segment. Penultimate segment 2.5-2.7 times as long as wide, 0.8-0.9 times as long as apical segment; the latter pointed apically.

Thorax 1.8 times as long as high. Neck of prothorax almost straight or weakly concave anteriorly (see from above). Notauli narrow, deep, crenulate. Median lobe of mesoscutum without median longitudinal furrow. Prescutellar depression deep, rather long, rugulose, with 3-5 carinae, half as long as scutellum. Scutellum weakly convex, with distinct lateral carinae. Metanotum with small median tooth. Subalar depression shallow and strongly longitudinally striate. Sternauli narrow, shallow posteriorly, curved, long, densely crenulate.

Wing. Length of fore wing 2.9-3.1 times its width. Metacarpus 1.2-1.3 times as long as pterostigma, 4.5-5 times as long as the distance from apex of radial cell to apex of wing. Pterostigma long and rather wide, 3.2-3.5 times as long as wide. Radial vein arising behind the middle of pterostigma. 2nd radial abscissa 0.6-0.7 times 1st abscissa, 0.2 times 3rd abscissa, 0.6 times 1st



Figs 22-30. *Pentatermus austini* sp. n. 22, head, frontal view; 23, head, dorsal view; 24, basal and apical segments of antenna; 25, fore wing; 26, hind wing; 27, propodeum; 28, hind tibia; 29, hind femur; 30, abdomen, dorsal view.

radiomedial vein. Length of 2nd radiomedial cell 1.5-1.6 times its maximum width, 0.6-0.7 times the length of brachial cell. Distance from nervulus to basal vein 0.3-0.6 times nervulus length.

Parallel vein almost interstitial. Brachial cell closed at the level of or slightly behind recurrent vein. Hind wing 4.7-4.8 times as long as wide. 1st costal abscissa 0.9 times 2nd abscissa. 1st



abscissa of mediocubital vein 0.8-0.9 times as long as 2nd abscissa. Recurrent vein of hind wing distinctly pigmented.

Legs long and slender. Hind femur 4.7-4.8 times as long as wide. Hind tarsus 1-1.1 times as long as hind tibia. Hind basitarsus 0.7 times as long as 2nd-5th segments combined. 2nd tarsal segment 0.4-0.45 times as long as basitarsus, 1.3-1.4 times as long as 5th segment (without pretarsus).

Abdomen 1.2-1.3 times as long as thorax and head combined, 2.2-2.4 times as long as wide. 1st tergite strongly regularly and convexoroundly widened toward apex, spiracular tubercles indistinct. Spiracles in basal 1/3 of 1st tergite; dorsal carinae distinct, not fused, slightly convergent in basal 1/3, divergent in apical 2/3. Apical width of 1st tergite 2.2-2.5 times its minimum width, its length 0.6-0.65 times apical width. Length of 2nd tergite 0.7 times its basal width, 1.4-1.6 times median length of 3rd tergite. 5th tergite rather enlarged, weakly convex medioposteriorly, 1.1-1.3 times as long as 4th tergite, 1.3-1.6 times as long as 3rd tergite. Ovipositor sheath 1.4-1.6 times as long as 1st tergite, 1.4-1.5 times as long as hind basitarsus, 0.25 times as long as fore wing.

Sculpture and pubescence. Vertex smooth; frons distinctly longitudinally striate, smooth between striae; temple and face smooth. Mesoscutum finely and densely granulate, with wide rugulose-reticulate medioposterior area. Scutellum smooth. Mesopleura smooth. Propodeum coarsely and irregularly rugose, granulate basally, with distinctly marginate, narrow and long areola. Hind legs smooth. Tergites from 1st to 4th rather densely longitudinally striate, 1st and 2nd tergites more or less distinctly rugulose between striae, 3rd and 4th tergites smooth posteriorly. 5th tergite rather finely concentrically striate, without rugosity between striae. Mesoscutum entirely, shortly and densely setose.

Colour. Body dark reddish brown; face reddish brown. Palpi yellow. Two basal segments of antennae brownish yellow, flagellum reddish brown or dark reddish brown to black. Legs brownish yellow, tarsi darker. Ovipositor sheath almost black. Wings faintly infuscated. Pterostigma yellowish brown.

Male unknown.

*Remarks.* This new species is very similar to *P. striatus* (Szépl.), the differences are indicated in the key.

*Distribution.* Australia.

*Host.* Unknown.

*Etymology.* This species is named after Dr. A. Austin, well-known Australian hymenopterist.

#### Key to species of *Pentatermus* Hedqvist

1. Eye weakly convex. Temple behind eyes less strongly and roundly narrowed. Hypoclypeal depression large, its width 1.4 times the distance from edge of depression to eye. Scutellum wide, without lateral carinae, its width 1.3-1.4 times median length. Propodeum with long median basal carina and marginate basolateral areas. 2nd radial abscissa 1.2 times 1st abscissa. Brachial cell closed distinctly behind recurrent vein; parallel vein not interstitial. – East Africa . . . . . *P. concolor* (Szépl.), **comb. n.**
- Eye more or less distinctly convex. Temple behind eyes strongly and linearly narrowed. Hypoclypeal depression rather small, its width 0.9-1 times the distance from edge of depression to eye. Scutellum narrow, with lateral carinae at least in anterior 2/3, its width almost equal to median length. Propodeum without median basal carina, without marginate basolateral areas. 2nd radial abscissa 0.7-1.0 (very rarely, 1.15-1.2) times 1st abscissa. Brachial cell closed almost at the level of recurrent vein; parallel vein interstitial or almost interstitial . . . . . 2
2. 5th tergite shorter, 0.8 times as long as 4th tergite, without concentric striation, finely rugulose in posterior 1/3. Metanotum without median tooth. Areola of propodeum not marginate. Vertex granulate. 1st flagellar segment shorter, slightly longer than 2nd one. Cheek shorter, its height 0.25 times eye height, 0.8 times basal width of mandible. Parasite of Noctuidae. – Nigeria . . . . . *P. carinatus* Hedqv.
- 5th tergite longer, 1-1.3 times as long as 4th tergite, with concentric striation in posterior 1/3. Metanotum with rather distinct round median tooth. Areola of propodeum distinctly and entirely marginate. Vertex usually smooth, but sometimes finely rugulose or partly granulate. 1st flagellar segment longer, 1.2-1.3 (rarely, 1.1) times as long as 2nd one. Cheek longer, its height 0.4 times eye height, 1-1.3 times basal width of mandible . . . . . 3
3. Body light reddish brown or brownish yellow. Abdomen wider, 1.8-2 times as long as wide. Dorsal carinae of 1st tergite parallel-sided or convergent in apical 2/3. 2nd tergite 1.7-1.8 times as long as 3rd tergite. Propodeum smooth or punctulate basally. Ovipositor sheath 0.17-0.2 times as long as fore wing. Parasite of Hesperidae. – Indonesia, Malaysia, Vietnam, China, Japan, India, Oman, Niger, Somalia, Madagascar, South Africa . . . . . *P. striatus* (Szépl.)
- Body dark reddish brown. Abdomen narrower, 2.2-2.4 times as long as wide. Dorsal carinae of 1st tergite roundly divergent in apical 2/3. 2nd tergite 1.4-1.6 times as long as 3rd tergite. Propodeum densely granulate basally. Ovipositor sheath 0.25 times as long as fore wing. – Australia . . . . . *P. austini* sp. n.

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**References**

- Achterberg, C. van.** 1991. Revision of the genera of the Afrotropical and W. Palaearctical Rogadinae Förster (Hymenoptera: Braconidae). *Zool. Verhandl.*, **273**: 3-102.
- Belokobylskij, S.A.** 1990. Material to the braconid fauna of the supertribe Exothecidii (Hymenoptera, Braconidae, Doryctinae) of Vietnam. *Trudy Zool. Inst. Acad. Nauk SSSR*, **209**: 115-140. (In Russian).
- Belokobylskij, S.A. & Tobias, V.I.** 1998. Fam. Braconidae. Introduction. In: P.A. Lehr (ed.). *Opredelitel' nasekomykh Dal'nego Vostoka Rossii* [Keys to the insects of the Russian Far East], **4**(3): 8-26. Dal'nauka, Vladivostok. (In Russian).
- Chen, X. & He, J.** 1995. The genus *Pentatermus* Hedqvist (Hymenoptera: Braconidae: Lysiterminae) of China. *Entomotaxonomia*, **17**(3): 225-227.
- Granger, C.** 1949. Braconides de Madagascar. *Mem. Inst. sci. Madagascar, Ser. 1, Biol. Anim.*, **2**: 1-428.
- Hedqvist, K.-J.** 1963. Notes on Hormiinae with description of new genera and species (Hym., Ichneumonoidea, Braconidae). *Entomol. Tidskr.*, **84**: 30-61.
- Shenefelt, R.D.** 1975. Exothecinae, Rogadinae. Braconidae 8. *Hymenopterorum Catalogus*, **12**: 1115-1262. 's-Gravenhage.
- Szépligeti, G.** 1908. E. Jacobson'sche Hymenopteren aus Semarang (Java). Evaniden, Braconiden und Ichneumoniden. *Notes Leiden Mus.*, **29**: 209-260.
- Szépligeti, G.** 1914. Braconidae. Insectes Hymenopteres. IV. *Voyage Ch. Alluaud et R. Jeannel en Afrique Orientale (1911-1912)*: 167-198.

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