Revue suisse Zool.	Tome 93	Fasc. 3	p. 587-605	Genève, septembre 1986

Agathidium from North Pakistan: expedition 1983 of the Geneva Natural History Museum (Coleoptera, Leiodidae, Anisotomini)

by

Fernando ANGELINI * and Luigi DE MARZO **

With 59 figures

ABSTRACT

Ten species, represented by 324 specimens, are recorded from northern Pakistan, eight of them are described as new for science: *Agathidium (Neoceble) dardi* n. sp., *A. (s. str.) pakistanicum* n. sp., *A. (s. str.) robustum* n. sp., *A. (s. str.) guagir* n. sp., *A. (s. str.) senile* n. sp., *A. (s. str.) swaticum* n. sp., *A. (s. str.) pinorum* n. sp., *A. (s. str.) vile* n. sp. The species *Agathidium (Microceble) laticorne* Port. and *A. (s. str.) pauper* Ang. & Dmz. are mentioned for the first time from this country, the spermatheca of *Agathidium pauper* Ang. & Dmz. is figured. An artificial identification key to the *Agathidium* species, known from Pakistan, is proposed.

INTRODUCTION

As there have been no previous records of *Agathidium* species from Pakistan, the 324 specimens of this genus collected by Dr. C. Besuchet and Dr. I. Löbl in 14 localities of Swat, Dir, Hazara and Penjab (expedition 8.V-5.VI.1983) provide us with many new faunistic and taxonomical data.

This material includes 10 species, 8 of which are new to science, and also some females of *A. pauper* Ang. & Dmz., of which only an unique male was known.

* Via Imperiali 203, I-72021 Francavilla Fontana, Brindisi, Italy.

** Istituto di Entomologia Agraria, Università, via Amendola 165, I-70126 Bari, Italy.

Identification of specimens is based on characters of male copulatory organ and spermatheca. Specifications on our terminology and techniques are reported in one of our previous paper (1981). The specimens are deposited at the Geneva Museum (GM) and in Angelini's collection (AC).

We are very obliged to the above-mentioned colleagues for the loan of the highly interesting specimens they have found.

Key to the Pakistani *Agathidium*

1. Metasternum without femoral lines; lateral outline of elytra with sharp humeral angle (subg. *Neoceble* Gozis). Dorsum uniformly reddish-brown or darker at elytra, without microreticulation, wholly punctate; 9th and 10th antennal segments dark; clypeal line weak; 3rd antennal segment 1.6 times as long as the 2nd; sutural striae of elytra absent. Length 2.60-2.85 mm. Antenna: fig. 4, dorsal and lateral outlines of pronotum: figs 12-13, male copulatory organ: figs 35-36, spermatheca: fig. 51. Pakistan ..... *dardi* n. sp.

1'. Metasternum with complete or incomplete femoral lines; lateral outline of elytra with weak humeral angle 2

2. Clypeus with a short crest at each side; width ratio pronotum/head = 1.8 (subg. *Microceble* Ang. & Dmz.). Dorsum dark reddish-brown or black, wholly punctate; 9th and 10th antennal segments dark; head wholly striolate; 3rd antennal segment 1.7 times as long as the 2nd. Length 2.60-3.20 mm. SE Asia from Pakistan to Darjeeling, India, Sri Lanka, Viet Nam, Malaysia, Indonesia ..... *laticorne* Port.

2'. Clypeus without lateral crests or marked clypeal line; length ratio pronotum/head not higher than 1.5 (subg. *Agathidium* s. str.) 3

3. Head widest at eyes 4

3'. Head widest behind eyes 8

4. Elytra with sutural striae 5

4'. Elytra without sutural striae 7

5. Dorsum microreticulate. Dorsum reddish-brown; punctures very small and sparse on head and pronotum, absent on elytra; antennae uniformly testaceous; 3rd antennal segment as long as the 2nd. Length 2.05-2.70 mm. Antenna: fig. 5; dorsal and lateral outline of pronotum: figs 14-15; male hind femur: fig. 28; male copulatory organ: figs 37-38; spermatheca: fig. 52. Pakistan ..... *pakistanicum* n. sp.

5'. Dorsum not microreticulate 6

6. Eyes not very flattened, distinct from a dorsal point of view; mesosternum with lateral lines. Dorsum uniformly reddish-brown, wholly finely and sparsely punctate; antennae uniformly testaceous; 3rd antennal segment 1.4 times as long as the 2nd. Length 2.90-3.50 mm. Spermatheca: fig. 53. Pakistan, Kashmir ..... *pauper* Ang. & Dmz.

6'. Eyes very flattened and elongate, scarcely distinct from a dorsal point of view; mesosternum without lateral lines. Dorsum uniformly reddish-brown, entirely finely and sparsely punctate; antennae uniformly testaceous; 3rd antennal segment 1.4 times as long as the 2nd. Length 2.85-3.40 mm. Antenna: fig. 6; dorsal and lateral outline of pronotum: figs 16-17; male copulatory organ: figs 39-40; spermatheca: fig. 54. Pakistan ..... *robustum* n. sp.

7. Dorsum microreticulate. Dorsum reddish-brown, lacking in puncturation, wholly microreticulate; antennae testaceous, just a little darker at club; 3rd antennal segment 1.15 times as long as the 2nd. Length 1.75-2.25 mm. Antenna: fig. 7; dorsal and lateral outline of pronotum: figs 18-19; male hind femur: fig. 30; male copulatory organ: figs 41-42; spermatheca: fig. 55. Pakistan ..... *guagir* n. sp.

7'. Dorsum not microreticulate. Dorsum uniformly reddish-brown, not punctate or with fine and sparse puncturation; antennae uniformly testaceous; 3rd antennal segment 1.3 times as long as the 2nd. Length 1.85-2.25 mm. Antenna: fig. 8; dorsal and lateral outline of pronotum: figs 22-23; male hind femur: fig. 31; male copulatory organ: figs 43-44; spermatheca: fig. 56. Pakistan .... *senile* n. sp.

8. Elytra without sutural striae; dorsum not microreticulate. Dorsum uniformly reddish-brown, with sparse punctures on head and pronotum or lacking in puncturation at all; antennae uniformly testaceous; 3rd antennal segment 1.3 times as long as the 2nd. Length 1.70-2.15 mm. Head: fig. 1; antenna: fig. 9; dorsal and lateral outline of pronotum: figs 26-27; male hind femur: fig. 32; male copulatory organ: figs 45-46; spermatheca: fig. 57. Pakistan .... *swaticum* n. sp.

8'. Elytra with sutural striae; dorsum microreticulate 9

9. Mesosternum without lateral lines; male hind femora simple (fig. 33). Dorsum uniformly reddish-brown, not punctate; antennae uniformly testaceous; 3rd antennal segment as long as the 2nd. Length 2.15-2.35 mm. Head: fig. 2; antenna: fig. 10; dorsal and lateral outline of pronotum: figs 20-21; male copulatory organ: figs 47-48; spermatheca: fig. 58. Pakistan ..... *pinorum* n. sp.

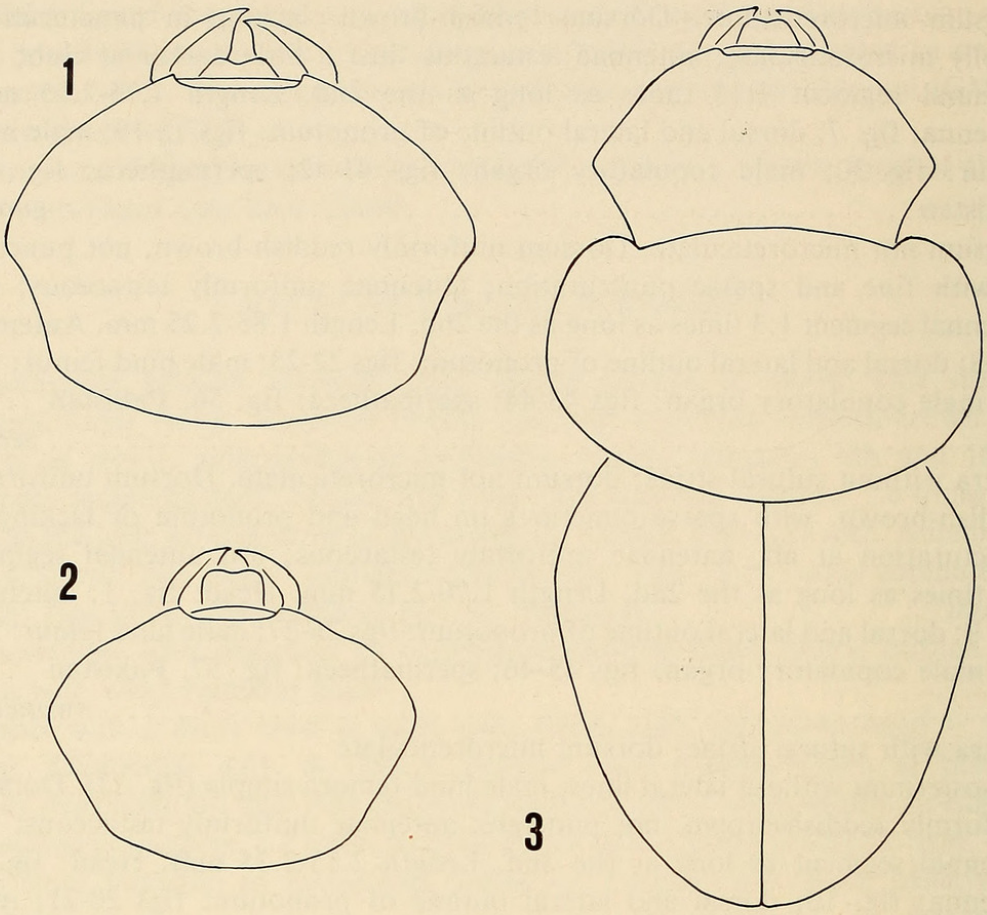
9'. Mesosternum with lateral lines; male hind femora with a weak distal tooth at the posterior margin (fig. 34). Dorsum uniformly reddish-brown, without puncturation, except some very small punctures on head and pronotum; antennae uniformly testaceous; 3rd antennal segment 1.4 times as long as the 2nd. Length 1.95-2.35 mm. Habitus: fig. 3; antenna: fig. 11; dorsal and lateral outline of pronotum: figs 24-25; male copulatory organ: figs 49-50; spermatheca: fig. 59. Pakistan ..... *vile* n. sp.

Agathidium (Neoceble) dardi n. sp.
Figs 4, 12, 13, 35, 36, 51

Length 2.60-2.85 mm (holotype ♂ 2.85 mm). Dorsum uniformly reddish-brown or darker on elytra; venter reddish-brown; antennae testaceous with 9th and 10th segments dark; legs reddish-brown. Microreticulation absent; puncturation present on the whole dorsum.

Head: Punctures small but well impressed, spaced from each other by 1-3 times their own diameter. Clypeal line slight. 3rd antennal segment 1.6 times as long as the 2nd and shorter than 4th + 5th (fig. 4); Hamann's organ: gutter without vesicles in both 9th and 10th antennal segments.

Pronotum: Punctures smaller and more superficial than on head, spaced from each other by 2-8 times their own diameter. 1.5 times as broad as head, moderately transverse (W/L = 1.75) and moderately convex (W/H = 1.53). Anterior margin slightly bent



FIGS 1-3.

Head of: 1, *A. swaticum* n. sp.; 2, *A. pinorum* n. sp. Habitus of: 3, *A. vile* n. sp.

(fig. 12). Lateral outline truncate (fig. 13). Holotype: length 0.84 mm, width 1.47 mm, height 0.96 mm.

Elytra: Punctures larger than on head, superficial, spaced from each other by 1-6 times their own diameter. Slightly broader than pronotum, a little broader than long (W/L = 1.2) and very convex (W/H = 1.4). Lateral outline with sharp humeral angle. Sutural striae absent. Holotype: length 1.35 mm, width 1.63 mm, height 1.16 mm.

Metathoracic wings absent. Meso- and metasternum: median carina weak, lateral lines complete, femoral lines absent.

Legs: Tarsal formula ♂ 5-5-4, ♀ 4-4-4.

Male copulatory organ (figs 35-36): Aedeagus slender, with proximal part simple, lateral margins subparallel and convergent into a subacute tip; ventral piece indistinct. Parameres slender, a little enlarged at apex.

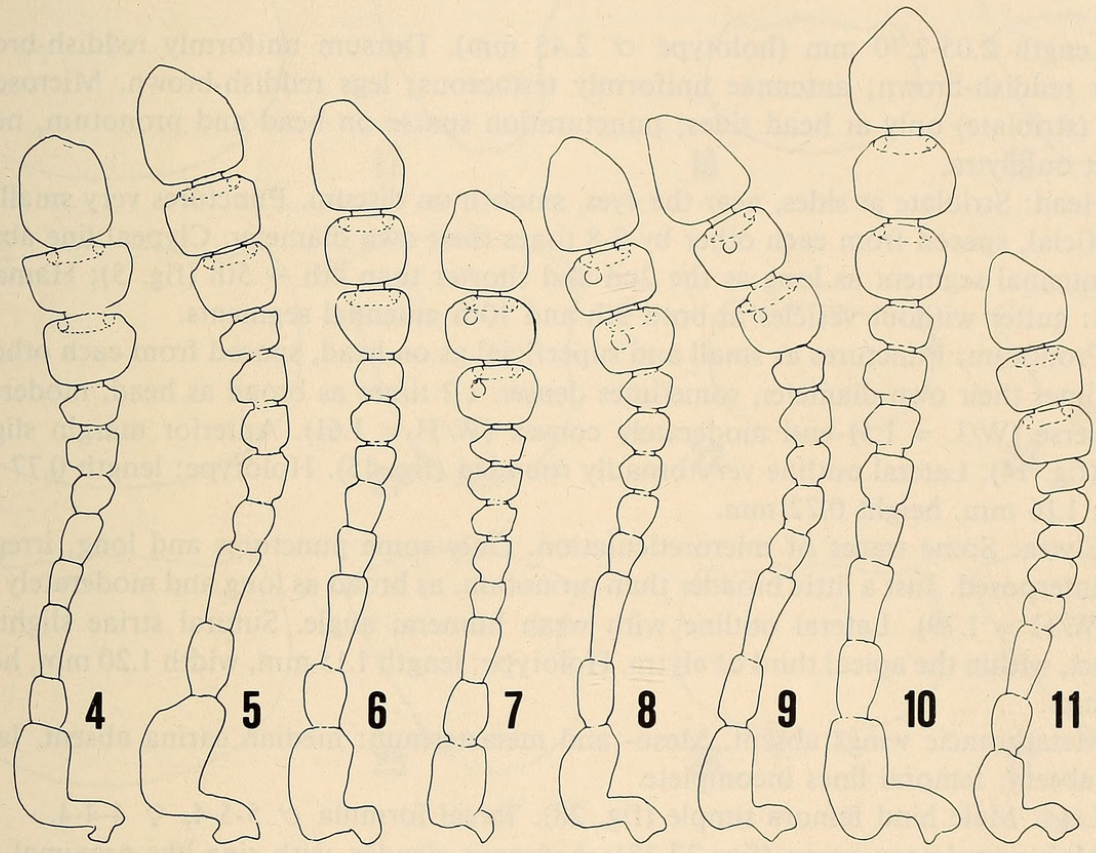
Spermatheca (fig. 51): S-shaped; basal and apical parts alike in caliber.

Discussion: *A. dardi* n. sp. is similar to *A. kumaonicum* Ang. & Dmz. (1985) and *A. bonzi* Ang. & Dmz. (1985); it differs from *A. kumaonicum* by absence of metathoracic wings, tarsal formula of males and larger size; from *A. bonzi* by absence of head dimples, smaller size and colour of the antennal club.

Collecting methods: Under stones, sifting rotten leaves and moss in forest of *Abies* or sifting rotten wood of walnut-trees.

Types: PAKISTAN, Dir, Lawarai pass, 2700 m, 21.V.1983, holotype ♂ N. 5557 in GM; Swat, above Miandam, 2400-2500 m, 17.V.1983, 1 ♀ paratype N. 5558 in GM, 2 ♀ paratypes N. 5559-5560 in AC; Swat, Malam Jabba, 2500-2600 m, 18.V.1983, 1 ♀ paratype N. 5561 in GM; all leg. Besuchet & Löbl.

Distribution: Pakistan (Dir and Swat).



FIGS 4-11.

Antenna of: 4, *A. dardi* n. sp.; 5, *A. pakistanicum* n. sp.; 6, *A. robustum* n. sp.; 7, *A. guagir* n. sp.; 8, *A. senile* n. sp.; 9, *A. swaticum* n. sp.; 10, *A. pinorum* n. sp.; 11, *A. vile* n. sp.

Agathidium (Microceble) laticorne Portevin

Agathidium (Cyphoceble) laticorne Portevin, 1922: 58; 1928: 32.
Agathidium (s. str.) laticorne: HLISNIKOVSKY 1964: 200.
Agathidium (s. str.) laticorne: ANGELINI & DE MARZO 1983*b*: 162; 1984*a*: 559; 1984*b*: 167; 1984*c*: 37; 1985: 70.
Agathidium (s. str.) laticorne: ANGELINI & COOTER 1985: 131; 1986: 37.
Agathidium (Microceble) laticorne: ANGELINI & DE MARZO 1986: 442.

Material: PAKISTAN, Hazaro, Balakot, 900 m, 4.VI.1983, leg. Besuchet & Löbl, 1 ♀ in GM.

Distribution: Pakistan, Nepal, Bhutan, India (Garhwal, Kumaon, Darjeeling, Assam, Meghalaya, Tamil Nadu, Kerala), Sri Lanka, Viet Nam, Malaysia (Malaya, Sarawak), Indonesia (Java).

New record for Pakistan.

Agathidium *(s. str.)* **pakistanicum** n. sp.
Figs 5, 14, 15, 28, 37, 38, 52

Length 2.05-2.70 mm (holotype ♂ 2.45 mm). Dorsum uniformly reddish-brown; venter reddish-brown; antennae uniformly testaceous; legs reddish-brown. Microsculptured (striolate) only at head sides; puncturation sparse on head and pronotum, nearly absent on elytra.

Head: Striolate at sides, near the eyes, smooth on discum. Punctures very small and superficial, spaced from each other by 2-8 times their own diameter. Clypeal line absent. 3rd antennal segment as long as the 2nd and shorter than 4th + 5th (fig. 5); Hamann's organ: gutter without vesicles in both 9th and 10th antennal segments.

Pronotum: Punctures as small and superficial as on head, spaced from each other by 4-10 times their own diameter, sometimes denser. 1.2 times as broad as head, moderately transverse (W/L = 1.5) and moderately convex (W/H = 1.61). Anterior margin slightly bent (fig. 14). Lateral outline very broadly rounded (fig. 15). Holotype: length 0.77 mm, width 1.16 mm, height 0.72 mm.

Elytra: Some traces of microreticulation. Only some punctures and long, irregular lines interposed. Just a little broader than pronotum, as broad as long and moderately convex (W/H = 1.79). Lateral outline with weah humeral angle. Sutural striae slight but distinct, within the apical third of elytra. Holotype: length 1.15 mm, width 1.20 mm, height 0.67 mm.

Metathoracic wings absent. Meso- and metasternum: median carina absent, lateral lines absent, femoral lines incomplete.

Legs: Male hind femora simple (fig. 28). Tarsal formula ♂ 5-5-4, ♀ 4-4-4.

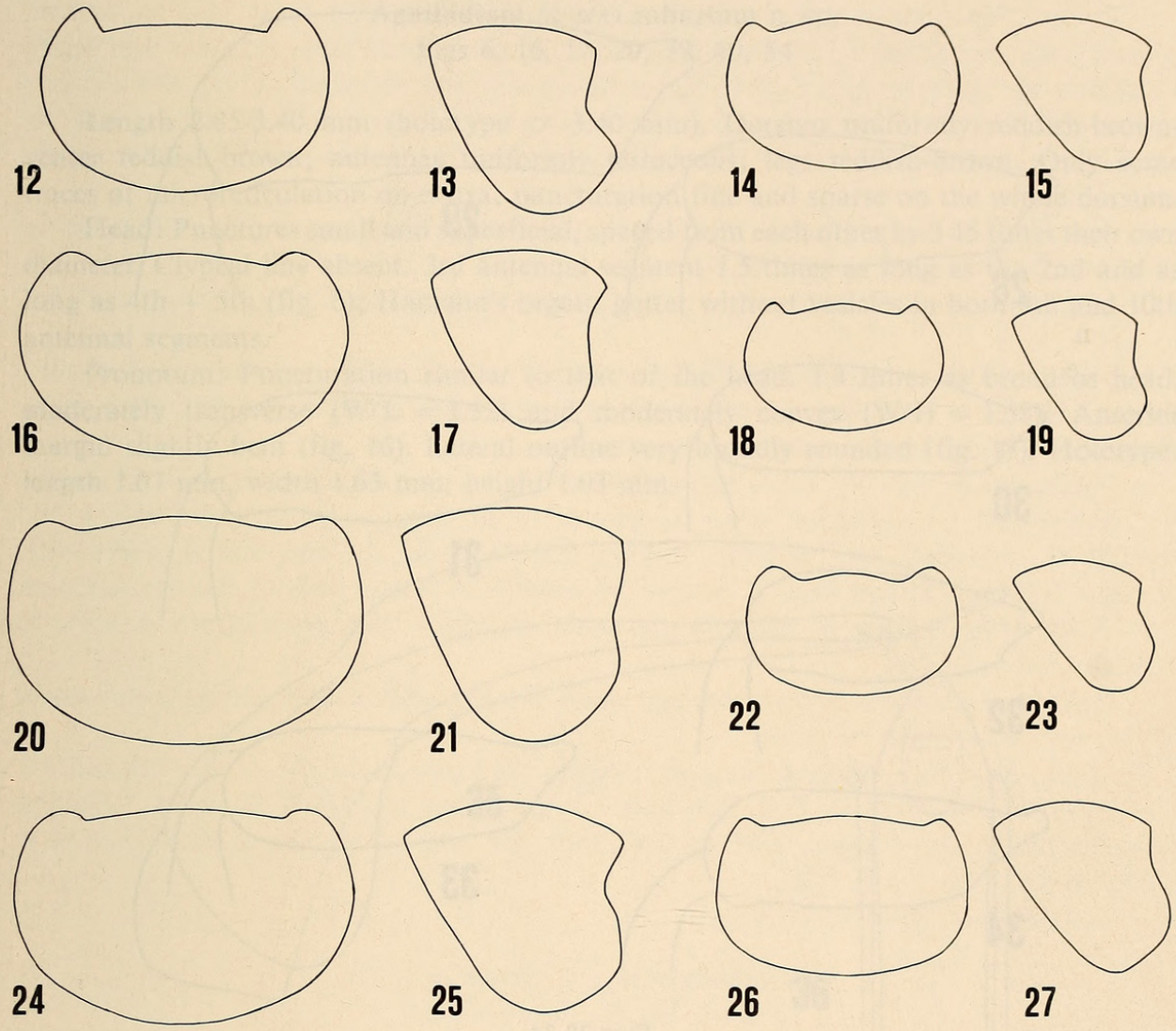
Male copulatory organ (figs 37-38): Aedeagus slender, with ring-like proximal part, lateral margins gently convergent into a small rounded tip; ventral piece bifid. Parameres slender, gently tapering towards apex.

Spermatheca (fig. 52): Basal and apical part not very different in length and caliber; the apical part broadly rounded at apex.

Discussion: *A. pakistanicum* n. sp. is somewhat similar to *A. punctatum* Ang. & Dmz. (1981) and *A. ausobskyi* Ang. & Dmz. (1983*a*) in habitus and microreticulation characters; it differs from *A. punctatum* in colour and puncturation of head and pronotum; from *A. ausobskyi* in ratio 3rd/2nd in antennal segments and its very flattened eyes.

Collecting methods: Sifting rotten leaves, moss decaying wood and plant debris in forest of *Abies*; on a trunk of *Abies*; sifting rotten leaves and branches of chestnut trees; under the bark or within the wood of a big fallen poplar; under stones near the edge of snow-covered ground.

Types: PAKISTAN, Hazara, Nathia Gali, 2500 m, 5.VI.1983, holotype ♂ N. 5562, 22♂ and 14♀ paratypes N. 5563-5597 in GM, 5♂ and 5♀ N. 5598-5607 in AC; Hazara, Naran, 2500 m, 31.V.1983, 4♂ paratypes N. 5608-5611 in GM, 2♂ paratypes N. 5612-5613 in AC; Hazara, above Naran, 2600 m, 1.VI.1983, 9♂ and 4♀ paratypes N. 5614-5626 in GM, 1♂ and 2♀ paratypes N. 5627-5629 in AC; Hazara, between, Naran and Kaghan, 2300 m, 2.VI.1983, 2♂ and 1♀ paratypes N. 5630-5632 in GM; Penjab, Murree, 2100 m, 5.VI.1983,

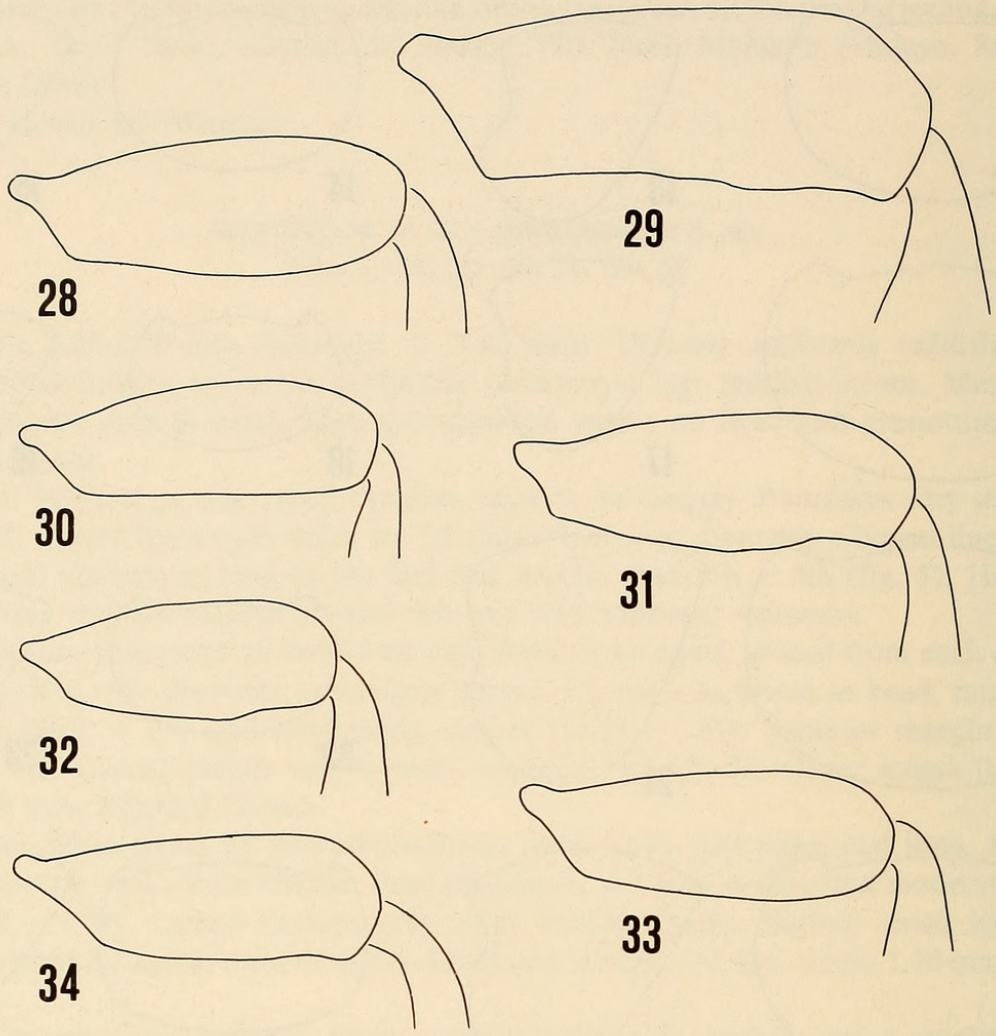


FIGS 12-27.

Dorsal and lateral outline of pronotum in: 12-13, *A. dardi* n. sp.; 14-15, *A. pakistanicum* n. sp.; 16-17, *A. robustum* n. sp.; 18-19, *A. guagir* n. sp.; 20-21, *A. pinorum* n. sp.; 22-23, *A. senile* n. sp.; 24-25, *A. vile* n. sp.; 26-27, *A. swaticum* n. sp.

39♂ and 38♀ paratypes N. 5633-5709 in GM, 10♂ and 10♀ paratypes N. 5710-5729 in AC; Swat, above Miandam, 2400-2500 m, 17.V.1983, 1♀ paratype N. 5730 in GM, all leg. Besuchet & Löbl.

Distribution: Pakistan (Hazara, Penjab and Swat).



FIGS 28-34.

Male hind femur of: 28, *A. pakistanicum* n. sp.; 29, *A. robustum* n. sp.; 30, *A. guagir* n. sp.; 31, *A. senile* n. sp.; 32, *A. swaticum* n. sp.; 33, *A. pinorum* n. sp.; 34, *A. vile* n. sp.

Agathidium *(s. str.)* **pauper** Ang. & Dmz. (nom. emend.)
Fig. 53

Agathidium (s. str.) pauperum Angelini & De Marzo, 1983*c*: 10-11.

Material: Pakistan, Hazara, above Naran, 2600 m, 1.VI.1983, leg. Besuchet & Löbl, 1 ♀ in GM, 1 ♀ in AC; Hazara, Shogran, 2400 m, 3.VI.1983, leg. Besuchet & Löbl, 1 ♀ in GM, 1 ♀ in AC.

Collecting methods: Sifting rotten leaves in forest of pines.

Discussion: We knew only one male of this species, coming from Kashmir. The dorsal coloration of the new specimens is similar to that of the holotype; the puncturation is variably dense. Length range: 2.90-3.50 mm. Spermatheca: fig. 53. Tarsal formula ♀ 4-4-4.

Distribution: Pakistan (Hazara), Kashmir.

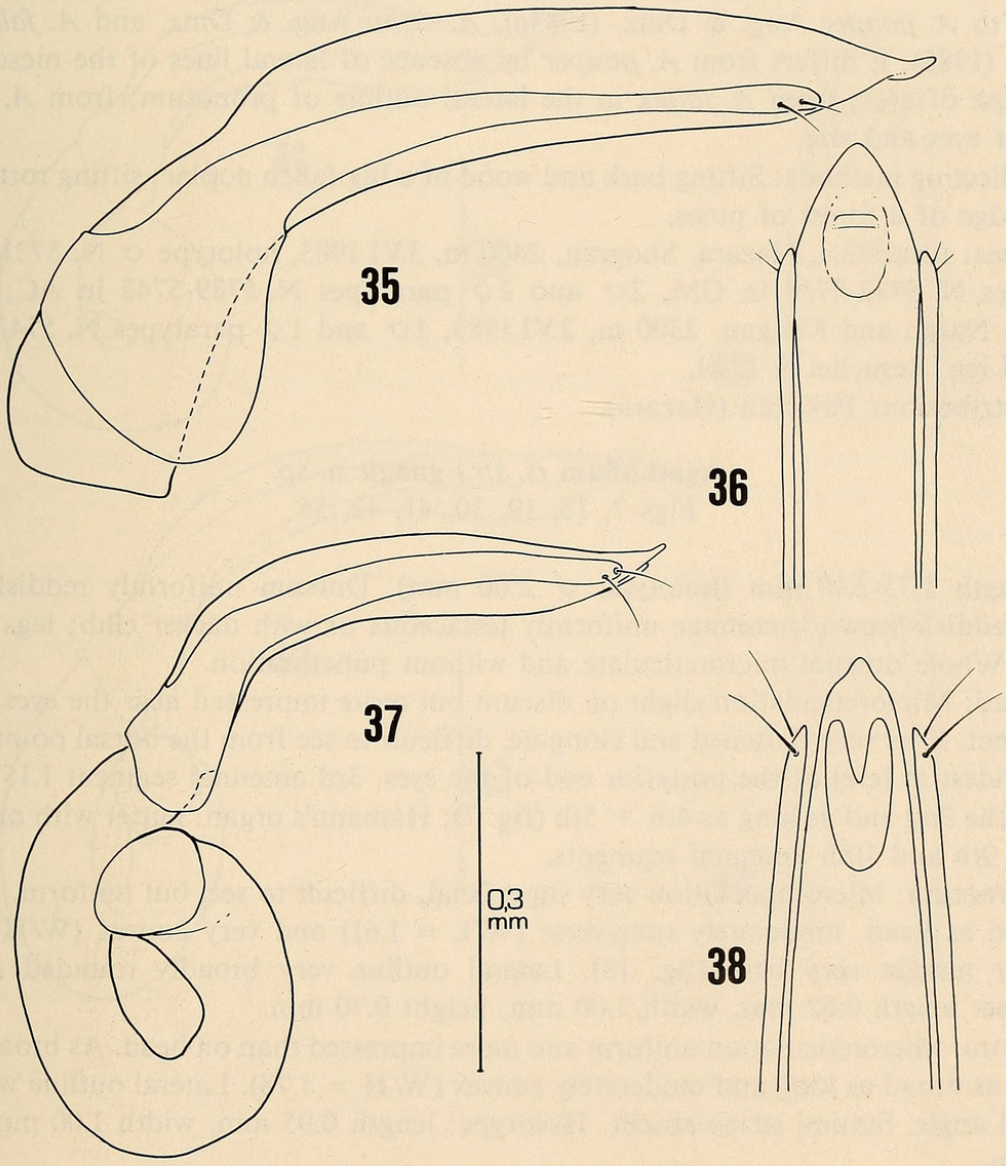
New record for Pakistan.

Agathidium *(s. str.)* **robustum** n. sp.
Figs 6, 16, 17, 29, 39, 40, 54

Length 2.85-3.40 mm (holotype ♂ 3.40 mm). Dorsum uniformly reddish-brown; venter reddish-brown; antennae uniformly testaceous; legs reddish-brown. Only some traces of microreticulation on elytra; puncturation fine and sparse on the whole dorsum.

Head: Punctures small and superficial, spaced from each other by 3-15 times their own diameter. Clypeal line absent. 3rd antennal segment 1.5 times as long as the 2nd and as long as 4th + 5th (fig. 6); Hamann's organ: gutter without vesicles in both 9th and 10th antennal segments.

Pronotum: Puncturation similar to that of the head. 1.4 times as broad as head, moderately transverse (W/L = 1.52) and moderately convex (W/H = 1.58). Anterior margin slightly bent (fig. 16). Lateral outline very broadly rounded (fig. 17). Holotype: length 1.07 mm, width 1.63 mm, height 1.03 mm.



FIGS 35-38.

Male copulatory organ (lateral view and ventral view of apex) of: 35-36, *A. dardi* n. sp.; 37-38, *A. pakistanicum* n. sp.

Elytra: With vague traces of microreticulation. Punctures small and superficial, spaced from each other by 10 times their own diameter; some long, irregular and superficial lines are interposed. A little narrower than pronotum, as broad as long and not very convex (W/H = 1.91). Lateral outline with weak humeral angle. Sutural striae slight but distinct, within the apical half of elytra. Holotype: length 1.50 mm, width 1.55 mm, height 0.81 mm.

Metathoracic wings absent. Meso- and metasternum: median carina absent, lateral lines absent, femoral lines complete.

Legs: Male hind femora with a weak distal tooth (fig. 29). Tarsal formula ♂ 5-5-4, ♀ 4-4-4.

Male copulatory organ (figs 39-40): Aedeagus slender, with ring-like proximal part, lateral margins a little sinuate near the apex, the latter truncate; ventral piece bifid. Parameres slender, gently tapering towards apex.

Spermatheca (fig. 54): Basal and apical parts not very different in length and caliber.

Discussion: *A. robustum* n. sp. is similar in antennal characters, coloration and habitus to *A. pauper* Ang. & Dmz. (1983*c*), *A. visnu* Ang. & Dmz. and *A. fallax* Ang. & Dmz. (1985); it differs from *A. pauper* by absence of lateral lines of the mesosternum and shape of eyes; from *A. fallax* in the lateral outline of pronotum; from *A. visnu* in shape of eyes and size.

Collecting methods: Sifting bark and wood of a big fallen poplar; sifting rotten leaves at the edge of a forest of pines.

Types: PAKISTAN, Hazara, Shogran, 2400 m, 3.VI.1983, holotype ♂ N. 5731 and 7 ♀ paratypes N. 5732-5738 in GM, 2 ♂ and 2 ♀ paratypes N. 5739-5742 in AC; Hazara, between Naran and Khagan, 2300 m, 2.VI.1983, 1 ♂ and 1 ♀ paratypes N. 5743-5744 in GM; all leg. Besuchet & Löbl.

Distribution: Pakistan (Hazara).

Agathidium *(s. str.)* **guagir** n. sp.
Figs 7, 18, 19, 30, 41, 42, 55

Length 1.75-2.10 mm (holotype ♂ 2.00 mm). Dorsum uniformly reddish-brown; venter reddish-brown; antennae uniformly testaceous or with darker club; legs reddish-brown. Whole dorsum microreticulate and without puncturation.

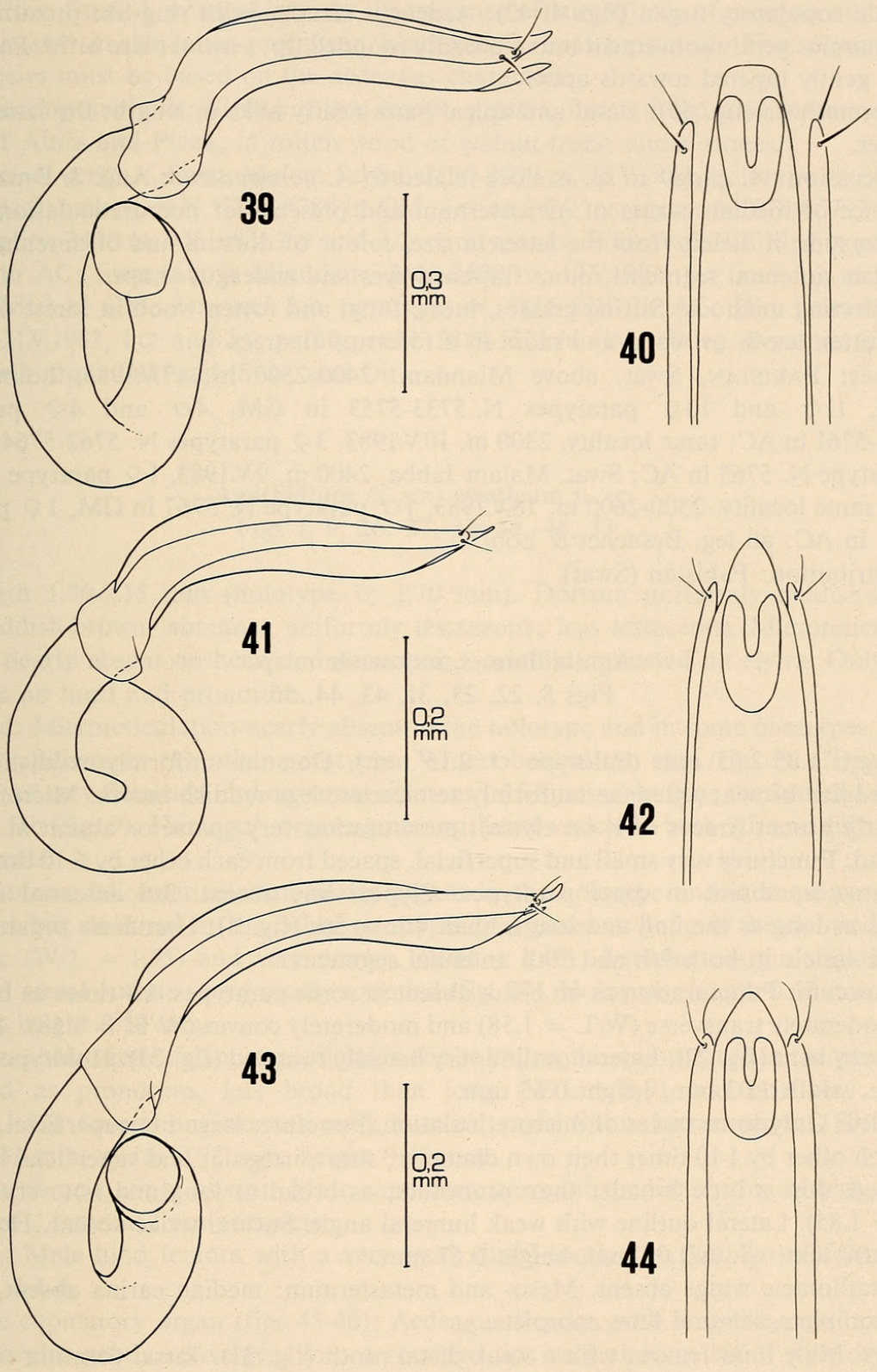
Head: Microreticulation slight on discum but more impressed near the eyes. Clypeal line absent. Eyes very flattened and elongate, difficult to see from the dorsal point of view. Head widest at level of the posterior end of the eyes. 3rd antennal segment 1.15 times as long as the 2nd and as long as 4th + 5th (fig. 7); Hamann's organ: gutter with one vesicle in both 9th and 10th antennal segments.

Pronotum: Microreticulation very superficial, difficult to see, but uniform. 1.4 times as broad as head, moderately transverse (W/L = 1.61) and very convex (W/H = 1.42). Anterior margin very bent (fig. 18). Lateral outline very broadly rounded (fig. 19). Holotype: length 0.62 mm, width 1.00 mm, height 0.70 mm.

Elytra: Microreticulation uniform and more impressed than on head. As broad as pronotum, as broad as long and moderately convex (W/H = 1.78). Lateral outline with weak humeral angle. Sutural striae absent. Holotype: length 0.95 mm, width 1.00 mm, height 0.56 mm.

Metathoracic wings absent. Meso- and metasternum: median carina absent, lateral lines incomplete, femoral lines incomplete.

Legs: Male hind femora simple (fig. 30). Tarsal formula ♂ 5-5-4, ♀ 4-4-4.



FIGS 39-44.

Male copulatory organ (lateral view and ventral view of apex) of: 39-40, *A. robustum* n. sp.; 41-42, *A. guagir* n. sp.; 43-44, *A. senile* n. sp.

Male copulatory organ (figs 41-42): Aedeagus slender, with ring-like proximal part, lateral margins gently convergent into a broadly rounded tip; ventral piece bifid. Parameres slender, gently tapered towards apex.

Spermatheca (fig. 55): Basal and apical parts nearly alike in length; the latter larger in caliber.

Discussion: *A. guagir* n. sp. is close related to *A. goropanicum* Ang. & Dmz. (1985) by absence of median carina of mesosternum and presence of microreticulation on the whole dorsum; it differs from the latter in size, colour of dorsum and of antennae, ratio 3rd/2nd in antennal segments, more flattened eyes and aedeagus shape.

Collecting methods: Sifting grasses, moss, fungi and rotten wood in forest of pines; sifting rotten leaves or wood and moss in a forest of fir-trees.

Types: PAKISTAN, Swat, above Miandam, 2400-2500 m, 17.V.1983, holotype ♂ N. 5732, 11♂ and 10♀ paratypes N. 5733-5753 in GM, 4♂ and 4♀ paratypes N. 5754-5761 in AC; same locality, 2300 m, 10.V.1983, 3♀ paratypes N. 5762-5764 in GM, 1♂ paratype N. 5765 in AC; Swat, Malam Jabba, 2400 m, 9.V.1983, 1♀ paratype N. 5766 in GM; same locality, 2500-2600 m, 18.V.1983, 1♂ paratype N. 5767 in GM, 1♀ paratype N. 5768 in AC; all leg. Besuchet & Löbl.

Distribution: Pakistan (Swat).

Agathidium *(s. str.)* **senile** n. sp.
Figs 8, 22, 23, 31, 43, 44, 56

Length 1.85-2.25 mm (holotype ♂ 2.15 mm). Dorsum uniformly reddish-brown; venter reddish-brown; antennae uniformly testaceous; legs reddish-brown. Microreticulation nearly absent (traces of it on elytra); puncturation very sparse or absent at all.

Head: Punctures very small and superficial, spaced from each other by 6-10 times their own diameter; absent in some paratypes. Clypeal line absent. 3rd antennal segment 1.3 times as long as the 2nd and longer than 4th + 5th (fig. 8); Hamann's organ: gutter with one vesicle in both 9th and 10th antennal segments.

Pronotum: Puncturation as on head, absent in some paratypes. 1.3 times as broad as head, moderately transverse (W/L = 1.58) and moderately convex (W/H = 1.58). Anterior margin very bent (fig. 22). Lateral outline very broadly rounded (fig. 23). Holotype: length 0.65 mm, width 1.03 mm, height 0.65 mm.

Elytra: Only some traces of microreticulation. Punctures large but superficial, spaced from each other by 1-10 times their own diameter; short, irregular and superficial lines are interposed. Just a little broader than pronotum, as broad as long and not very convex (W/H = 1.85). Lateral outline with weak humeral angle. Sutural striae absent. Holotype: length 1.00 mm, width 1.06 mm, height 0.57 mm.

Metathoracic wings absent. Meso- and metasternum: median carina absent, lateral lines incomplete, femoral lines complete.

Legs: Male hind femora with a weak distal tooth (fig. 31). Tarsal formula ♂ 5-5-4, ♀ 4-4-4.

Male copulatory organ (figs 43-44): Aedeagus slender, with ring-like proximal part, lateral margins gently convergent into a broadly rounded tip; ventral piece bifid. Parameres slender, with rounded tip.

Spermatheca (fig. 56): Basal part larger in caliber; apical part shorter.

Discussion: *A. senile* n. sp. is fully similar to *A. phulcokiense* Ang. & Dmz. (1981) and *A. transversum* Ang. & Dmz. (1981) in habitus and characters of mesosternum and anten-

nae; it differs from *A. phulcokiense* by the presence of lateral lines of mesosternum; from *A. transversum* in the ratios pronotum/head and W/L of pronotum. The separation of these species must be based on the aedeagus characters.

Collecting methods: Sifting rotten leaves, grasses, moss, fungi and rotten wood in forests of Abies and Picea; in rotten wood of walnut-trees; under stones.

Types: PAKISTAN, Swat, Malam Jabba, 2500-2600 m, 18.V.1983, holotype ♂ N. 5769, 8♂ and 11♀ paratypes N. 5770-5788 in GM, 4♂ and 5♀ paratypes N. 5789-5797 in AC; same locality, 2400 m, 9.V.1983, 2♂ and 3♀ paratypes N. 5798-5802 in GM, 1♂ paratype N. 5803 in AC; Swat, above Miandam, 2400-2500 m, 17.V.1983, 8♂ and 3♀ paratypes N. 5804-5814 in GM, 2♂ and 2♀ paratypes N. 5815-5818 in AC; Dir, Lawarai pass, 3000 m, 21.V.1983, 1♂ and 2♀ paratypes N. 5819-5821 in GM; all leg. Besuchet & Löbl.

Distribution: Pakistan (Swat and Dir).

Agathidium *(s. str.)* **swaticum** n. sp.
Figs 1, 9, 26, 27, 32, 45, 46, 57

Length 1.70-2.15 mm (holotype ♂ 1.70 mm). Dorsum uniformly reddish-brown; venter reddish-brown, antennae uniformly testaceous; legs testaceous. Microreticulation slight or nearly absent on head and pronotum, variably impressed on elytra. Only some punctures on head and pronotum.

Head: Microreticulation nearly absent in the holotype and in some paratypes, superficial but uniform in the other paratypes. Widest behind the eyes (fig. 1). Clypeal line absent. Eyes very flattened. 3rd antennal segment 1.35 times as long as the 2nd and as long as 4th + 5th (fig. 9); Hamann's organ: gutter with one vesicle in both 9th and 10th antennal segments.

Pronotum: Microreticulation nearly absent in the holotype and in some paratypes, superficial but uniform in the other paratypes. 1.3 times as long as head, moderately transverse (W/L = 1.55) and very convex (W/H = 1.46). Anterior margin slightly bent (fig. 26). Lateral outline very broadly rounded (fig. 27). Holotype: length 0.47 mm, width 0.73 mm, height 0.50 mm.

Elytra: Microreticulation superficial in the holotype, more impressed in the paratypes. As broad as pronotum, less broad than long (W/L = 0.9) and not very convex (W/H = 1.82). Lateral outline with weak humeral angle. Sutural striae absent. Holotype: length 0.81 mm, width 0.73 mm, height 0.40 mm.

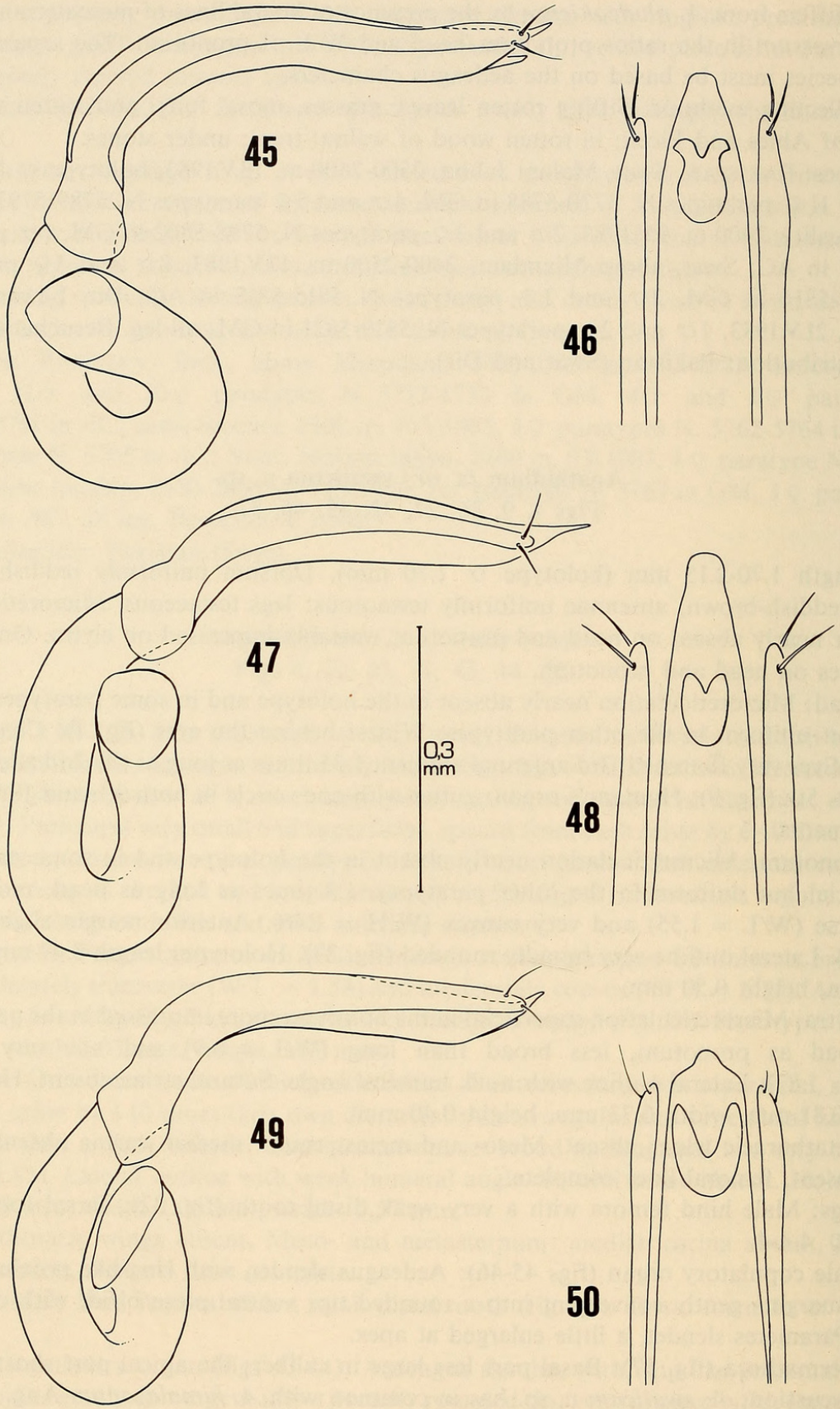
Metathoracic wings absent. Meso- and metasternum: median carina absent, lateral lines absent, femoral lines complete.

Legs: Male hind femora with a very weak distal tooth (fig. 32). Tarsal formula ♂ 4-4-4, ♀ 4-4-4.

Male copulatory organ (figs 45-46): Aedeagus slender, with ring-like proximal part, lateral margins gently convergent into a rounded tip; ventral piece bifid, with diverging arms. Parameres slender, a little enlarged at apex.

Spermatheca (fig. 57): Basal part less large in caliber; the apical part shorter.

Discussion: *A. swaticum* n. sp. has in common with *A. himalayanum* Ang. & Dmz. (1981) and *A. nepalense* Ang. & Dmz. (1981) the head shape (head widest behind eyes); it differs from *A. himalayanum* in size and microreticulation characters, from *A. nepalense* in the lower length of the "postocular tempora". The separation of *A. swaticum* from *A. nepalense* is doubtless on the basis of the aedeagus characters.



FIGS 45-50.

Male copulatory organ (lateral view and ventral view of apex) of: 45-46, *A. swaticum* n. sp.; 47-48, *A. pinorum* n. sp.; 49-50, *A. vile* n. sp.

Collecting methods: Sifting decaying wood, rotten leaves and moss in forest of *Abies*; sifting moss in a damp grassland; sifting rotten leaves in oak-forest or at the foot of an old pine.

Types: PAKISTAN, Swat, above Miandam, 2300 m, 10.V.1983, holotype ♂ N. 5822 and 9♀ paratypes N. 5823-5831 in GM, 2♂ and 4♀ paratypes N. 5832-5837 in AC; same locality, 2400-2500 m, 17.V.1983, 1♀ paratype N.5838 in GM; Swat, Kalam, 2100 m, 12.V.1983, 2♂ paratypes N. 5839-5840 in GM; Swat, above Utrot, 2600-2800 m, 13.V.1983, 2♂ paratypes N. 5841-5842 in GM, 1♂ paratype N. 5843 in AC; Swat, Malam Jabba, 2500-2600 m, 18.V.1983, 2♀ paratypes N. 5844-5845 in GM; Dir, Lawarai pass, 3000 m, 21.V.1983, 1♂ paratype N. 5846 in GM; all leg. Besuchet & Löbl.

Distribution: Pakistan (Swat, Dir).

Agathidium *(s. str.)* **pinorum** n. sp.

Figs 2, 10, 20, 21, 33, 47, 48, 58

Length 2.15-2.35 mm (holotype ♂ 2.20 mm). Dorsum uniformly reddish-brown; venter reddish-brown; antennae uniformly testaceous; legs reddish-brown. Microreticulation uniform and impressed on the whole dorsum. Puncturation absent. Head: fig. 2.

Head: Microreticulation uniform and impressed. Widest behind the eyes (fig. 2). Clypeal line absent. Eyes very flattened. 3rd antennal segment as long as the 2nd and shorter than 4th + 5th (fig. 10); Hamann's organ: gutter without vesicles in both 9th and 10th antennal segments.

Pronotum: Microreticulation as on head. 1.3 times as broad as head, moderately transverse (W/L = 1.63) and moderately convex (W/H = 1.68). Anterior margin slightly bent (fig. 20). Lateral outline very broadly rounded (fig. 21). Holotype: length 0.65 mm, width 1.06 mm, height 0.63 mm.

Elytra: Microreticulation as on head. As broad as pronotum, as broad as long and not very convex (W/H = 2.12). Lateral outline with weak humeral angle. Sutural striae clear, within the apical half of the elytra. Holotype: length 1.01 mm, width 1.06 mm, height 0.50 mm.

Metathoracic wings absent. Meso- and metasternum: median carina absent, lateral lines absent, femoral lines incomplete.

Legs: Male hind femora simple (fig. 33). Tarsal formula ♂ 5-5-4, ♀ 4-4-4.

Male copulatory organ (figs 47-48): Aedeagus slender, with ring-like proximal part, lateral margins gently convergent into a rounded tip; ventral piece not deeply bifid. Parameres slender, gently tapering towards apex.

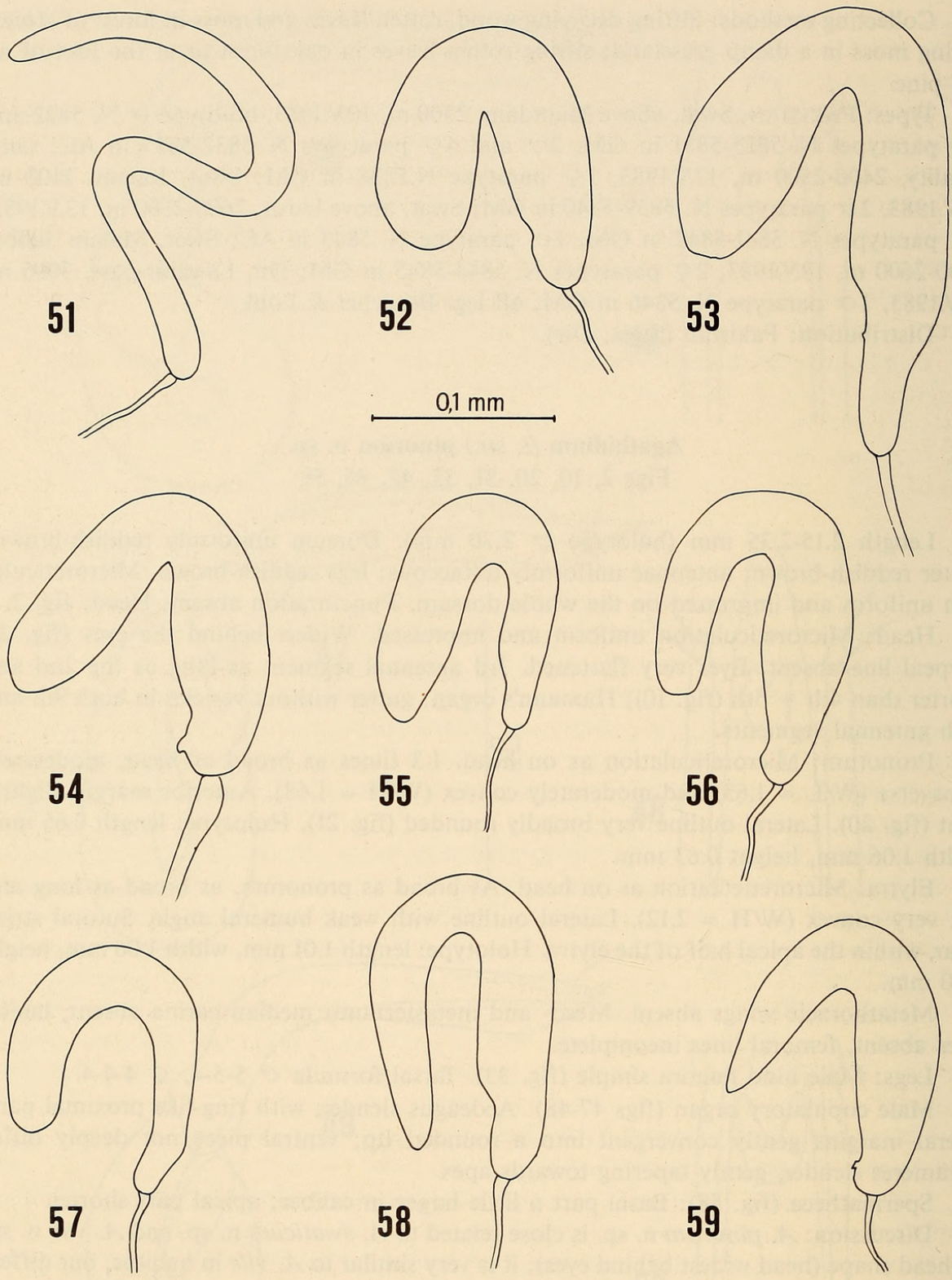
Spermatheca (fig. 58): Basal part a little larger in caliber; apical part shorter.

Discussion: *A. pinorum* n. sp. is close related to *A. swaticum* n. sp. and *A. vile* n. sp. by head shape (head widest behind eyes); it is very similar to *A. vile* in habitus, but differs from the latter by absence of lateral line of mesosternum, shape of male hind femora and aedeagus shape.

Collecting methods: Sifting decaying wood and plant debris near a fallen fir-tree; sifting rotten leaves under shrubs at the edge of a pine-forest.

Types: PAKISTAN, Hazara, Shogran, 2400 m, 3.VI.1983, holotype ♂ N. 5847, 2♂ and 4♀ paratypes N. 5848-5853 in GM, 2♂ and 2♀ paratypes N. 5854-5857 in AC; Hazara, above Naran, 2600 m, 1.VI.1983, 1♀ paratype N. 5858 in GM; all leg. Besuchet & Löbl.

Distribution: Pakistan (Hazara).



FIGS 51-59.

Spermatheca of: 51, *A. dardi* n. sp.; 52, *A. pakistanicum* n. sp.; 53, *A. pauper* Ang. & Dmz.; 54, *A. robustum* n. sp.; 55, *A. guagir* n. sp.; 56, *A. senile* n. sp.; 57, *A. swaticum* n. sp.; 58, *A. pinorum* n. sp.; 59, *A. vile* n. sp.

Agathidium *(s. str.)* **vile** n. sp.
Figs 3, 11, 24, 34, 49, 50, 59

Length 1.95-2.35 mm (holotype ♂ 2.35 mm). Dorsum uniformly reddish-brown; venter reddish-brown; antennae uniformly testaceous; legs reddish-brown. Microreticulation clear on the whole dorsum; puncturation nearly absent: only some very small punctures on head and pronotum. Habitus: fig. 3.

Head: Microreticulation clear and uniform. Widest behind the eyes (fig. 3). Clypeal line absent. Eyes very flattened. 3rd antennal segment 1.4 times as long as the 2nd and as long as 4th + 5th (fig. 11); Hamann's organ: gutter without vesicles in both 9th and 10th antennal segments.

Pronotum: Microreticulation as on head. Only some very small punctures. 1.3 times as broad as head, moderately transverse (W/L = 1.55) and moderately convex (W/H = 1.6). Anterior margin slightly bent (fig. 24). Lateral outline very broadly rounded (fig. 25). Holotype: length 0.63 mm, width 0.98 mm, height 0.61 mm.

Elytra: Microreticulation as on head. A little broader than pronotum, less broad than long (W/L = 0.9) and not very convex (W/H = 1.92). Lateral outline with weak humeral angle. Sutural striae sharp, within the apical half of the elytra. Holotype: length 1.10 mm, width 1.00 mm, height 0.52 mm.

Metathoracic wings absent. Meso- and metasternum: median carina absent, lateral lines incomplete, femoral lines incomplete.

Legs: Male hind femora with a weak distal tooth (fig. 34). Tarsal formula ♂ 5-5-4, ♀ 4-4-4.

Male copulatory organ (figs 49-50): Aedeagus slender, with ring-like proximal part, lateral margins abruptly convergent into a small semicircular tip; ventral piece bifid. Parameres slender, gently tapering towards apex.

Spermatheca (fig. 59): Basal part larger in caliber; apical part shorter, tapering towards its apex.

Discussion: See discussion of *A. pinorum* n. sp.

Collecting methods: Sifting rotten leaves and wood in forests of chestnut trees; under the bark of a big fallen poplar.

Types: PAKISTAN, Hazara, between Naran and Kaghan, 2300 m, 2.VI.1983, holotype ♂ N. 5859 in GM, 2♀ paratypes N. 5860-5861 in AC; Hazara, above Naran, 2600 m, 1.VI.1983, 1♀ paratype N. 5862 in GM; all leg. Besuchet & Löbl.

Distribution: Pakistan (Hazara).

FAUNISTIC REMARKS

This table shows the distribution of the known Pakistani species of *Agathidium* at both sides of the Indus river:

	Dir-Swat (west of the Indus)	*Hazara-Penjab (east of the Indus)*
A. (Neoceble) dardi n. sp.	+	
A. (Microceble) laticorne Port.		+
A. (s. str.) *pakistanicum* n. sp.	+	+
A. (s. str.) *pauper* Ang. & Dmz.		+
A. (s. str.) *robustum* n. sp.		+
A. (s. str.) *guagir* n. sp.	+	
A. (s. str.) *senile* n. sp.	+	
A. (s. str.) *swaticum* n. sp.	+	
A. (s. str.) *pinorum* n. sp.		+
A. (s. str.) *vile* n. sp.		+

Since this river is regarded by HOLDHAUS (1911) as a border between the "Oriental Region" and the "Palearctic Region", some remarks can be drawn:

a) Actually, the *Agathidium* fauna of Swat and Dir (western side of the Indus) seems sharply different from that of Hazara and Penjab (eastern side). In fact, only one species, *A. pakistanicum,* has been found on both sides. In view of the high number of collected specimens, we can consider that such differences correspond to a real faunistic diversity.

b) On the other hand, the species from the western side of the Indus (presumed as Palearctic according to HOLDHAUS) do not show a close phylogenetical relationship with those from Europe, but they are indeed more closely related to the species of the eastern side of the river.

c) Altogether, the Pakistani species show a close relationship with those from Himalaya, owing to certain characters such as: small size, head shape, very flattened eyes, absence of metathoracic wings, tarsal formula. Moreover, in Pakistan we find a percentage of *Neoceble* species which is as low as in Himalaya, whereas this percentage is much higher in Europe. However, at east of the Indus, but not at west, we find the subg. *Microceble (A. laticorne)*, which is widespread in the Oriental Region but absent in the greater part of the Palearctic Region (it is present only in Japan: unpublished data).

At present, we can conclude that, on the basis of the *Agathidium* fauna, both Dir-Swat and Hazara-Penjab belong to the Oriental Region, although the Indus river is a very strong zoogeographical barrier.

REFERENCES

ANGELINI, F. & DE MARZO. 1981. Reports of *Agathidium* from Himalaya: expeditions of Basel Natural History Museum and Prof. H. Franz *(Coleoptera, Leiodidae). Entomol. Basiliensia* 6: 187-294.

— 1983*a*. New species and records of the genus *Agathidium* Panzer 1797 from Nepal *(Insecta: Coleoptera: Leiodidae). Senckenberg. biol.* 64 (1/3): 157-173.

— 1983*b*. New species and records of *Agathidium* from Himalaya: expeditions of Basel Natural History Museum *(Coleoptera, Leiodidae). Entomol. Basiliensia* 8: 153-164.

— 1983*c*. Anisotomini nuovi o poco conosciuti reperiti in Nepal e Kashmir dal Prof. H. Franz *(Coleoptera, Leiodidae). Entomologica* 18: 5-16.

— 1984*a*. Reports of *Agathidium* from Darjeeling: expeditions 1978 of Geneva Natural History Museum *(Coleoptera, Leiodidae). Revue suisse Zool.* 91 (3): 545-562.

— 1984*b*. *Agathidium* from India collected by Dr. Gy. Topál *(Coleoptera, Leiodidae). Annls. hist.-nat. Mus. natn. hung.* 76: 165-168.

— 1984*c*. Descrizione di 13 nuove specie di Anisotomini dell'Asia sudorientale *(Coleoptera, Leiodidae). Entomologica* 19: 23-49.

— 1985. Reports of *Agathidium* from Central Nepal and North India: expeditions 1979 and 1981 of Geneva Natural History Museum *(Coleoptera, Leiodidae). Revue suisse Zool.* 92 (1): 33-76.

— 1985. Studies on Anisotomini *(Col., Leiodidae)* of Sarawak. *Sarawak Mus. Journ.* 34 (55): 125-143.

— 1986. *Agathidium* from India and Malaya: expeditions of Geneva Natural History Museum *(Coleoptera, Leiodidae, Anisotomini). Revue suisse Zool.* 93: 423-455.

ANGELINI, F. & J. COOTER. 1986. Notes on some *Agathidium* Panzer *(Col., Leiodidae)* from South-East Asia with description of two new species. *Entomologist's mon. Mag.* 122: 37-41.

HLISNIKOVSKY, J. 1964. Monographische Bearbeitung der Gattung *Agathidium* Panzer *(Coleoptera). Acta ent. Mus. natn. Pragae,* suppl. 5: 1-255.

PORTEVIN, M. G. 1922. Notes sur quelques Silphides et Liodides de la collection Grouvelle. *Bull. Mus. natn. Hist. nat. Paris* 00: 54-58.