

A contribution to the study of the family Erigonidae (Araneae) from Pirin Mountain, Bulgaria, with a description of a new species (*Metopobactrus orbelicus* sp. n.)

Christo D. Deltshv

Institute of Zoology,
Bulgarian Academy of Sciences,
Sofia, Bulgaria

Summary

The present paper comprises 1 new species, 9 species new to the fauna of Bulgaria, 8 species new to the fauna of Pirin mountain, and for the remaining 3 species and 1 subspecies many new localities are given. As a result of a revision of the collection made by Drensky, some names are deleted from the list of the Bulgarian spider fauna ("*Araeoncus crassiceps*" = *A. anguineus*; "*Gnathonarium dentatum*" = *Meioneta rurestris*; "*Gonatum isabellinum*" = *G. orientale*; "*Dicymbium tibiale*" = *Diplocephalus altimontanus*; "*Diplocephalus cristatus*" = *D. foraminifer*). Some zoogeographical remarks are also given.

Introduction

Drensky (1921, 1936) reported 14 species and 1 subspecies of the family Erigonidae from Pirin mountain. Deltshv (1983) rejected 3 species (*Erigone arctica* (White), *E. capra* Simon, *E. remota* L. Koch) and 1 subspecies (*E. capra oblita* Kulcz.) and described a new subspecies (*Erigone longipalpis pirini*). A new species (*Diplocephalus altimontanus*) has been described recently (Deltshv, 1984).

The present investigation comprises 1 new species, 9 species new for the fauna of Bulgaria (marked with 2 asterisks), 8 species new for the fauna of Pirin mountain (marked with 1 asterisk), and for the remaining 3 species and 1 subspecies many new localities are given. Drensky's material has been revised and as a consequence some names (based on misidentified material) have to be deleted from the list of Bulgarian spider fauna ("*Araeoncus crassiceps*" = *A. anguineus* (L. Koch); "*Araeoncus humilis*" = *Aulacocyba subitanea* (O. P.-C.); "*Gnathonarium dentatum*" = *Meioneta rurestris* (C. L. Koch); "*Gonatum isabellinum*" = *G. orientale* Fage; "*Dicymbium tibiale*" = *Diplocephalus altimontanus* Deltshv; "*Diplocephalus cristatus*" = *D. foraminifer* (O. P.-C.).

Further data concerning the zoogeographical distribution of the species are taken from Wiehle (1960).

Study area

The localities where the spiders were collected are shown in Fig. 1, and were as follows:

P-1 – peak Vihren (2914 m); P-2 – area of peak Vihren (2500 m); P-3 – area of cottage Vihren (2000 m); P-4 – circus Banski suhodol (2400 m); P-5 – circus Kamenitica (2500 m); P-6 – area of Pogledec (2300 m); P-7 – Muratovo lake (2300 m); P-8 – Banderishka porta (2500 m); P-9 – Sinanishko lake (2350 m); P-10 – Spano pole (2100 m); P-11 – Arnautski grobishta, the forest (1800 m); P-12 – Ribno lake (2400 m); P-13 – Jabeshko lake (2400 m); P-14 – peak Tipic (2600 m); P-15 – Todorina porta (2580 m); P-16 – Vasilashki circus (2400 m); P-17 – Vasilashki lake (2300 m); P-18 – Mozgovishka porta (2550 m); P-19 – Tevno lake (2550 m); P-20 – Valiavishki tshukar (2600 m); P-21 – Kravevdvorska porta (2550 m); P-22 – Mitrovo lake (2400 m); P-23 – Solishteto (2200 m); P-24 – area of cottage Begovitsa (1800 m); P-25 – area of cottage Pirin (1800 m); P-26 – Popovo lake (2400 m); P-27 – area of cottage Bezbog (2300 m); P-28 – area of cottage G. Deltshv (1700 m); P-29 – Djengalska porta (2500 m); P-30 – Valiavishki lake (2400 m); P-31 – Prevalski lake (2450 m); P-32 – Tijacite (2300 m); P-33 – area of cottage Demianica (2200 m); P-34 – cottage Demianica (1895 m); P-35 – Gazeisko lake (2550 m); P-36 – Demianishka poljana (1800 m); P-37 – Todorova ornica (1700 m); P-38 – area of town Bansko.

Species records

Araeoncus anguineus (L. Koch)* (Figs. 2-5)

Araeoncus crassiceps (non Westring): Drensky, 1921: 29.

P-19, 2 ♂♂, 11 Oct. 1978, 1 ♂, 8 July 1979; P-31, 1 ♂, 2 ♀♀, 12 Oct. 1978, 1 ♀, 20 July 1981; P-3, 1 ♂, 3 ♀♀, 12 July 1978; P-12, 2 ♀♀, 5 July 1979; P-16, 3 ♀♀, 5 July 1979; P-33, 1 ♂, 21 July 1978, 1 ♀, 8 Aug. 1982; P-36, 1 ♂, 23 July 1981, amongst loose stones, in damp places in zones above 1600 m. Wiehle (1960) regarded this species as a high-altitude element.

The Bulgarian material appears to agree well with the populations from Central Europe, but drawings are given of the copulatory organs (Figs. 2-5). The Bulgarian populations occupy the most south-easterly point of the range of the species.

Distribution: Austria, North Italy, Switzerland and Bulgaria.

Aulacocyba subitanea (O. P.-Cambridge)*

Araeoncus humilis (non Blackwall): Drensky, 1921: 29.

P-37, 1 ♀, July 1915 (leg. P. Drensky). Earlier data concerning the species in Bulgaria are only from caves. Fage (1931) also reported the species from caves in Spain.

Distribution: Europe, North Africa, North America.

Ceratinella brevis (Wider)*

P-16, 1 ♀, 5 July 1979, in vegetable detritus in

damp places.

Distribution: Europe.

Cineta gradata (Simon)**

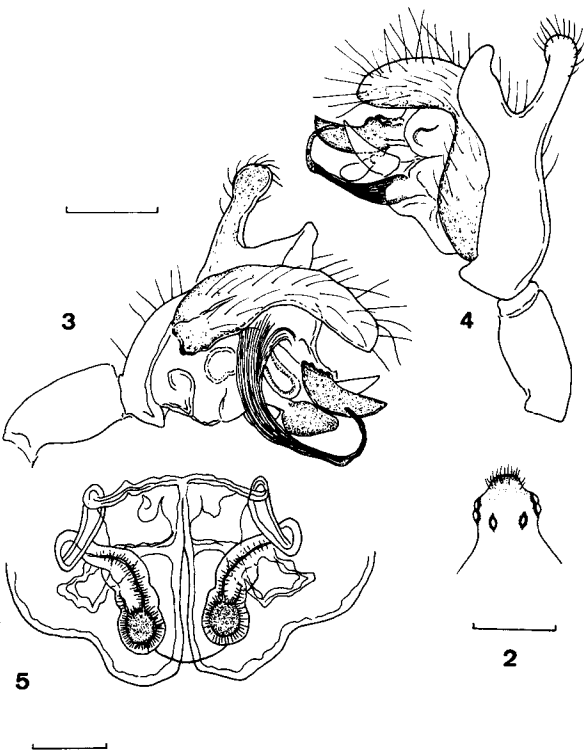
P-6, 1 ♂, 7 Aug. 1980, on low bushes in pine wood.

Distribution: Austria, France, Switzerland, Germany, Italy, Czechoslovakia, Yugoslavia, Bulgaria. The locality in Bulgaria is the highest (2000 m). Wiehle (1960) described this species from localities in Central Europe, between 100 and 1400 m.

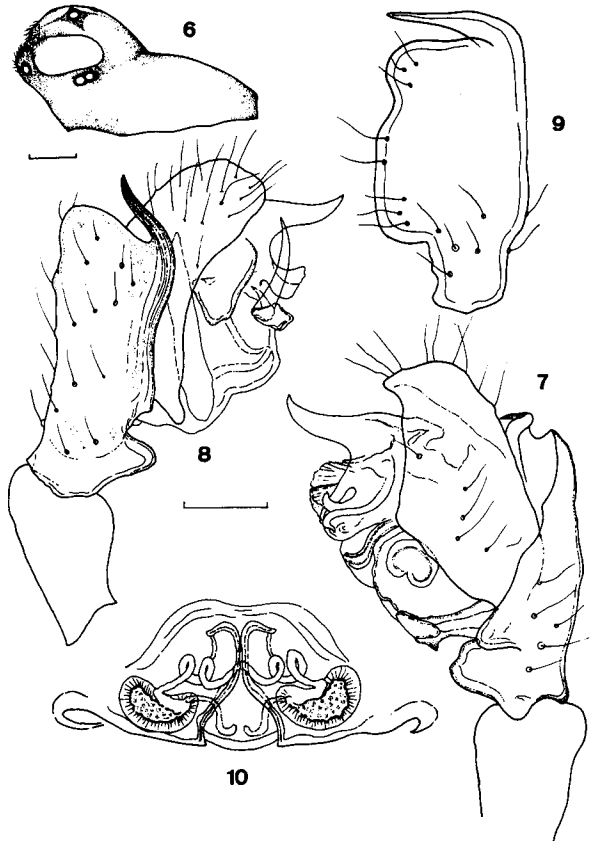
Diplocephalus foraminifer (O. P.-Cambridge)** (Figs. 6-10)

Diplocephalus cristatus (non Blackwall): Drensky, 1921: 30.

P-2, 1 ♂, 27 July 1978; P-19, 1 ♂, 3 ♀♀, 11 Oct.



Figs. 2-5: *Araeoncus anguineus* (L. Koch). 2 ♂ head, from above; 3 Male palp, external view; 4 Male palp, internal view; 5 Vulva. Scale lines: 0.05 mm (5), 0.1 mm (3, 4), 0.2 mm (2).



Figs. 6-10: *Diplocephalus foraminifer* (O. P.-Cambridge). 6 ♂ carapace, lateral view; 7 Male palp, external view; 8 Male palp, internal view; 9 Male palpal tibia, dorsal view; 10 Vulva. Scale lines: 0.1 mm (7-10), 0.2 mm (6).

1978; P-32, 1 ♀, 12 Oct. 1978; P-34, 1 ♀, 10 Oct. 1978; P-16, 1 ♀, 9 Aug. 1980; P-13, 1 ♀, 9 Aug. 1980; P-23, 1 ♀, 18 July 1981; P-7, 1 ♀, 4 Aug. 1982, under stones.

Wiehle (1960) regarded the species as "eine Species der Schneeregion der Alpen und Pyreneen". On the other hand Denis (1970) wrote "Il est normal de trouver *D. foraminifer* en Suisse et en Carinthie. Mais il faut aller jusqu'au Banat et Balkans pour voir les deux "groupes de formes" voisiner réellement, et encore je connais trop mal la géographie de ces régions pour apprécier les conditions de ce voisinage". Drawings are therefore provided of the cephalothorax and copulatory organs of Bulgarian specimens (Figs. 6-10).

Distribution: France, Bulgaria.

Entelecara media Kulczynski** (Figs. 11-15)

P-19, 2 ♂♂, 2 ♀♀, 6 July 1982, under stones.

This species (Figs. 11-15) is classified by Thaler (1976) as an arctic-alpine element.

Distribution: The establishment of the species in Bulgaria confirms the assertion of Locket, Millidge & Merrett (1974) that "*E. media* occurs in central and eastern Europe".

Erigone dentipalpis (Wider)

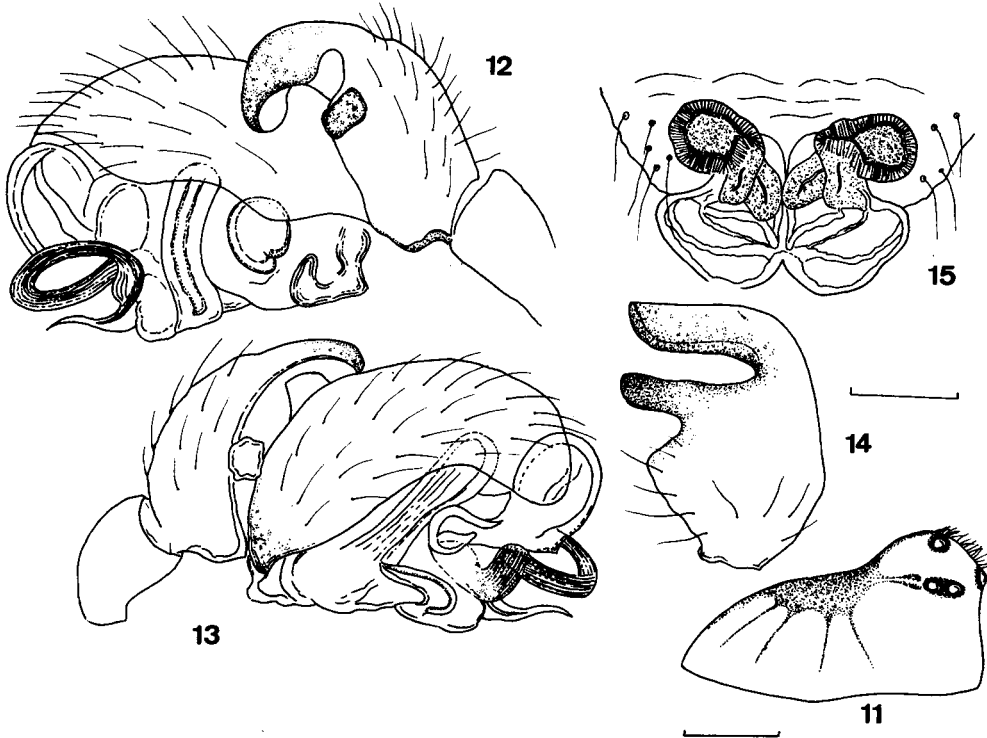
P-13, 2 ♀♀, 9 Aug. 1980; P-17, 1 ♀, 9 Aug. 1980; P-33, 1 ♀, 10 Aug. 1980; P-31, 1 ♀, 10 Aug. 1980, 2 ♀♀, 21 July 1981; P-27, 1 ♂, 10 Aug. 1980; P-26, 1 ♀, 11 Aug. 1980; P-23, 1 ♀, 18 July 1981; P-32, 10 ♀♀, 21 July 1981; P-36, 1 ♂, 23 July 1981; P-37, 1 ♂, 1 ♀, 23 July 1981; P-30, 1 ♀, 8 Aug. 1982, very common and universally distributed.

Distribution: Europe, Syria, Tunisia.

Erigone longipalpis pirini Deltshv

P-23, 1 ♀, 18 Aug. 1981; P-32, 1 ♂, 3 ♀♀, 21 July 1981; P-30, 1 ♀, 18 Aug. 1982; P-9, 1 ♂, 2 ♀♀, 25 Sept. 1982, in damp places near lakes. The species is not established below the upper border of the forest.

Distribution: Known only from Pirin mountain.



Figs. 11-15: *Entelecara media* Kulczynski. 11 ♂ carapace, lateral view; 12 Male palp, external view; 13 Male palp, internal view; 14 Male palpal tibia, dorsal view; 15 Vulva. Scale lines: 0.1 mm (12-15), 0.2 mm (11).

Erigone vagans Audouin

P-19, 1 ♀, 10 Oct. 1978; P-32, 2 ♀♀, 8 July 1979; P-27, 2 ♀♀, 9 July 1979; P-13, 2 ♀♀, 9 Aug. 1980; P-31, 1 ♀, 10 Aug. 1980; P-30, 8 ♀♀, 8 Aug. 1982, in damp places, and as common as *E. dentipalpis*.

Distribution: Europe, Mediterranean, S. Africa, Singapore.

Evansia merens O. P.-Cambridge**

P-2, 1 ♀, 27 Aug. 1978, under stones.

Distribution: Europe.

Gonatium orientale Fage** (Figs. 16-19)

Gonatium isabellinum: (non Blackwall, 1841): Drensky, 1921: 32.

P-33, 2 ♂♂, 9 ♀♀, 10 Aug. 1980, obtained by

beating small bushes (*Juniperus* sp.).

All existing data are from several localities in Romania, at the entrance to caves (Fage, 1931; Denis, 1952), and in woodland at c. 900-1100 m in the eastern Carpathians (Weiss *et al.*, 1979). The new drawings (Figs. 16-19) based on Bulgarian material, will form a contribution to the taxonomic characteristics of the species.

Distribution: Romania, Bulgaria.

Gongyliellum latebricola O. P.-Cambridge**

P-36, 1 ♀, 22 Oct. 1978, under stones.

Distribution: Europe.

Metopobactrus orbelicus sp. n. (Figs. 20-26)

Female/male (measurements in mm). Total length 2.56/2.19. Cephalothorax, length 0.19/0.82, width 0.82/0.82, dark brown. Male head with characteristic elevation (Figs. 20, 21). Eyes: Female anteriors c. 0.5 diam. apart, posterior medians c. one diam. apart and 0.5 diam. from laterals. Male anteriors less than one diam. apart, posteriors more than one diam. apart. Clypeus concave. Chelicerae very short. Sternum dark brown to black, length 0.58/0.54, width 0.58/0.54. Abdomen, length 1.74/1.46, black-grey to black.

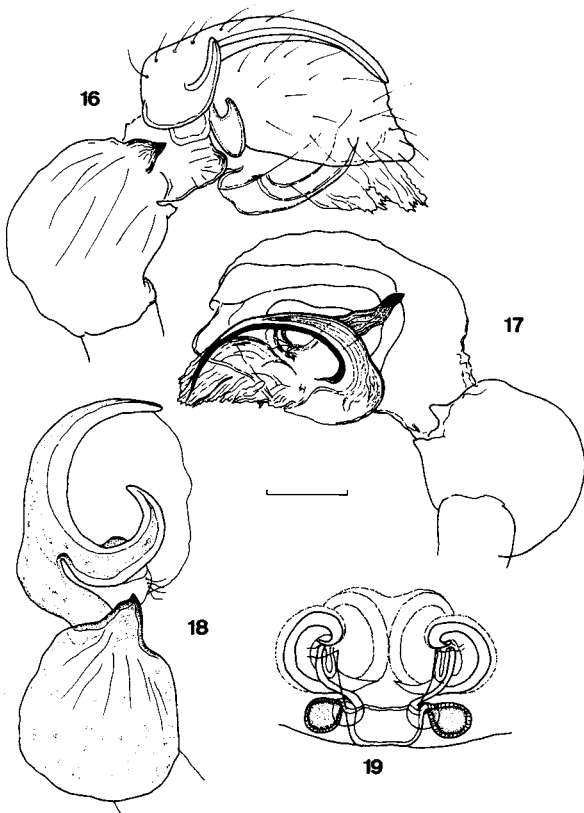
Legs brown (IV/I/II/III). Tibiae I-IV with one dorsal spine, close to base. Metatarsi I-IV with a trichobothrium (84/84/83/84)/(83/83/80/85). Measurements:

♀	Fe	Pa	Ti	Mt	Ta	Total
I	0.73	0.29	0.69	0.54	0.36	2.61
II	0.73	0.29	0.69	0.54	0.36	2.61
III	0.64	0.29	0.54	0.54	0.36	2.37
IV	0.82	0.29	0.82	0.69	0.54	3.16
♂						
I	0.73	0.21	0.73	0.54	0.36	2.57
II	0.66	0.21	0.64	0.54	0.34	2.39
III	0.54	0.21	0.54	0.47	0.31	2.07
IV	0.73	0.21	0.73	0.64	0.36	2.67

Epigyne and vulva (Figs. 22-24) close to those of *M. prominulus* (O. P.-C.), *M. nodicornis* Schenkel and *M. schenkeli* Thaler, but show some differences.

Male palps (Figs. 25, 26) similar to those of other species of the genus. Cymbium, bulbus and embolus without any special characteristics. There is a characteristic tooth on the tibia.

Etymology: From Orbel, an ancient name of the



Figs. 16-19: *Gonatium orientale* Fage. 16 Male palp, external view; 17 Male palp, internal view; 18 Male palp, patella/tibia, dorsal view; 19 Vulva. Scale line: 0.1 mm (16-19).

mountain (of Thracian origin).

Discussion: According to the genital organs *M. orbelicus* sp. n. is closely related to *M. nodicornis*, *M. schenkeli* and *M. prominulus*, but there is a tooth on the male palpal tibia of the new species. The cephalothorax is different from those of *M. nodicornis* and *M. prominulus* but close to those of *M. schenkeli* and *M. nadigi* Thaler.

Metopobactrus orbelicus sp. n. inhabits high altitude areas above 2500 m on Pirin mountain, under stones close to snow drifts.

Material and localities: P-1, male holotype, 3 ♂♂, 2 ♀♀ paratypes, 8 Aug. 1980; P-20, 2 ♂♂, 4 ♀♀ paratypes (1 ♂ and 1 ♀ kept by K. Thaler, Austria), 6 Aug. 1982. The material is retained in the collection of the Institute of Zoology, Sofia.

Micrargus herbigradus* (Blackwall)

P-36, 2 ♀♀, 12 Oct. 1978, under stones, amongst

grass.

Distribution: Europe.

Micrargus subaequalis* (Westring)

P-36, 1 ♂, 10 Oct. 1978; P-33, 1 ♀, 22 Oct. 1978; P-2, 1 ♂, 27 Aug. 1978, amongst stones.

Distribution: Europe.

Oedothorax agrestis* (Blackwall)

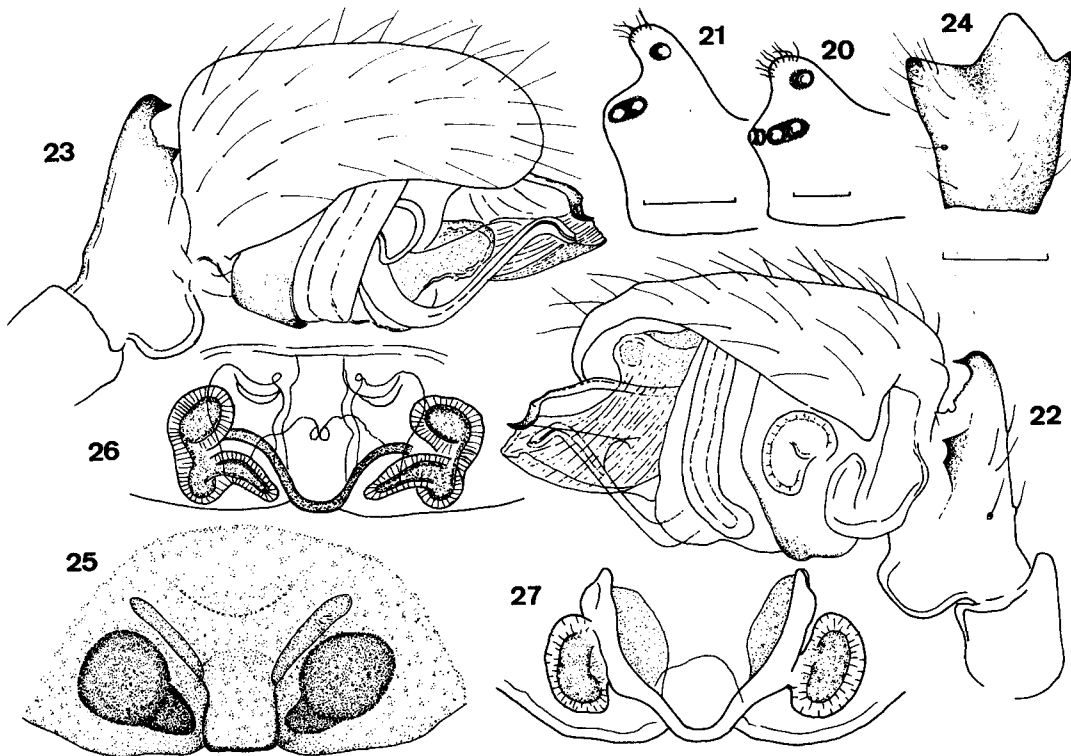
P-31, 1 ♀, 11 Oct. 1978; P-16, 4 ♂♂, 5 ♀♀, 9 Aug. 1980; P-17, 1 ♂, 4 ♀♀, 9 Aug. 1980, in damp places, amongst stones.

Distribution: Europe.

Oedothorax apicatus* (Blackwall)

P-19, 1 ♀, 11 Oct. 1978, in grass amongst stones.

Distribution: Europe, Siberia.



Figs. 20-27: *Metopobactrus orbelicus* sp. n. 20 ♂ carapace, lateral view (holotype); 21 ♂ carapace (paratype, P-20); 22 Male palp, external view; 23 Male palp, internal view; 24 Male palpal tibia, dorsal view; 25 Epigyne; 26 Vulva, dorsal view; 27 Vulva, ventral view. Scale lines: 0.1 mm (22-27), 0.2 mm (20, 21).

***Oedothorax fuscus* Blackwall**

P-26, 1 ♂, 1 ♀, 9 July 1979; P-32, 1 ♀, 10 Aug. 1980, in grass, under stones.

Distribution: Europe, Algeria.

***Rhaebothorax paetulus* (O. P.-Cambridge)** (Figs. 27-32)**

P-19, 1 ♂, 1 ♀, 11 Oct. 1978; P-31, 2 ♂♂, 5 ♀♀, 12 Oct. 1978; P-14, 1 ♀, 5 Aug. 1982; P-13, 1 ♂, 22 Sept. 1982, under stones.

Wiehle (1960) and Thaler (1976) put *R. paetulus* (Figs. 27-32) in the category of arctic-alpine species. The Bulgarian population occupies the most south-eastern point of its distribution.

Distribution: Sweden, Scotland, France, Germany, Austria, Czechoslovakia, Bulgaria.

Tiso vagans* (Blackwall)

P-19, 2 ♂♂, 11 Oct. 1978, in grass.

Distribution: Europe.

Walckenaera capito* (Westring)*

P-20, 2 ♀♀, 6 Aug. 1982; P-29, 1 ♀, 8 Aug. 1982,

under stones.

Locket & Millidge (1953) mentioned that *W. capito* occurs on mountains above 1000 m.

Distribution: Europe.

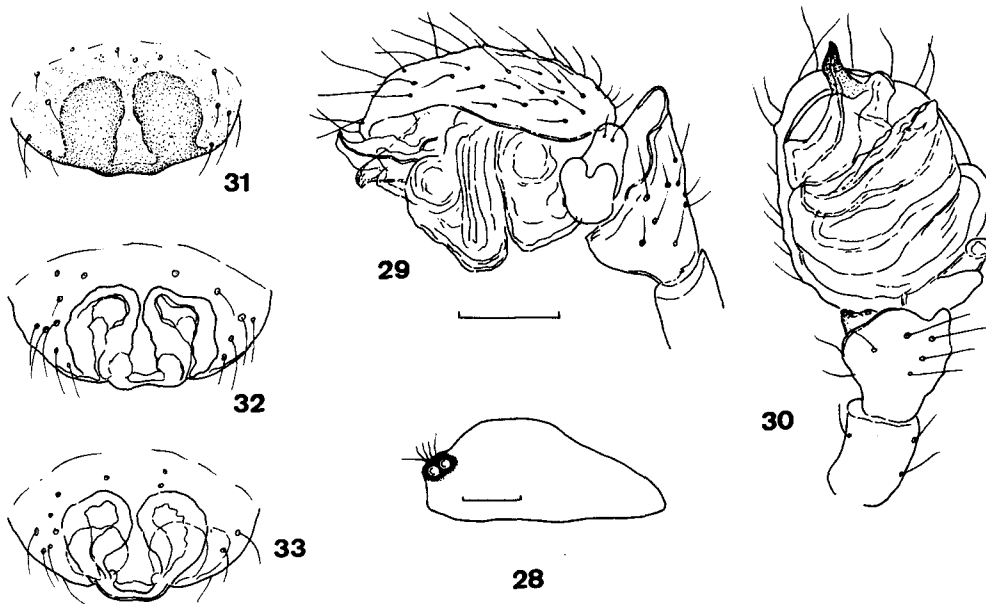
Walckenaera vigilax* (Blackwall)*

P-7, 1 ♀, 4 Aug. 1982, in damp places.

Distribution: Europe.

Discussion

The family Erigonidae in Bulgaria is represented by 60 species, 23 of which are established on Pirin mountain. Of the erigonids reported by Drensky (1921), *Gonatium rubens* (Blackwall) has not been found again (but the existing material has been confirmed). Of the above-mentioned 23 species, four (*C. gradata*, *G. rubens*, *G. latebricola* and *M. herbi-gradus*) are not established above the upper border of the forest. Into the category of high-altitude elements we can put only 5 species (*A. anguineus*, *E. media*, *E. longipalpis pirini*, *M. orbelicus* sp. n. and *R. paetulus*), which are not found below the upper border of the forest. It is necessary to emphasize the establishment of *E. media* and *R. paetulus* which



Figs. 28-33: *Rhaebothorax paetulus* (O. P.-Cambridge). 28 ♂ carapace, lateral view; 29 Male palp, external view; 30 Male palp, internal view; 31 Epigyne; 32, 33 Vulva. Scale lines: 0.1 mm (29-33), 0.2 mm (28).

are known only from high altitude regions of Europe, and their definition as arctic-alpine species.

According to their general distribution, the erigonid spiders of Pirin mountain can be divided into 6 groups: hemicosmopolitan (1), holarctic (2), west-palaearctic (2), euro-siberian (1), european (17).

Finally it is worth emphasising that the high percentage of European spiders defines the zoogeographical character of the erigonid spiders on Pirin mountain.

Acknowledgements

I am especially obliged to Dr K. Thaler (Austria) with whom the paper and some of the species were discussed, and to the Natural History Museum of Basel for sending the type material of *Metopobactrus schenkeli*.

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