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ON A NEW STYLOPHYLLID GENUS, *PAMIROPHYLLUM* (SCLERACTINIA, UPPER TRIASSIC)

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Genus *Pamirophyllum* nov. is known in the upper Norian of the Pamirs and Central Iran, while in the Rhaetian of the Tatra Mountains. Perfectly cerioid colonies with simple intercorallite walls of a septal origin additionally completed by auxilliary septal spines are characteristic of these corals. A new species, *P. tatricum* Roniewicz, has been described from the Tatra Mts.

Key words: Scleractinia, Stylophyllidae, taxonomy, Upper Triassic, Pamirs, Central Iran, Carpathians.

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INTRODUCTION

Some Late Triassic stylophyllids, described earlier by the present authors under generic names of *Stylophyllum* Reuss and *Elysastreaea* Laube reveal some common characters enabling to discriminate a new genus, *Pamirophyllum*. These corals come from different parts of the Tethys, and occur in beds differing slightly in age: from upper Norian limestones of the SE Pamirs they were described under the name of *Stylophyllum pamiricum* Melnikova 1972, from Central Iran as *S. iranicum* Melnikova 1972, and from the Rhaetian of the West Tatra Mountains, high-tatric nappe, they were described as *?Stylophyllum* sp. and *?Elysastraea* sp. (Roniewicz 1974).

All the specimens of the species mentioned above and revised for the purpose of this paper, are completely recrystallized. Nevertheless, their peculiar stylophyllid microstructural features are fairly well recognizable in the septal structure and microornamentation of the skeleton.

Specimens from the Pamirs and Central Iran are housed at the Institute of Geology of the Academy of Sciences of the Tadjik Socialist Re-

public in Dushanbe (MIGD), and specimens from the Tatra Mountains at the Institute of Paleobiology of the Polish Academy of Sciences in Warsaw (ZPAL). The work has been done in the frame of the scientific cooperation between these institutes in the years 1987—1990.

DESCRIPTION

Suborder **Stylophyllina** Beauvais, 1981
Family **Stylophyllidae** Frech, 1890
Genus *Pamirophyllum* nov.

Type species: *Stylophyllum iranicum* Melnikova, 1972, upper Norian, Central Iran.

Derivation of the name: from the Pamirs, where the corals of the genus were for the first time recognized; neutr.

Diagnosis. — Cerioid. Wall simple, formed by external septal edges and auxiliary septal spines. Septal spines thin, continuous. Septa long, lamellate, with some free septal spines detached at the internal edges. Columella papillar, feeble. Dissepiments small, vesicular or densely packed, large and tabuloid. Budding intratentacular with indirect linkages and extratentacular.

Species included: *P. iranicum* (Melnikova 1972), *P. pamiricum* (Melnikova 1972), *P. tatricum* Roniewicz sp. n.

Stratigraphical and geographical ranges: upper Norian and Rhaetian of the Tethys realm.

Discussion. — In the family Stylophyllidae, there are three other genera with cerioid colonies and a septal wall: *Meandrostylis* Frech, *Anthostylis* Roniewicz and *Monstroseris* Melnikova. Other cerioid genera, *Heterastraea* Tomes (see Beauvais 1976) and, partly, *Stylophyllum* Reuss, have a double wall quite different in origin from the septotheca and provided with a fissure in its middle (Roniewicz 1989).

Corals in the genus *Pamirophyllum* especially resemble cerioid morphotypes of *Meandrostylis* Frech. However, in the wall architecture in *Pamirophyllum* there are auxiliary, interseptal, peripheral elements (septal spines founded on dissepimental surface), lacking in *Meandrostylis*. Besides, there is a general structural difference between corals of these genera caused by the fact that in *Pamirophyllum* septa share in skeleton structure more significantly than diseptiments, while in *Meandrostylis* the reverse proportion is observed.

Despite the general resemblances in wall structure between *Pamirophyllum* and *Anthostylis*, corals of these genera cannot be compared due to differences in colony and corallite architectural features (see Roniewicz 1989).

In *Monstroseris* Melnikova, the skeleton is built, exclusively, of septal spines and a sclerenchyme infilling all free intraskeletal spaces (Melnikova 1989), and for this reason is incomparable with that of *Pamirophyllum* gen. n.

Pamirophyllum belongs to the group of stylophyllid genera (*Oppelismilia* Duncan: Flügel 1964, *Stylophyllopsis* Reuss: Cuif 1973, Roniewicz 1989) characterized by equal, thin and long septal spines, and radial elements apparently compact with the exception of the distal margins and adaxial portions which can be weakly dissociated into spines. For these reasons, in general aspect, their skeleton resembles much that of trabecular corals. But, in contrast to trabecular corals, septal and dissepimental surfaces in *Pamirophyllum* and other stylophyllids are covered with minute, and dense microornamentation (Roniewicz 1989).

Pamirophyllum iranicum (Melnikova, 1972)
(pl. 21: 1)

1972. *Stylophyllum iranicum* Melnikova: 59, pl. 10: 3.
1975. *Stylophyllum iranicum* Melnikova; Melnikova: 77, pl. 9: 2, pl. 10: 1.

Holotype: IGD 507/1[a] (25/1), Central Iran, Naiband region, Shurabe-Nagi coal outcrop, upper Norian; figured as indicated in the synonymy, and herein, pl. 21: 1.

Material. — Two colonies, the larger of them measuring 130 mm in heigth and about 300 mm in diameter.

Remarks. — From among three known species, this is the one having the largest corallite diameters: from 5—7 mm up to 12—15 mm in young corallites while to 18—22 mm in adults. Septa are 25—40, 50—70, and ca. 100, respectively. They are differentiated into, at most, three cycles in the juveniles and four cycles in adults. Endotheca is composed of vesicular dissepiments slightly inclined from the wall to the axis.

Occurrence. — As for the holotype.

Pamirophyllum pamiricum (Melnikova, 1972)
(pl. 21: 2)

1972. *Stylophyllum pamiricum* Melnikova: 58, pl. 10: 2.
1975. *Stylophyllum pamiricum* Melnikova; Melnikova: 76, pl. 9: 1.

Holotype: IGD 505/1918 (20/125), SE Pamirs, Bortepa valley, upper Norian, Bortepa suite; figured as indicated in the synonymy, and herein, pl. 21: 2.

Material. — Holotype colony measuring 35 mm in heigth and 25—35 mm in diameter.

Remarks. — The material examined consists of a colony composed of 5 corallites. In comparison with *P. iranicum*, the species has slightly smaller number of septa at the similar corallite diameters: there are 30—40 septa at the diameter of 5—10 m. in juveniles, and up to 70—80 septa at the diameter od 15—20 mm in adults. At the colony margin, a young corallite is observed which appeared in the way of extratentacular budding (pl 21: 2).

Occurrence. — As for the holotype.

Pamirophyllum tatricum Roniewicz sp. n.
(pl. 22: 1—4)

1974. ?*Stylophyllum* sp.: Roniewicz, 105, pl. 2: 1.
1974. ?*Elysastraea* sp.: Roniewicz, 111, pl. 8: 1, 2.

Syntypes: ZPAL H. VI/138—143; figured in Roniewicz 1974, pl. 2: 1 (ZPAL H. VI/138), pl. 8: 1, 2 (ZPAL H. VI/140, 141), and herein pl. 2: 1—4.

Type locality: Bobrowiecka valley, West Tatra Mts., Czechoslovakia.

Type horizon: Rhaetian of the high-tatric nappe.

Derivation of the name: from the region of origin.

Diagnosis. — *Pamirophyllum* with a diameter ranging in adult corallites from about 10 to 15 mm and a number of septa reaching about 80, with a dense endotheca

built of low, tabuloid dissepiments; colony increase by intracalicular budding with indirect linkages.

Material. — Six fragments of topotype specimens: ZPAL H. VI/138—143 (syntypes). It is highly probable that fragmentary specimens ZPAL H. VI/139—143 belong to the same colony.

Dimensions (in mm):

Specimen	d	s
ZPAL H. VI/138	20—25	ca. 80
ZPAL H. VI/140	ca. 10	50—55

Remarks. — The specimen ZPAL H. VI/138 from the one side and the remaining specimens (ZPAL H. VI/139—143) from the other side, show some differences in coralite diameters, number of septa and septal blade structure. These differences were considered previously (Roniewicz 1974) as generic ones, at the same time, a significant character of all specimens being overlooked, viz. homogeneous stylophyllid microornamentation of the intracalicular skeleton surface. Taking into consideration variability observed in the above group of features in other stylophyllids (Roniewicz 1989), the differences mentioned have been here considered as an expression of a phenotypic diversity of *P. tatricum*.

The new species resembles *P. iranicum* and *P. pamiricum* in diameter of corallites and number of septa. In all species, the septa are differentiated into 4 orders, the septa S1 and S2 are subequal, the septa S3 are very long, the septa S4 are well developed, but they appear irregularly. In the highest order septa there is a tendency observed to vertical discontinuity of septal blade, i.e. formation of lonsdaleoid septa. There is some difference observed between colonies of *P. tatricum* in development of those septa: in ZPAL H VI/138 they are numerous, in the rest of the specimens they are scarce.

The new species differs from the others in its structure of endotheca, built of low, extent, tabuloid dissepiments, and in a mode of budding with temporary bistomodeal state of the corallite. In addition, the ornamentation is here coarser than in the remaining species.

Occurrence. — As for the type specimens.

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O NOWYM STYLOFYLIDOWYM RODZAJU, *PAMIROPHYLLUM* (SCLERACTINIA, TRIAS GÓRNY)

Streszczenie

Pewne późnotriasowe stylofylidy oznaczone wcześniej przez Melnikovą jako *Stylophyllum* Reuss (Melnikova 1972, 1975), a przez Roniewicz uważane za prawdopodobne *Stylophyllum* czy *Elysastraea* Laube (Roniewicz 1974), ukazują cechy wspólne, pozwalające na wyróżnienie nowego rodzaju, *Pamirophyllum*. Poszczególne gatunki pochodzą z różnych części Tetydy (Pamir, Iran centralny, Tatry) i nieco różnią się wiekiem: azjatyckie znaleziono w warstwach późnego noryku, tatrzańskie pochodzą z retyku. Nowy rodzaj należy do grupy stylofylidów o cienkich kolcach septalnych i stosunkowo zwartej budowie septów, co zbliża je wyglądem do korali trabekularnych (pls. 21, 22). Opisano nowy gatunek, *P. tatricum* Roniewicz, z retyku serii wierchowej Tatr.

EXPLANATION TO PLATES 21 AND 22

Plate 21

Pamirophyllum iranicum (Melnikova, 1972)
Central Iran, Shurabe-Nagi, upper Norian

1. Specimen MIGD 507/1[a]: *a* cross section; *b* longitudinal oblique section showing vesicular dissepiments; *c* colony side with a longitudinal broken section showing dissepiments of the intercorallite region (lower right corner), long continuous septal spines and small spines developed on the dissepimental surface (arrow); *d* fragment of *a* showing wall region with interseptal spines (arrows); *e* septum in cross section showing septal spines embedded in transparent sclerenchyme, note a coarse septal surface (arrow); *f* colony upper surface showing shallow calices.

Pamirophyllum pamiricum (Melnikova, 1972)
Pamirs, Bortepa valley, upper Norian

2. Specimen MIGD 505/1918: *a* colony in calicular view, *b* colony in side view with holotheca visible; note a small corallite at the colony margin (arrows) appeared in the way of extratentacular budding.

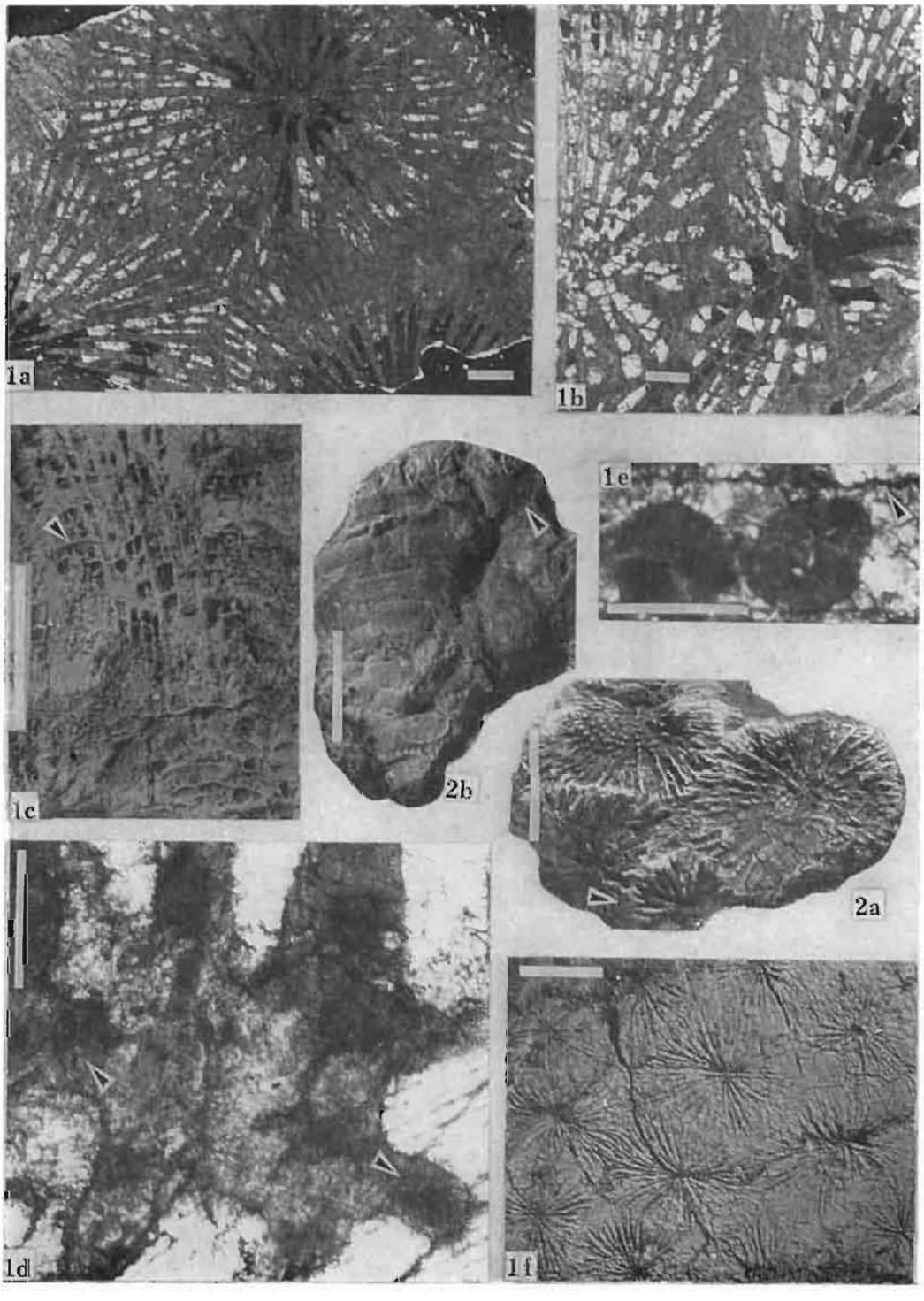
Scale bars in: *1d—e* = 0.5 mm, *1a—b* = 2 mm, *1c, f* and *2a—b* = 10 mm

Plate 22

Pamirophyllum tatricum Roniewicz sp. n.
Tatra Mts., Bobrowiecka valley, Rhaetian

1. Specimen ZPAL H. VI/140: *a* detail of a corallite in transverse section (*1d*) showing septa of lonsdaleoid type and coarse septal ornamentation; *b* wall region with a spine developed in the intercorallite region (arrow); *c* septotheca built of peripherally enlarged septa; *d* transverse section showing a fragment of a colony with an elongated corallite at the initial stage of intratentacular budding (lower right corner).
2. Specimen ZPAL H. VI/142 in transverse sections: *a* intercorallite region lacking a wall and provided instead with a gap between neighbouring corallites (arrow); *b* colony fragment.
3. Specimen ZPAL H. VI/143: adaxial corallite portion with isolated septal spines.
4. Specimen ZPAL H. VI/138: *a* longitudinal section showing tabuloid character of dissepiments; *b* lobate corallite, *c* a corallite at the advanced phase of the intratentacular budding with a dividing septal wall developed (arrow).

Scale bars in: *1a—d*, *2a* and *3* = 1 mm, *2b*, *4a—c* = 2 mm


1a
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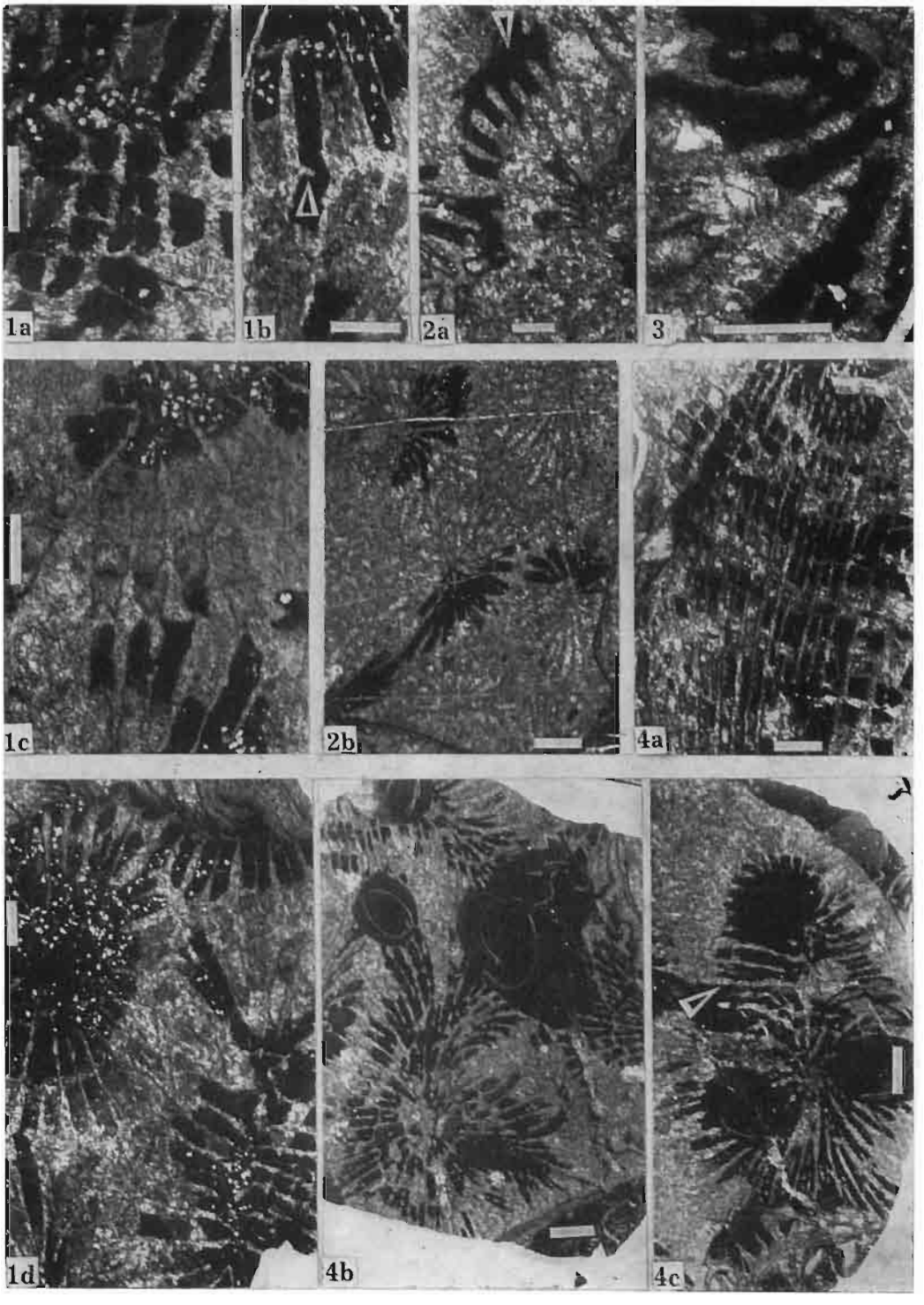
1a
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