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SUTHERLANDIA STASINSKAE SP.N. (TABULATA) FROM THE
UPPER VISEAN OF POLAND

Abstract.—*Sutherlandia stasinskae* sp.n. (Favositidae, Tabulata) is described and illustrated from the Upper Visean of the Cracow region. This is the first record of the genus *Sutherlandia* from Poland.

INTRODUCTION

Corals of the genus *Sutherlandia* Cocke and Bowsher, 1968 are only occasionally found despite of their very wide geographic distribution (USSR, China, USA). The new species described here is the first species of *Sutherlandia* recorded from Poland.

The present study covered material from the Upper Visean cropping out in the Orlej gorge in the vicinities of Zalas village, Cracow region and was collected by R. Kulicka in 1968. Some additional material gathered in the same locality was kindly given to the present authors by Dr. S. Czarniecki (Research Centre of the Geological Sciences of the Polish Academy of Sciences, Cracow). The Carboniferous deposits in the Orlej gorge are developed in typical Culm facies and represent the coral zone D₂ only (see: Siedlecki 1954, Czarniecki 1956, Zajączkowski 1964, Żakowa 1968). Lithologically, they are represented by dark-grey and black clay and sandy shales intercalated by limestones and tuffites. Tabulata occur in the shales as well as in the limestone intercalations. They are innumerable and usually rather poorly preserved. Previously, from the locality at the Orlej gorge there were reported *Paleacis orlei* Nowiński and representatives of the genera *Aulopora* and *Cladochonus* (Nowiński 1976). Tabulates are here accompanied by numerous Tetracoralla, Bryozoa (mainly belonging to the genus *Fenestella*), Brachiopoda, Gastropoda, Lamellibranchiata, Trilobita, crinoidal stems and plant remains.

Order **Favositida** Sokolov, 1962
 Suborder **Favositina** Sokolov, 1950
 Family **Favositidae** Dana, 1846
 Subfamily **Emmonsinae** Lecompte, 1952
 Genus *Sutherlandia* Cocke and Bowsher, 1968

Type species: Sutherlandia irregularis Cocke and Bowsher, 1968.

Diagnosis (after Vassiljuk 1974, supplemented). — Colonies small, subspherical and hemispherical. Corallites short, favositoidal, polygonal in transverse section. Calices polygonal, with sharp margins. Septal apparatus consisting of squamulae occurring alone or together with spines. Connecting pores arranged in 1—2 rows on coralite walls. Tabulae thin, rare or absent.

Species assigned. — *Sutherlandia alani* Cocke and Bowsher, 1968; *S. irregularis* Cocke and Bowsher, 1968; *S. seminolensis* Cocke and Bowsher, 1968; *S. nucleus* Vassiljuk, 1974; *S. stasinskae* sp.n.; *Pseudofavosites minus* Yakovlev, 1939; *P. extraspinosus* Sokolov, 1955; *P. guangxiensis* Lin, 1963; *P. linchengensis* Lin 1963; *P. certus* Tchudinova, 1965; *P. finitimus* Tchudinova, 1965; *Pleurodictyum dechenianum* Kayser, 1882; *Emmonsia parasitica* (Phillips, 1841); *E. globosa* Dubatolov, 1963.

Remarks. — Cocke and Bowsher (1968), the authors of the genus *Sutherlandia*, did not give unequivocal diagnosis nor comparison with similar genera such as *Pseudofavosites* Gerth, 1921, and *Emmonsia* Milne-Edwards and Haime, 1851. The diagnosis is here supplemented by the data given by Cocke and Bowsher (op. cit.), Vassiljuk (1974), Sokolov (1955, 1962) and by new observations of the present authors.

The colonies of *Sutherlandia* almost always encrusted the skeletons of other organisms. The spherical and ellipsoidal colonies overgrew the crinoidal stems (see p. 5) whilst the hemispherical colonies covered flat, skeletal surfaces. According to the present authors, two species originally described as *Pseudofavosites*: *P. certus* and *P. finitimus* from the Upper Permian of the Trans-Caucas (Tchudinova 1965) should be assigned to *Sutherlandia*. These species differ from the typical representatives of *Sutherlandia* only in the presence of spine-like septal squamulae and, sometimes, branching-digital shape of the colony. The species assigned to *Pseudofavosites* by Gerth (1921) display spinelike projections in angles of corallites which merge into vertical, septal ridges and have neither squamulae proper nor tabulae typical of *Sutherlandia*.

Sutherlandia is very similar to *Emmonsia* Milne-Edwards and Haime, 1851, which is, however, still insufficiently defined. *Squamofavosites* Tchernychev is very close to the latter (Nowiński 1976). It is possible at present to state that *Emmonsia* differs from *Sutherlandia* in incomplete, discontinuous tabulae, attached to squamulae and usually very numerous. Some species previously assigned to *Emmonsia* match the diagnosis of *Sutherlandia*. This is especially the case of *Emmonsia globosa* Dubatolov 1963 from the Eifelian of Kuznetsk Basin, which forms small, spherical colonies overgrowing crinoidal stems and is characterized by loosely spaced corallites, thin tabulae and the *Sutherlandia*-type septal apparatus.

Stratigraphic range. — Middle Devonian — Upper Permian.

Sutherlandia stasinskae sp.n.

(pl. 20: 1—6; pl. 21: 1—4)

Holotype: ZPAL T XII/1; (pl. 21: 1ab).

Type horizon: Lower Carboniferous, Upper Visean, D₂.

Type locality: Orlej gorge, Zalas, Cracow Region.

Derivation of the name: *stasinskae*—in honour of dr Anna Stasińska.

Diagnosis.—Colonies small, up to 8 mm in diameter, when spherical and up to 20 mm long, when elliptical. Corallites short, straight, polygonal in transverse section, 1.2—1.6 mm in diameter. Walls 0.05—0.07 mm thick. Pores circular, 0.15—0.2 mm in diameter, spaced 0.6—1.0 mm, arranged in 2 rows on corallite walls. Septal squamulae thin, long, incurved. Tabulae extremely rare.

Material.—Twenty four complete colonies and fourteen fragments (ZPAL T XII/1—38).

Description.—Colonies small, 4.0—8.2 mm in diameter when spherical or 4.5—11.0×4.5—14.8×7.0—20.0 mm when ellipsoidal and irregular, composed of short, straight, radially arranged and closely adjoining to one another corallites of the favositoidal type. Calices moderately deep, somewhat conical, with sharp edges, more or less regularly polygonal in transverse section, 1.0—1.8 mm, usually 1.2—1.5 mm, in diameter. Corallites of adult individuals polygonal (pentagonal to septagonal) in transverse section, 0.9—1.7 mm usually 1.2—1.6 mm, in diameter or polygonal, elongate 1.0—1.5×1.3—1.8 mm in size. Young corallites markedly smaller in size, triangular to pentagonal in outline. Lumen of visceral chamber circular or ovate, or rounded, rectangular. Corallite walls thin, straight, 0.05—0.07 mm, sometimes up to 0.1 mm, thick in peripheral zone of the colony. Wall microstructure radial-fibrous, very poorly visible. Medial line indistinct, discontinuous. Connecting pores numerous, circular, 0.15—0.2 mm in diameter, arranged in one or two rows on corallite walls, spaced at 0.6—1.3 mm, commonly 0.8—1.0 mm, intervals. Septal apparatus formed of long and sometimes thin squamulae set somewhat oblique to corallite walls and with proximal ends directed towards outlet of corallite. Squamulae arcuate in transverse section. Tabulae very thin, somewhat concave, very scarce.

Mode of life.—The spherical colonies of *Sutherlandia stasinskae* sp.n. usually grow on very small bioclasts (small parts of crinoidal stems, pelecypod shell debris) and display spherical shape from the very beginning. The ellipsoidal colonies are generally larger than the spherical and develop on long and thin crinoidal stems. First corallites appear at any place on cylindrical crinoidal stem and form small and low colonies. In time, the colonies attain elliptical shape elongated in accordance with longer axis of the stem. During a further development, the colony grows around the stem becoming gradually semicrescent and forming subsequently a complete ring around the stem. At first, such ring is asymmetrical, (thickest at the place where the colony initiated) and relatively thin. Later, its thickness increases and the colony overgrows uniformly the centrally placed crinoidal stem. A fully developed colony is elongated according to the axis of the crinoidal stem; in the longitudinal section it is ellipsoid in shape. A high symmetry of fully-developed colonies and central position of crinoidal stem suggest vertical or slightly oblique orientation of the latter during growth of the colony.

Remarks.—*Sutherlandia stasinskae* sp.n. is most similar to the type species of this genus, *S. irregularis* Cocke and Bowsher, from the Pennsylvanian of the USA, differing in the markedly thinner walls of corallites, less strongly developed septal squamulae and more numerous connecting pores. The new species resembles *S. nucleus* Vassiljuk from the Lower Carboniferous of the Donetsk Basin (Vassil-

juk 1974) in size of connecting pores and structure of tabulae, differing in smaller size of colony, narrower corallites and more loosely spaced connecting pores, the lack of septal spines and very rare tabulae.

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RÓŻA KULICKA I ALEKSANDER NOWIŃSKI

SUTHERLANDIA STASINSKAE SP.N. (TABULATA) Z GÓRNEGO WIZENU
REGIONU KRAKOWSKIEGO

Streszczenie

Przedstawiono charakterystykę rodzaju *Sutherlandia*, uzupełniono jego diagnozę, oraz włączono do tego rodzaju następujące, wcześniej opisane gatunki: *Pseudofavosites certus* Tchudinova, *P. finitimus* Tchudinova i *Emmonsia globosa* Dubatolov. Mimo szerokiego rozprzestrzenienia geograficznego rodzaj *Sutherlandia* jest rzadko spotykany. Opisany w niniejszej pracy *S. stasinskae* sp.n. jest pierwszym gatunkiem tego rodzaju znalezionym w Polsce (pls 20, 21). *Sutherlandia stasinskae* (z rodziny Favositidae), pochodzi z górnego wizenu okolic wsi Zalas w regionie krakowskim. Z obserwacji nad wzrostem kolonii *Sutherlandia stasinskae* sp.n. wynika, że u tego gatunku istnieją dwa morfologiczne typy kolonii — kolonie kuliste, drobne, rozwijające się na ułamkach szczątków organicznych i kolonie elipsoidalne, większe od poprzednich, rozwijające się na cienkich łądygach Crinoidea. Oba typy kolonii cechuje wysoka symetryczność i centralne położenie łądygi Crinoidea lub fragmentu szkieletu innego organizmu. Takie same typy morfologiczne kolonii występują u większości przedstawicieli rodzaju *Sutherlandia*.

РУЖА КУЛИЦКА, АЛЕКСАНДЕР НОВИЊСКИ

SUTHERLANDIA STASINSKAE SP. N. (TABULATA)
ИЗ ВЕРХНЕГО ВИЗА ПОЛЬШИ

Резюме

Исследован и описан новый вид *Sutherlandia stasinskae* (семейства Favositidae), обнаруженного в верхнем визе окрестности села Залас краковского района. Несмотря на широкое географическое распространение, представители рода

Sutherlandia встречаются редко. Описанные в настоящей статье колонии *S. stasinskae* sp. n. являются первым видом этого рода, найденными в Польше.

Дана характеристика рода *Sutherlandia*, дополнен его диагноз, а также в этот род включены следующие виды: *Pseudofavosites certus* Tchudinova, *P. finitimus* Tchudinova и *Emmonsia globosa* Dubatolov. Из наблюдений над ростом колоний *Sutherlandia stasinskae* sp. n. следует, что у этого вида существуют два морфологических типа колоний: шаровидные колонии, мелкие, развивающиеся на фрагментах органических остатков, и эллипсоидальные колонии, большие от выше названных, обрастающие кольцом тонкие стебли Crinoidea. Оба типа колоний характеризуются большой симметрией строения. Такие же самые морфологические типы колоний, существуют у большинства представителей рода.

EXPLANATION OF THE PLATES

Plate 20

Sutherlandia stasinskae sp.n.

Zalas (Orlej gorge), Cracow region, Upper Visean D₂

- 1,2. Young, spheroidal colony in upper view; polygonal shape of corallites is visible. ZPAL T XII/6, 7.
3. Adult, irregular colony in upper view. ZPAL TXII/9.
4. Young, ellipsoidal colony growing on the crinoidal stem, side view. ZPAL TXII/11.
- 5,6. Adult, ellipsoidal colonies growing on the crinoidal stems (cs), side view. ZPAL TXII/18, 19.

All $\times 8$

Plate 21

Sutherlandia stasinskae sp.n.

Zalas (Orlej gorge), Cracow region, Upper Visean D₂

1. *a* cross section through central part of spherical colony, *b* cross section; $\times 10$. Holotype, ZPAL TXII/1.
 2. Longitudinal section through central part of ellipsoidal colony growing on the crinoidal stem (cs), $\times 5$. ZPAL TXII/3.
 3. Tangential section to the colony surface, $\times 5$. ZPAL TXII/4.
 4. Longitudinal section through central part of ellipsoidal colony growing on the crinoidal stem (cs), $\times 10$. ZPAL TXII/5.
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