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CALPIONELLITES ALLEMANNI N. SP. (CALPIONELLIDAE BONET, 1956) FROM THE VALANGINIAN OF THE WEST CARPATHIANS

(Figs. 4, Pl. I, Tab. 1)

Abstract: Description of a new species of a calpionellid microorganism based on its morphology in thin sections, structure of the collar and character of extinction of the wall in polarized light. The species is assigned to the genus *Calpionellites* COLOM, 1948 and designated in the paper as *Calpionellites allemanni* n. sp. The described new species represents a common constituent of microfossil association in clayey microorganic limestones of Lower Valanginian age underlying the Vienna Basin in the Borský Jur area.

Резюме: В статье описан новый вид калпионелидового микроорганизма на основе морфологии шлифов, структуры воротника и характера погасания стены в поляризованном свете, который включен в род *Calpionellites* COLOM, 1948 и в статье он назван как *Calpionellites allemani* n. sp. Новый вид является обычным компонентом микрофоссильной ассоциации глинистых микроорганогенных известняков нижнего валанжина фундамента Венской впадины в районе с. Борски Юр.

Introduction

The drillhole Borský Jur 19 (Text-fig. 1) revealed various facies developments of muddy limestones of Upper Jurassic to Lower Cretaceous age under the Vienna Basin Neogene. It is not the first discovery of these sediments in the area concerned. Their occurrences of various depths were in the past documented by drillcore samples from several localities. Opinions on the assignation of this Jurassic and Lower Cretaceous formation to some of the structural units in the pre-Neogene basement of the Vienna Basin in the Slovakian territory are different so far.

Microfacies developments of Kimmeridgian—Tithonian—Berriasian limestones from the drillhole profile Šaštín 11 were assigned to the Klippen Belt or were regarded as part of a slice of the Krížna nappe folded into the Choč nappe (Kullmanová, 1968; Biely et al., 1973).

On the basis of lithologic-biostratigraphic analyses of Jurassic and Lower Cretaceous sediments from the drillhole localities Borský Jur 15 and Šaštín 11, Borza (1984) favours the opinion that the studied samples belong to the continuation of the so-called Frankenfels - Lunz slice system from Austria to the Slovak territory. He also stated that they can be correlated with equivalent developments of the Krížna nappe in the Strážovské vrchy Mts. of the West Carpathians.

Jiříček (Moravian Petroleum Mines, Hodonín, personal communication, January 1988) does not rule out the possibility that the Jurassic and Lower

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Cretaceous limestones represent tectonic slices drawn from the Pieniny basement on which the North Limestone Alps were overthrusted.

The drillcore No. 7 consisting of grey compact microorganic clayey limestones from the locality Borský Jur 19 from a depth of 3497—3500 m was documented and on the basis of biostratigraphic evaluation of calpionellid, stomiospherid and cadosinid association the author of this paper assigns the rocks to the Lower Valanginian. A relatively common component of this association are also specimens of the newly described calpionellid species denominated *Calpionellites allemanni* n.sp. whose detailed paleontological description is given in the following text.

Paleontological description

Calpionellidae BONET, 1956
Calpionellites COLOM, 1948 emend. Allemann et Trejo, 1975

Type of the genus: *Calpionellites darderi* (COLOM, 1934)

Diagnosis: Spheroidal to cylindrical lorica. Oral zone has a simple or composed inner collar, often separated from the main lorica by a fissure. Oral pole of the lorica and collar form a branching. Collar is short or elongated. In the latter case it turns to the outer side and is higher than the terminal part of the lorica. The collar and the termination of the lorica wall have a different optical orientation, at crossed nicols the position of their extintion differs by 45°. Aboral pole of the lorica is rounded or pointed, sometimes protruding in a small caudal protuberance.

Calpionellites allemanni n. sp.
Pl. I, Figs. 1—9, Text-fig. 3

Holotype: specimen depicted in Pl. I, Fig. 1 and Text-fig. 3, No. 1 deposited in thin-section archives of the Moravian Petroleum Mines, Hodonín. Thin section No. 465/85-2, coordinates x = 52.1, y = 7.3.

Derivatio nominis: in honour of Prof. Dr. F. Allemann, Geological Institute, University of Bern.

▶

Plate I

Calpionellites allemanni n. sp. from the locality Borský Jur 19, drillcore No. 7, depth 3497—3500 m, interval 0.9—1.0 m.

Fig. 1. - holotype, thin section 465/85-2, magn. 478×; Figs. 2—6 paratypes: Fig. 2. - thin section 465/85-2, magn. 478×, Fig. 3. - slight recrystallization in aboral zone. Thin section 465/85-1, magn. 510×, Fig. 4. - thin section 465/85-1, magn. 450×, Fig. 5. - right side of test aperture slightly damaged by pressure. Thin section 465/85-1, magn. 450×, Fig. 6. - slight lateral compression of test during compaction of sediment and slight corrosion of wal by surrouding sediment. Thin section 465/85-2, magn. 450×; Fig. 7. - detail of oral zone of specimen in Fig. 3, magn. 940×; Fig. 8. - detail of left side of thin section of oral zone. Thin section 465/85-1, magn. 990×; Fig. 9. - detail of right side of thin section of oral zone of specimen in Fig. 6, magn. 990×.

Photographed by J. Řehánek.


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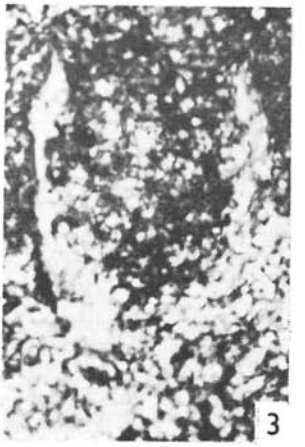
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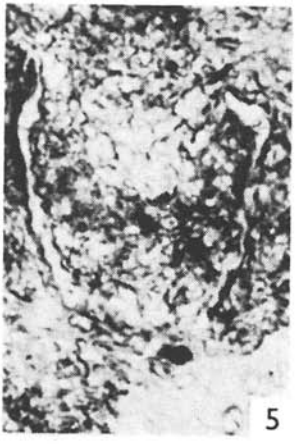
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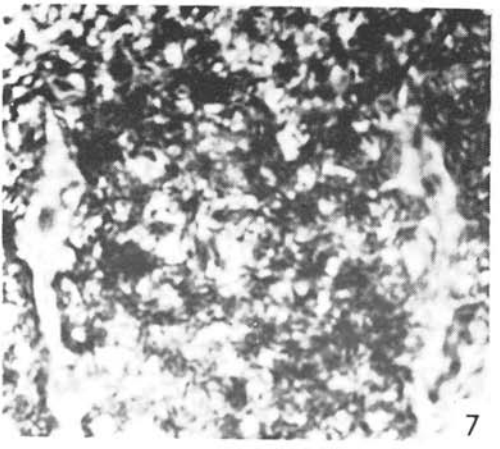
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Stratum typicum: Lower Valanginian (zone *Calpionellites*), grey microorganic clayey limestone.

Locus typicus: drillhole Borský Jur 19, core No. 7, depth 3497—3500 m.

Material: 20 specimens in thin sections from the above locality.

Diagnosis: bell-shaped lorica with wide aperture and short caudal protuberance that is distinct only in sections of vertical axis. Thickness of the wall is considerably variable. In the aperture of the lorica there is a conspicuous, from the inner side tightly clinging, inserted compact collar. In thin section it has a character of conspicuous antenna-shaped protuberances bent to the outer side. At least a half of the length of the protuberances rises over the terminal part of the lorica. At crossed nicols the positions of extinction of the lorica and collar differ by approximately 45°.

Description: bell-shaped lorica with a slightly inward-bent termination of the wall in the oral zone. Aboral pole in axial sections is slightly pointed with a relatively short caudal protuberance, whereas in subvertical sections it is rounded, almost horse-shoe-shaped. Collar is very conspicuous, simple, from the inside inserted into the aperture of the lorica. The collar tightly adjoins the lorica wall and the separating fissure is generally imperceptible, only when very magnified it is distinct as a thin short dark discontinuous

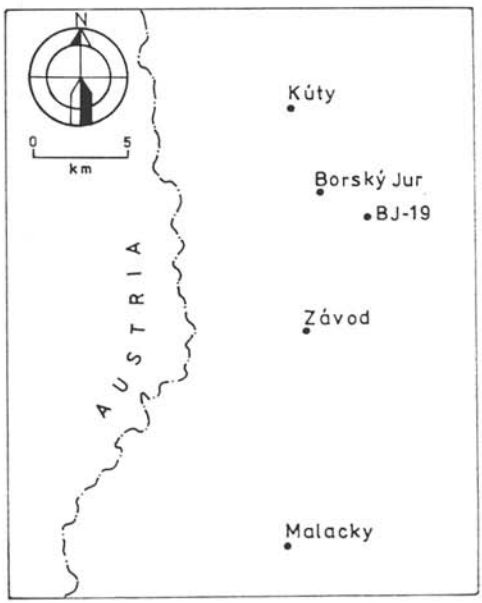

Fig. 1. Location of the drillhole Borský Jur 19 in the evaluated area.

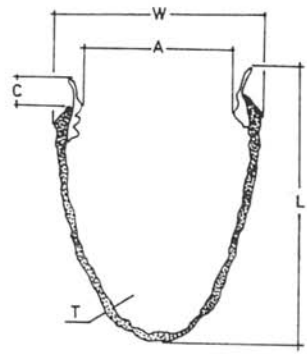

Fig. 2.

Fig. 2. Mode of measurements of main parametres of *Calpionellites allemanii* n. sp. in thin sections.

Explanations: L — total length of the test section, W — width of the lorica, A — width of the aperture, C — length of the collar rising above the lorica aperture, T — thickness of the wall.

Table 1

Parametres of typical specimens of *Calpionellites allemanni* n. sp. (in μm) in thin sections from the locality Borský Jur 19, drillcore No. 7

No.	interval (m)	thin section	coordinates		L	W	A	C	T	
			x	y					max	min
1	0.9 — 1.0	465/85-1	52.2	13.2	99.3	71.8	47.8	17.1	6.8	2.0
2	0.9 — 1.0	465/85-1	56.1	16.4	85.5	61.6	41.0	13.6	—	2.0
3	0.9 — 1.0	465/85-1	58.0	9.1	75.2	71.8	58.1	13.6	—	2.0
4	0.9 — 1.0	465/85-1	59.5	11.2	82.1	61.6	41.0	10.2	6.8	2.0
5	0.9 — 1.0	465/85-2	54.7	21.0	82.1	71.8	54.6	10.2	5.1	—
6	0.9 — 1.0	465/85-2	52.4	19.8	102.7	78.6	51.3	17.1	5.1	—
7	0.9 — 1.0	465/85-2	50.2	17.2	102.7	68.4	51.3	13.6	—	2.0
8	0.9 — 1.0	465/85-2	58.7	16.3	92.5	68.4	47.8	10.2	6.8	2.0
9	0.9 — 1.0	465/85-2	57.3	12.3	82.1	61.6	37.6	17.1	5.1	—
10	0.9 — 1.0	465/85-2	52.1	7.3	109.5	75.2	54.6	10.2	6.8	2.0
11	0.9 — 1.0	465/85-2	50.0	20.9	85.5	65.0	47.8	10.2	—	2.0
12	0.9 — 1.0	465/85-2	59.1	18.6	112.9	68.4	44.4	17.1	—	3.4
13	0.9 — 1.0	465/85-2	52.0	6.3	119.8	78.6	51.3	17.1	6.8	5.1
14	1.5 — 1.6	466/85-1	54.0	19.8	88.9	65.0	41.0	13.6	6.8	2.0
15	1.5 — 1.6	466/85-1	58.8	12.3	99.3	65.0	44.4	13.6	6.8	2.0
16	1.5 — 1.6	466/85-2	62.2	14.1	85.5	65.0	47.8	13.6	3.4	2.0

line of more or less zig-zag course (Pl. I, Figs. 7—9). The collar itself and termination of the lorica wall can be easily distinguished at crossed nicols as their positions of extinction are different (by approx. 45°). Collar is not segmented. In thin sections it has a character of conspicuous, in the upper part mostly sharp-pointed, relatively thin antenna-shaped protuberances. At least a half of their length rises over the terminal part of the lorica. In well preserved specimens the protuberances are slightly arc-bent on the outer side of sections (relative to the vertical).

Parametres of the specimens studied: length (L) 75.2—119.8 μm, width (W) 61.6—78.6 μm, aperture (A) 37.6—58.1 μm, height of collar above terminal part of lorica (C) 10.2—17.1 μm, thickness of wall (T) 2.0—6.8 μm (see Text-fig. 2 and Tab. 1, holotype rank number 10). A small caudal protuberance up to 6.8 μm thick is exceptionally found on axial sections.

Diagnosis differentialis: the newly described species differs from all so far described species of the genus *Calpionellites* sensu ALLEMANN et TREJO especially in its morphology, structure and size of the collar.

Calpionellites darderi (COLOM, 1934) (Text-fig. 4, Fig. 1) differs in a considerably shorter collar which is separated from the lorica wall by a distinct fissure.

Calpionellites uncinata CITA et PASQUARÉ, 1959 (Text-fig. 4, Fig. 2) has a shorter collar. In sections it has a character of conspicuous hook-shaped protuberances, laterally detached from the lorica wall by a marked separating fissure.

Calpionellites coronata TREJO, 1975 (Text-fig. 4, Fig. 3) differs mainly in a segmented, two-part collar which has various shapes in thin sections.

Calpionellites caravacaensis ALLEMANN, 1975 (Text-fig. 4, Fig. 4) differs in a much larger subcylindrical to cylindrical lorica and differently shaped, two-part collar.

Association: *Calpionellites allemanni* n. sp., *Clts. darderi* (COLOM), rarely *Clts. coronata* TREJO, *Tintinnopsella carpathica* (MURG. et FILIP.),

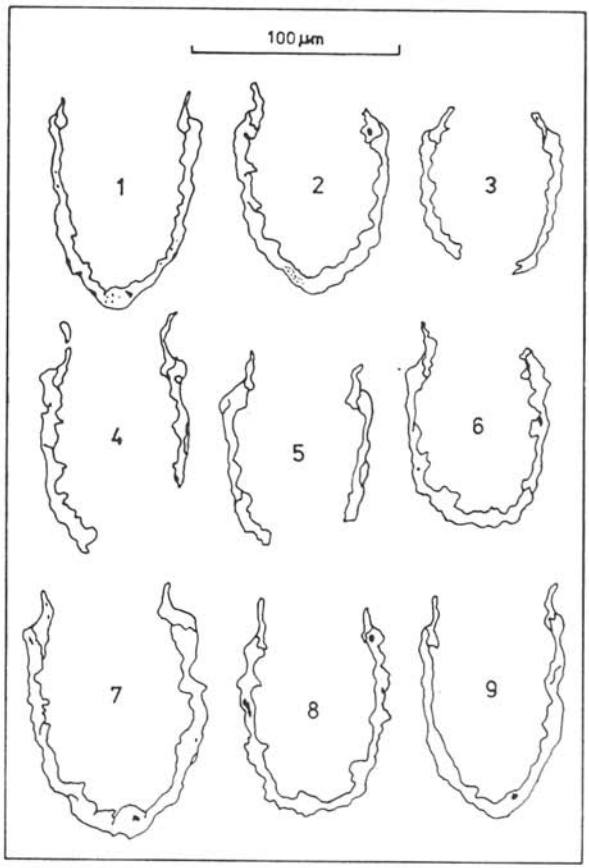

Fig. 3. Graphic reproduction of thin-section specimens of *Calpionellites allemanni* n. sp. with variable intensity of corrosion, recrystallization and pressure destruction of the test. Borský Jur 19, cora No. 7, depth 3497—3500 m, Figs. 1—2, 4—7, 9 - interval 0.9—1.0 m, thin section 465/85-2 (Fig. 1, holotype), Figs. 3, 8 - interval 1.5—1.6 m, Fig. 3. - thin section 466/85-2 (section slightly oblique to the vertical axis), Fig. 8 - thin section 466/85-1.

Calpionellopsis oblonga (CADISCH), *Remaniella cadischiana* (COLOM), *Lorenziella* sp., exceptionally *Cadosina minuta* BORZA, *C. fusca* WANNER, *Colomisphaera minutissima* (COLOM), *Col.* cf. *heliosphaera* (VOGLER), *Col.* cf. *lucida* BORZA, *Globochaete alpina* LOMBARD, *Didemnoides moreti* (DURAND DELGA), *Didemnum carpaticum* MIŠÍK et BORZA, commonly *Nannoconus* sp., small amounts of juvenile stages of lamellibranchiats, *Radiolaria*, ostracods, sponge monaxons, foraminifers (predominantly *Spirillina* sp.).

Remarks: studied thin-section specimens of *Calpionellites allemanni* n. sp. are mostly noted for distinct variability in the thickness of the lorica wall which is evidently due to thickenning during diagenesis. Growing of calcite is especially apparent on the inner side of the wall. Only a small part of the specimens of the whole evaluated population has parametres of the wall thickness fairly constant without substantial secondary thickenning (Tab. 1, specimens with one thickness parametre in the column T min.).

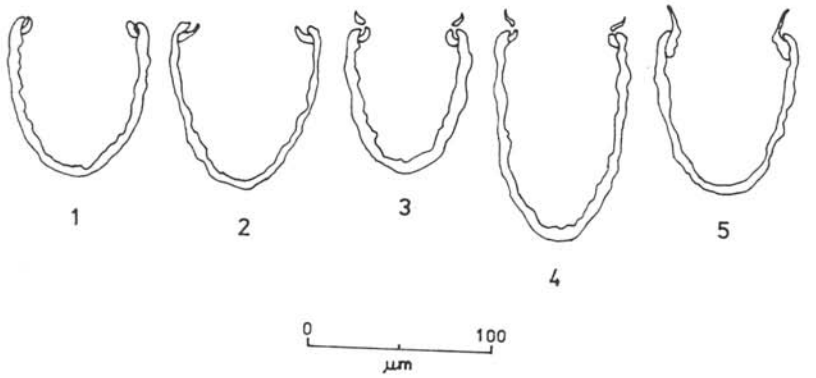

Fig. 4. Schematic sketch of the main morphological differences among individual species of the genus *Calpionellites* COLOM, 1948.
Explanations: 1 — *C. darderi* (COLOM, 1934); 2 — *C. uncinata* CITA et PASQUARÉ, 1959; 3 — *C. coronata* TREJO, 1975; 4 — *C. caravacaensis* ALLEMANN, 1975; 5 — *C. allemanni* n. sp.

Indications of discontinuity of the collar above the terminal part of the lorica are very rare in the studied specimens of the species described (see e. g. Text-fig. 3, Fig. 4, Pl. I/6). This fact as well as relatively common perforation of its lorica wall are due to corrosion by the surrounding sediment and in some cases also resulted from mechanical destruction in the course of the lithification of the sediment.

Translated by L. Böhmer

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