

***Neomeris mokragorensis* sp. nov. (Calcareous alga, Dasycladales)
from the Cretaceous of Serbia, Montenegro and the Northern
Calcareous Alps, (Gosau Group, Austria)**

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Abstract. The new species of the genus *Neomeris* – *Neomeris mokragorensis* sp. nov. described in this paper from western Serbia originates: from the Albian of Mokra Gora (the succession transgrading on the serpentinite) and from the Turonian of the Skrapež–Kosjerić area (the succession transgrading on the Carboniferous). The presence of this species has been noted in the Turonian of the Kukes and in the Santonian of the Metohija Cretaceous Unit (Mirdita Zone). In the surrounding of Podgorica (Dinaric Carbonate Platform, Montenegro), the same species previously was presented as *Neomeris* cf. *cretacea* STEINMANN. Well preserved *Neomeris* specimens from the Turonian to the Santonian strata of the Northern Calcareous Alps (Gosau Group, Austria) previously described as *Neomeris circularis* BADVE & NAYAK, is assigned to *Neomeris mokragorensis* sp. nov. *Neomeris mokragorensis* is characterized by a thin loosed skeleton formed only around ampullae, by which, besides the form of the ampullae, this species is clearly distinct from *Neomeris cretacea* (Steinmann).

Key words: Dasycladales, genus *Neomeris*, new species, Middle and Late Cretaceous, Serbia, Montenegro, Austria.

Апстракт. Из кредних слојева западне Србије описана је нова врста дасикладалеса *Neomeris mokragorensis* sp. nov. до сада нађена у албу Мокре Горе (типски локалитет) и турону долине Скрапежа. Осим у западној Србији, налази ове врсте познати су у Мирдита зони: из доњотуронских слојева Кукеске и сантонских слојева Метохијске кредне јединице. У околини Подгорице (Динарска карбонатна платформа, Црна Гора) неомерис раније приказан као *Neomeris* cf. *cretacea* STEINMANN сада се приписује новој врсти. За разлику од релативно масивног карбонатног скелета такође албске врсте *Neomeris cretacea*, скелет нове врсте формиран је калцификацијом појединачних ампула те је стога слабо везан и ограничен само на дио око репродуктивних органа (ампула). Ове двије врсте се разликују и по облику ампула које су овоидно-субсферичне код нове врсте, на супрот издужено елиптичним ампулама врсте *Neomeris cretacea*.

Кључне ријечи. Dasycladales, род *Neomeris*, нова врста, средња и млађа креда, Србија, Црна Гора, Аустрија.

Introduction

Neomeris mokragorensis sp. nov. is described from the Cretaceous of western Serbia. The today living genus *Neomeris* LAMOUROUX (dasycladalean alga) is known since the Early Cretaceous (Valanginian). Following the compilation of GRANIER & DELOFFRE (1993) only two species of *Neomeris* (excluding the subgenus *Larvaria* DEFRANCE, and *Drimella* RADOIČIĆ) are known from Cretaceous strata: *Neomeris cretacea* (STEINMANN) (Albian of Mexico) and *Neomeris circularis* BADVE &

NAYAK, 1993 (?Cretaceous of India). *Neomeris cretacea* was thoroughly described and well illustrated from the type-locality area by BARATTOLO (1990), whereas *Neomeris circularis* was introduced by one single poorly preserved fragment. GÉNOT (1994) did not list this species in valid Cretaceous *Neomeridae*. Well preserved representatives of *Neomeris* from the Late Cretaceous of the Northern Calcareous Alps, ascribed by SCHLAGINTWEIT & EBELI (1995) to *Neomeris circularis*, is assigned, in this paper, to *Neomeris mokragorensis* sp. nov.

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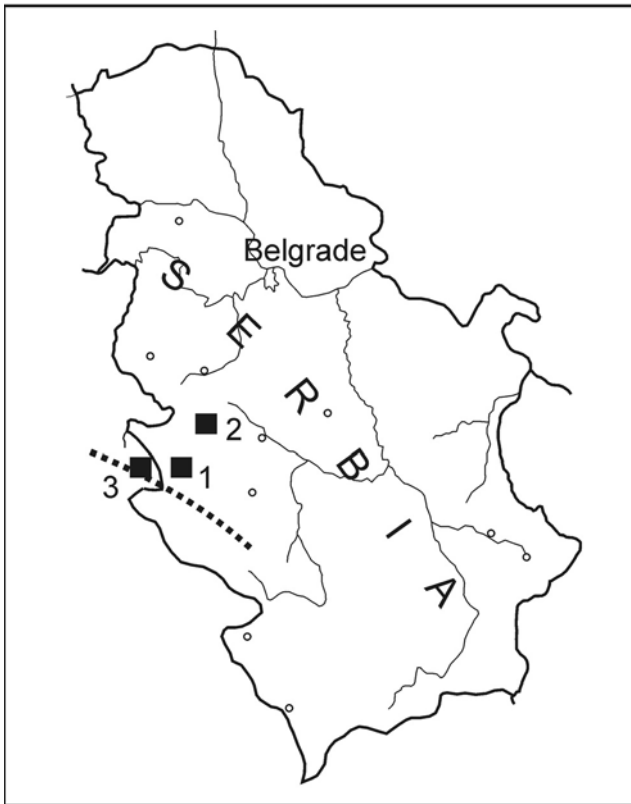


Fig. 1. Location map of the studied sections. 1, Mokra Gora; 2, Skrapež Valley; 3, Vardište; Dotted line: Drina Cretaceous Unit.

Geological setting

Western Serbia

In western Serbia, *Neomeris mokragorensis* sp. nov. has been found in two regions: in the Albian sediments of Mokra Gora (Figs. 1, 1) and in the Turonian of the Skrapež Valley (Figs. 1, 2).

Mokra Gora (cf. Mirdita Zone)

The Cretaceous succession of Mokra Gora is part of the Drina Cretaceous Unit (RADOIČIĆ 1995). In western Serbia, this unit crops out in the Zlatibor–Tara–Zvijezda Belt, from where it stretches further to the area of Višegrad in eastern Bosnia (Fig. 1, dotted line). Large ophiolite massifs, basinal Diabase-chert Formation and shallow water Triassic carbonates are transgressively and diachronously overlain by Albian to Turonian–Lower Senonian sediments. The Albian, Early–Middle Cenomanian, Middle Turonian and Early Senonian ages of Mokra Gora successions were documented by rich micro and macrofossil associations (ŽIVKOVIĆ 1905; LÓCZY 1924; MILOVANOVIĆ 1934; PEJOVIĆ & RADOIČIĆ 1971; BANJAC 1994) and also by Albian–Cenomanian palynospetra (DULIĆ 1994). Precise stratigraphic data on the interval

between the Early–Middle Cenomanian and the Middle Turonian limestone with rudists (on the Ograđenica marly sequence, respectively) are lacking. The Ograđenica marly sequence (Fig. 5) represents a peculiar feature in the paleogeography of the Drina Cretaceous Unit, occurring in the Mokra Gora area only, as a result of Mid-Cretaceous tectonic events. Early Cenomanian slump breccia (Fig. 6), observed in the western periphery of Mokra Gora, was the first announcement of these events.

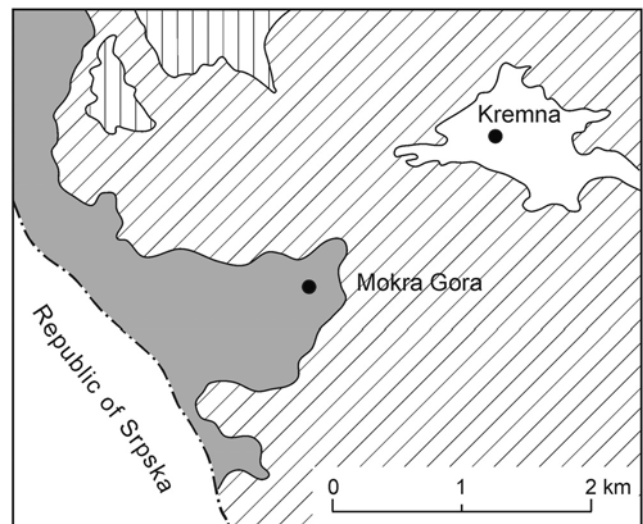


Fig. 2. Simplified geological map of the eastern Mokra Gora area. 1, Triassic; 2, serpentinites; 3, Cretaceous; 4, Kremna Neogene. According “Carte géologique de la R. S. de Serbie”, 1:200 000, by MILOVANOVIĆ & ĆIRIĆ (1968).

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In the eastern part of the Mokra Gora (Fig. 2), Cretaceous sediments, represented by some tens of metres of marls and marly limestones, overlying serpentinites with weathering crust, outcropped at places. These freshwater? to brackish deposits without noted microfossils, but in some beds with molluscs (*Glauconia*, *Acteonella*, *Natica*, *Cerithium*, other different gastropods; *Lucina*, *Cirena*, *Lopha*, *Gryphaea*, ostreid coquinas at places and other bivalvies) were ascribed to the Albian, although a latest Aptian age of the lowermost beds cannot be excluded. These sediments gradually pass into a sequence of alternating marls and marly-silty, peloidal or bioclastic limestone (Fig. 4), some of them containing benthic foraminifera, *Charophyta* gyrogonites and small molluscs. Within the beds about 10–12 metres below the outcrop in Fig. 4, the presence of *Hemicyclammia sigali* MAYNC indicated an age not older than middle Albian. The hand sample 011541 containing *Neomeris mokragorensis* sp. nov. and marls with *Atopochara trivolvii* PECK (011541a; see LJUBOVIĆ-OBRAĐOVIĆ 1995) are from the base of this outcrop. Wackestone – p. p. packstone with *Neomeris* contains frequent annelids (prevail-

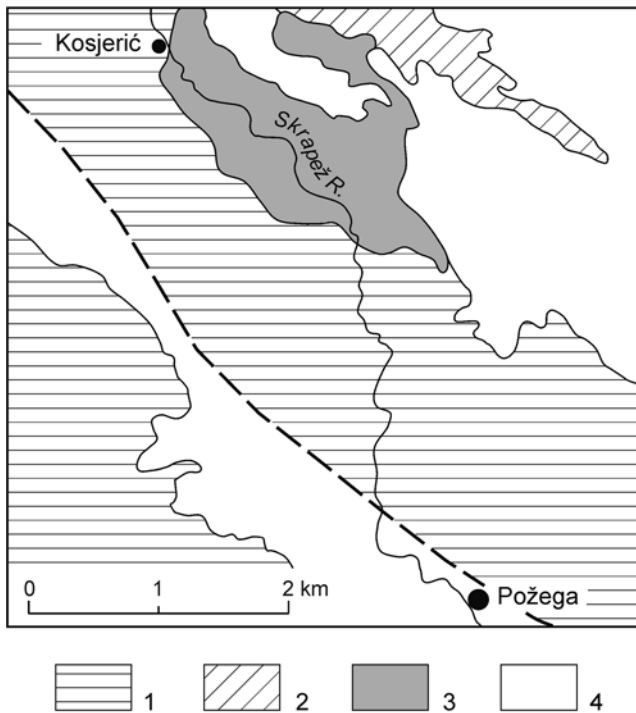


Fig. 3. Simplified geological map of the Skrapež Valley area. 1, Paleozoic (Lower Carboniferous); 2, Diabase-chert Formation; 3, Cretaceous; 4, Neogene. According “Carte géologique de la R.S. de Serbie”, 1:200 000, by MILOVANOVIĆ & ĆIRIĆ (1968).

ing fragments), rare *Charophyta* gyrogonites, micromolluscs and few foraminifera (last occurrence of *Hemicyclammina sigali* in this sequence!) In the sample 011545, only few a *Charophyta* gyrogonites were detected (Pl. 3, Figs. 9, 10). Very rare *Ovalveolina maccagnoae* DE CASTRO, associated with minute molluscs and rare ostracods, were found in samples 011546, 011549 and 011551. They became abundant in the topmost beds (Pl. 3, Figs. 7, 8). This sequence is ascribed to the Late Albian–Earliest Cenomanian (Vraconian).

Upward, badly exposed Early–Middle Cenomanian limestone with orbitolinids, *Pseudorhapydionina lauriniensis* (DE CASTRO), *Charentia cuvillieri* NEUMANN, *Cuneolina*, nezzatidae and ostracods is present. Further, followed friable deposits, some of them rich in molluscs (e.g. ostreids coquina, those with different gastropods), corresponding to the lower part of the Ogradenica marly sequence (Fig. 5). The succession continues in friable hemipelagic marly limestone with rare and badly preserved ammonites, echinoderms and rare planktonic microfossils (minute *Pithonella*, “*Hedbergella*”). In this part of the sequence, olistostromatic beds and some bioclastic limestone with debris of rudists and other molluscs, halimedacean algae and rare foraminifera were noted. Based on the ammonites, LOCZY (1924) considered a Cenomanian–Turonian age for this deposit, a view accepted by later researches. The Ogra-

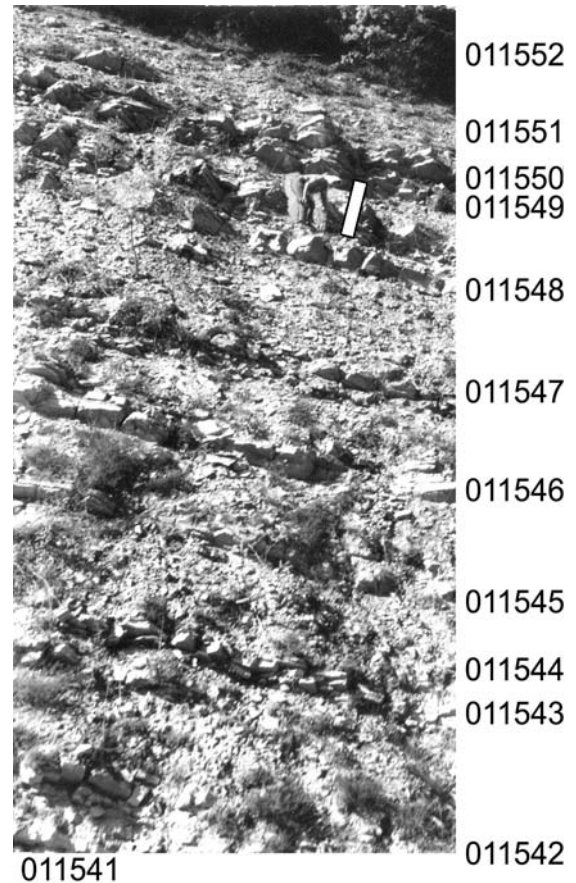


Fig. 4. Outcrop of a part of the Albian (Vraconian) deposits (about 15 metres) in the eastern part of Mokra Gora, at the crossing of the road and the railway (Photo: 1970).

denica marly sequence is discontinuously overlain by Middle Turonian to Early Senonian limestone with rudists (Fig. 5, on the top-arrow). The presence of the Santonian species *Vaccinites oppeli* (DOUVILLE) was mentioned by MILOVANOVIĆ, 1934, probably from the upper part of this limestone sequence. Younger beds of the Santonian are not documented.

It should be mentioned at this point that the Albian sequence of the same Cretaceous Unit at Vardište, westward of Mokra Gora (Fig. 1, 3), have been studied by BORTOLOTTI *et al.* (1971). According these authors “the fossils indicate an Late Jurassic age and an environment of shallow water and anomalous salinity”. Between the illustrated microfossils shown in Fig. 6, the specimen “L”, assigned with reserve to *Haplophragmoides* sp. is recognized as *Hemicyclammina sigali* MAYNC, a species widely distributed in the Albian of Mokra Gora.

In the basal part of the Drina Cretaceous Unit, fossils are rare and badly preserved. In addition, Albian shallow water facies in this area are different from those in the Albian of the Periadriatic Carbonate Platforms, therefore these deposits were not recognized, by our Italian colleagues, as Albian.



Fig. 5. Ograđenica marly sequence, on the top (arrow) limestone with rudists (Photo: 1970).

Skrapež Valley (The Cretaceous of Kosjerić, western belt of the Vardar Zone)

The Late Cretaceous deposits of Skrapež occur in the most eastern part of the Kosjerić Cretaceous area (Fig. 3). The oldest known sediments are Cenomanian in age transgrading over Early Carboniferous strata. The shallow water Cenomanian and p.p. Turonian deposits gradually pass into a basinal succession.

In the Skrapež Valley, *Neomeris mokragorensis* sp. nov. was found in two localities. In both cases in the sequences between the *Cisalveolina fraasi* Zone and sediments with hippuritids. In the locality Gradnja (sampled in 1966, the outcrop was 14 m thick), the *Neomeris* was found in the 4 m thick marly limestone (samples in the base and on the top, 07504, 07505) associated with barrel-shaped segments of *Halimeda*, *Terquemella*, *Nezzazatinella picardi* (HENSON), *Gendrotella rugorensis* (MAYNC), remains of gastropods and rare coral debris. About 10 metres upward (marly limestone, sandy marls and sandstones), Turonian hippuritids were discovered within a conglomeratic bed (data of D. PEJOVIĆ 1966). The other locality with *Neomeris mokragorensis* sp. nov. is on the opposite riverside to Gradnja.

Limestone with *Neomeris mokragorensis* sp. nov. in the Skrapež area was deposited in a low energy, shallow-water, lower?–middle ramp environment.

Other localities

Mirdita Zone and Montenegro

Neomeris mokragorensis sp. nov. has been recognized in the Turonian and Santonian limestone of the Mirdita Zone, and in the Albian (revised) of the Dinaric Carbonate Platform (Montenegro).

Mirdita Zone, Kukës Cretaceous Unit. A rare prevailing *Neomeris* fragment was found in the Early Turonian



Fig. 6. Lower Middle Cenomanian slump breccia cropped out during road constructions in 1970, Kotroman, Mokra Gora (Photo: 1970).

(*Helvetotruncana helvetica* Zone) of the Gradište succession, where it was associated with frequent *Halimeda elliotti* CONARD & RIOULT (RADOIČIĆ 1998, Pl. 1, Figs. 1–3). From here originates a unique *Neomeris mokragorensis* specimen with the contour of the central stem preserved and, consequently, the space corresponding to the primary laterals (Fig. 7). Dispersed ampullae and fragments of *Neomeris* in the Santonian limestone of the Metohija Cretaceous Unit (Mirdita Zone, RADOIČIĆ 1997, Pl. 4, Fig. 12) are ascribed to this species.

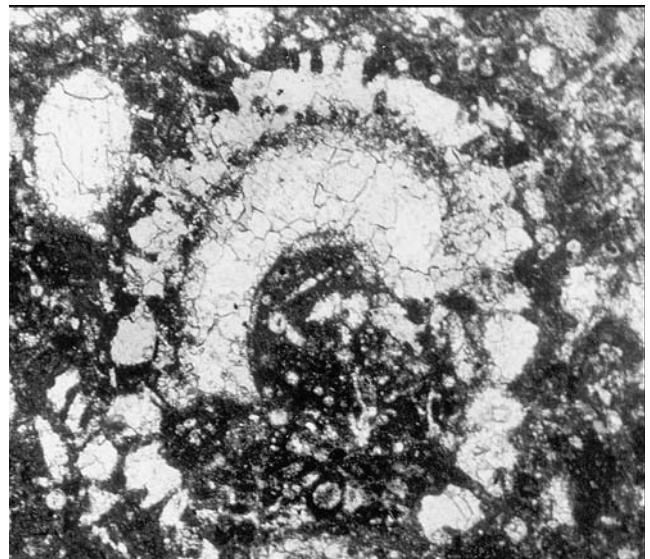


Fig. 7. *Neomeris mokragorensis* sp. nov. with preserved contour of the main stem, Turonian, *Helvetotruncana helvetica* zone, Kukës Cretaceous Unit (Mirdita Zone), thin slide RR2049, sample 015203, $\times 39$.

Dinaric Carbonate Platform Montenegro. From the Albian marly limestone in the surroundings of Podgorica (SE segment of the DCP), previously ascribed

to the Cenomanian, this species was presented as *Neomeris* cf. *cretacea* STEINMANN (RADOIČIĆ 1976; Pl. 5, Figs. 1–2). The limestone with *Neomeris mokragorensis* sp. nov. was deposited in a very shallow protected inner platform area, characterized by the presence of beds with *Atopochara trivolvus*.

Austria

The Gosau Group of the Northern Calcareous Alps uncoformably overlies the already deformed sediments of the Upper Austroalpine nappe complex. The remnants of the neritic Lower Gosau Subgroup comprise different facies associations (continental to shallow marine), which altogether cover a range from the Late Turonian to the Early Campanian (e.g. WAGREICH & FAUPL 1994; SANDERS 1998). The occurring lithologies (marls, limestones, sandstones) comprise a wide range of nearly pure silicoclastic, mixed clastic carbonate and pure carbonate lithologies, including also diverse types of bioconstructions *Neomeris mokragorensis* sp. nov., assigned to *Neomeris circularis* BADVE & NAYAK, has already been reported from various localities of the Lower Gosau Group of Austria:

Pletzschalm, Tyrol, (see SCHLAGINTWEIT & EBELI 1995).

Eisenbach, Salzkammergut area: Brownish lagoonal wackestones with miliolids (*Quinqueloculina*, *Vidalina*), *Thyrsoporella eisenbachensis* SCHLAGINTWEIT & LOBITZER (abundant), *Dissocladella pyriformis* SCHLAGINTWEIT (common) and *Neomeris mokragorensis* sp. nov. (rare) and plant remains (see SCHLAGINTWEIT & LOBITZER 2003). Stratigraphy: ?Late Turonian.

Hofergaben, type area of the Gosau Group: Mixed silicoclastic-calcareous tempestites layers within marls of the Hochmoos Formation with abundant debris of pelycopodes, *Neomeris mokragorensis* sp. nov., *Jodotella koradae*, *Trinocladus tripolitanus* (RAINERI), and *Halimeda paucimedullaris* SCHLAGINTWEIT & EBELI (see SCHLAGINTWEIT 2004).

Summarizing, *Neomeris mokragorensis* sp. nov. occurs in lagoonal, partly marly, wackestones with or without silicoclastic influence of the Lower Gosau Subgroup in strata ranging from Late? Turonian to Late Santonian age.

Paleontology

Order *Dasycladales*

Family *Dasycladaceae*

Genus *Neomeris* (LAMOUROUX, 1816) DELOFFRE, 1970

Neomeris mokragorensis sp. nov.

Pl. 1, Figs. 1–12; Pl. 2, Figs. 1–3; Pl. 3, Figs. 1–6.

1962 *Neomeris cretacea* STEINMANN – DELMAS & DELOFFRE, 216, pls. 1–2, Albian–Cenomanian of Aquitaine, France.

- 1971 *Neomeris* cf. *cretacea* STEINMANN – PEJOVIĆ & RADOIČIĆ: 138, Cenomanian (revised. Albian), Mokra Gora.
- 1976 *Neomeris?* cf. *N. cretacea* STEINMANN – CONRAD & PEYBERNÈS: 187, figs. 11b, 14e, Albian of the Spain.
- 1976 *Neomeris* cf. *cretacea* STEINMANN – RADOIČIĆ: pl. 5, figs. 1–2, Cenomanian (revised. Albian), Montenegro.
- 1991 *Neomeris* cf. *pfendere* KONISHI & EPIS – SCHLAGINTWEIT: 49, pl. 18, fig. 8, Albian of the Northern Calcareous Alps.
- 1995 *Neomeris circularis* BADVE & NAYAK – SCHLAGINTWEIT & EBELI: 718, text-fig. 3, pl. 1, figs. 1–10, Late Turonian–Early/Middle Coniacian of the Northern Calcareous Alps.
- 1995 *Neomeris circularis* BADVE & NAYAK – SCHLAGINTWEIT: 101, pl. 1, figs. 6, 11, Late Santonian of the Northern Calcareous Alps.
- 1998 *Neomeris* sp. – RADOIČIĆ: pl. 4, fig. 12, Santonian, Mirdita Zone.

Origin of name. The species name refers to the type area Mokra Gora in Western Serbia.

Holotype. The transversal slightly oblique section with few individually calcified ampullae (Pl. 1, Fig. 12, arrow), holotype (left) and (right) longitudinal section, arrow: primary calcified ampulla. Pl. 2, Fig. 1, thin slide RR4588 (sample 011541), Collection R. RADOIČIĆ, Geological Institute, Belgrade.

Isotypes. Different section in thin slides RR4588, 4588/1, 4588/2 and 4588/3 (sample 011541) some of them illustrated in the Pl. 1.

Type locality. Mokra Gora, the outcrop along the road, at the crossing of the road with the railway, 43°47'45.80" N, 19°30'41.12" E (Fig 4, photo 1970).

Age. Albian–Santonian, (in the type locality Middle–Late Albian).

Diagnosis. Representative of *Neomeris* with an elongated cylindrical thallus and densely set whorls with laterals set in quincunxes. Calcification formed in distal part of the whorls around fertile ampullae only, resulting in a wide central cavity. Primary laterals, basal parts of the secondaries and their distal swellings (cortex) unknown (not calcified); fertile ampullae ovoidal-sub spherical in shape and individually calcified including the membrane and thin sheath around the ampulla, usually overgrown during diagenesis.

Dimensions. Data from western Serbia and the Northern Calcareous Alps show good accordance. Minimum values (D, d) from the Alps correspond to a tiny specimen (SCHLAGINTWEIT & EBELI 1995: pl. 1, fig. 5).

	Austria	Serbia
D	0.72–2.32	1.28–1.88
d	0.58–1.68	1.05–1.52
d/D	0.6–0.88	0.7–0.86
w	25–34	30–45
L		9 (12, on the sample)

According to the specimen *Neomeris mokragorensis* sp. nov. from the Kukës Cretaceous Unit, Mirdita Zone (Fig. 7) the main stem of this species is about one third of the diameter.

Description. The variably preserved, simple, thin, loosely connected skeletons (Pl. 1, Figs. 1–6) consist of individually calcified laterally fused ampullae, alternating in whorls. The skeleton of the primary carbonate sheaths, due to recrystallization and overgrowth sometimes becomes better preserved (Pl. 1, Fig. 3; Pl. 2, Fig. 2; Pl. 3, Fig. 4). The primary calcified ampullae were preserved in both the studied material – from the Alps (SCHLAGINTWEIT & EBELI 1995, pl. 1, figs. 4, 8, 9) and from Western Serbia (Pl. 1, Fig. 11). The ampullae have an ovoidal-subspheric form. Usually, in random sections in thin slides, have a circular form because the axial sections of the ampullae, as those in the fragment shown in Pl. 1, Fig. 11, are extremely rare. In the same fragment (and in some others similarly preserved) are clearly distinct a primary calcified membrane (up to 0.01 mm thick) and a sheath around it (up to 0.02 mm thick). Dimensions of ampullae, in the axial sections (according Pl. 1, Fig. 12): internal diameter 0.1 mm, external with calcareous sheath 0.16 mm. Axial dimensions, internal 0.13 mm, external, with primary sheath, about 0.2 mm. Some specimens or a part of them consist only of orthosparite internal moulds of ampullae (about 0.1 mm in diameter) or of subspheric to irregular sparite units, mending both internal moulds and sheaths (Pl. 1, Figs. 2, 6, partly Fig. 1).

The particularly preserved, unique specimen of this species is shown in Pl. 1, Fig. 4. It has a netlike skeleton of fused individual calcified ampullae with micrite filling. Similarly preserved are the oblique sections in Pl. 1, Figs. 5, and 10, both with mixed individually calcified and completely recrystallized ampullae.

The middle part of the secondary laterals, visible in the tangential sections, usually appears as micritic pores (Pl. 1, Fig. 8, d is about 0.025 mm) somewhat in a displaced position.

Relations. *Neomeris mokragorensis* sp. nov. differs greatly from *Neomeris cretacea* (STEINMANN) by the skeletal structure and by the form of the reproductive organs (ampullae). The calcareous skeleton of *Neomeris cretacea* is compact and relatively massive, the ampullae are elongated-ellipsoidal in form. The biometric differences between the two species were given by SCHLAGINTWEIT & EBELI (1995).

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Резиме

***Neomeris mokragorensis* sp. nov. из кредних седимената Србије, Црне Горе и Сјеверних кречњачких Алпа Аустрије (Gosau група)**

Нова врста рода *Neomeris* описана је из кредних седимената западне Србије, из алба Мокре Горе (типски локалитет) и тутона долине Скрапежа. Забиљежени су такође налази ове врсте у доњем тутору Кукуске и сантону Метохијске кредне јединице Мирдита зоне. *Neomeris mokragorensis* sp. nov. из албских кречњака околине Подгорице (ЈИ сегмент Динарске карбонатне платформе, Црна

Гора) био је раније приказан као *Neomeris* cf. *cretacea* STEINMANN (RADOIČIĆ 1976, таб. 5, сл. 1 и 2).

Фамилија *Dasycladaceae*

Род *Neomeris* (LAMPOUROUX, 1816) DELOFFRE, 1970

***Neomeris mokragorensis* sp. nov.**

Таб. 1, сл. 1 12; Таб. 2, сл. 1 3; Таб. 3, сл. 1 6

Поријекло имена. по Мокрој Гори гдје се налази типски локалитет.

Холотип. попречан мало искошен пресјек са различито очуваним ампулама (таб. 1, сл. 11, стрелица), холотип (лијево) и лонгитудиналан пресјек са очуваном примарно калцифицираном ампулом (таб. 1, сл. 12, стрелица). Препарат PP4588, узорак 011541, Колекција Р. РАДОИЧИЋ, Геолошки институт Београд.

Иситипови. Различити пресједи у препаратима PP4588, 4588/1, 4588/2 и 4599/3 од којих су неки приказани на табли 1.

Типски локалитет. Профил (приказан на слици 4, снимљен 1970. године) откривен поред пута у источном дијелу Мокре Горе, на мјесту гдје се укрштају жељезнички и колски пут.

Дијагноза. *Neomeris* веома издуженог цилиндричног талуса са густим пршљеновима у којима су огранци наизмјенично распоређени. Калцификација је обухватала само дистални дио пршљена, око фертилних ампула, стога кречњачки скелет карактерише пространа унутарња празнина. Примарни огранци, базални дио секундарних огранака и њихово дистално проширење (кортекс) непознати. Фертилне ампуле овоидно-субсферичног облика, индивидуално су калцифициране (мембрана и спољашњи омотач) и обично секундарно измијењене – прекристалисале и надрастале током дијагенезе.

Neomeris mokragorensis sp. nov. веома се разликује од врсте *Neomeris cretacea* по структури скелета и облику репродуктивних органа (ампула).

Према расположивим подацима стратиграфско распрострањење нове врсте је алб–сантон. У типском локалитету старост слоја са *Neomeris mokragorensis* sp. nov. је средњи–горњи алб.

PLATE 1

Figs. 1–12. *Neomeris mokragorensis* sp. nov. from the type locality, Albian of the Mokra Gora.

1–6. Different skeleton preservations:

1. The primary calcification obliterated by recrystallization; some ampullae preserved as orthosparite moulds (arrow). Longitudinal slightly oblique section, thin slide RR4588/3, scale bar = 0.5 mm.
2. A skeleton in the disintegration stage; note that, notwithstanding a few, the ampullae are in part preserved on primary calcification (arrow). Longitudinal-tangential section, thin slide RR4588/2, scale bar = 0.5 mm.
3. Prevailing recrystallized skeleton, mixed preservation, few ampullae preserved as individually calcified, some as orthosparite moulds (arrows). Longitudinal slightly oblique section, thin slide RR4588/3, scale bar = 0.5 mm.
4. Netlike skeleton. Longitudinal oblique section cat distal part of the ampullae, thin slide RR4588/2, scale bar = 0.5 mm.
5. Mixed preserved skeleton. Oblique section, thin slide RR4588/3, scale bar = 0.5 mm.
6. Oblique section of the skeleton (a frequent type of preservation), thin slide RR4588/3, scale bar = 0.5 mm.
7. A fragment of the oblique section, prevailing preserved individually calcified ampullae, thin slide RR4588/2, scale bar = 0.5 mm.
8. A fragment of a skeleton with micrite filled ampullae and (left) *Charophyta* gyrogonite, tangential section; thin slide RR4588/3, scale bar = 0.5 mm.
9. A fragment of the whorl, few ampullae with well preserved primary calcification, some recrystallized and deformed by overgrowth, thin slide RR4588/3, scale bar = 0.5mm.
10. A fragment of a disintegrated whorl; ampullae filled by orthosparite, membrane and sheath recrystallized, thin slide RR4588/3, scale bar = 0.025 mm.
11. The form of the ampulla characteristic for this species, axial section: well preserved calcified membrane and sheath, detail from Fig. 12., thin slide RR4588/2, scale bar = 0.015 mm.
12. A fragment of the whorl; on the left transversal sections of two ampullae with well preserved primary calcification of the membrane and the sheath, thin slide RR4588/2, scale bar = 0.050 mm.

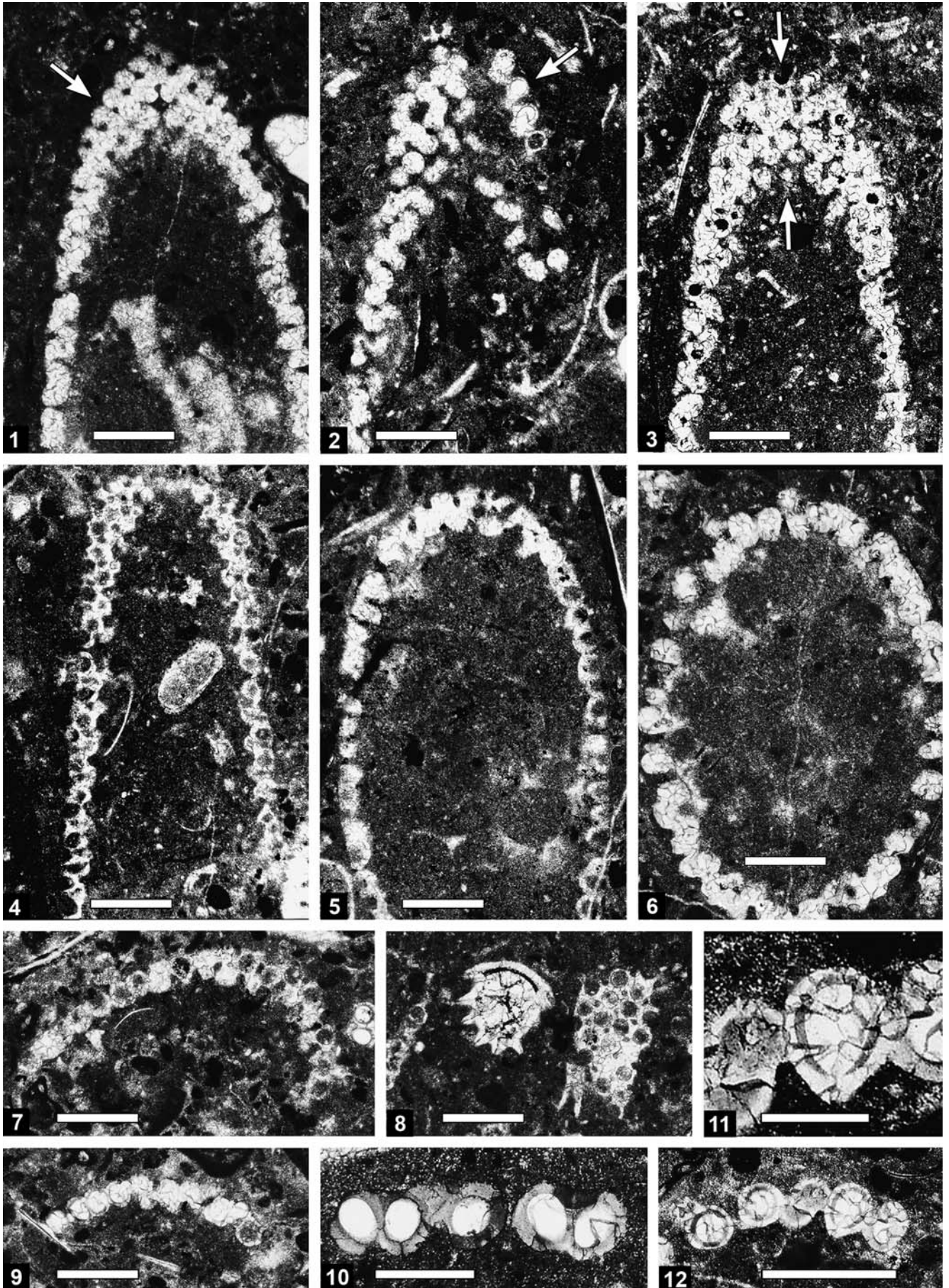


PLATE 2

Figs. 1–3. *Neomeris mokragorensis* sp nov.

1. Holotype, slightly oblique transversal section (left) showing some individually calcified ampullae (arrow), and (right) longitudinal section with one primary calcified ampulla (arrow). Thin-slide RR4588 (sample 011541); Albian, Mokra Gora (Fig. 4), scale bar = 1 mm.
2. Oblique section of the skeleton with altered primary calcification and orthosparite ampullae moulds, thin slide 4666, Turonian, Skrapež, scale bar = 0.6 mm.
3. Detail from Fig. 2, scale bar = 0.14 mm.

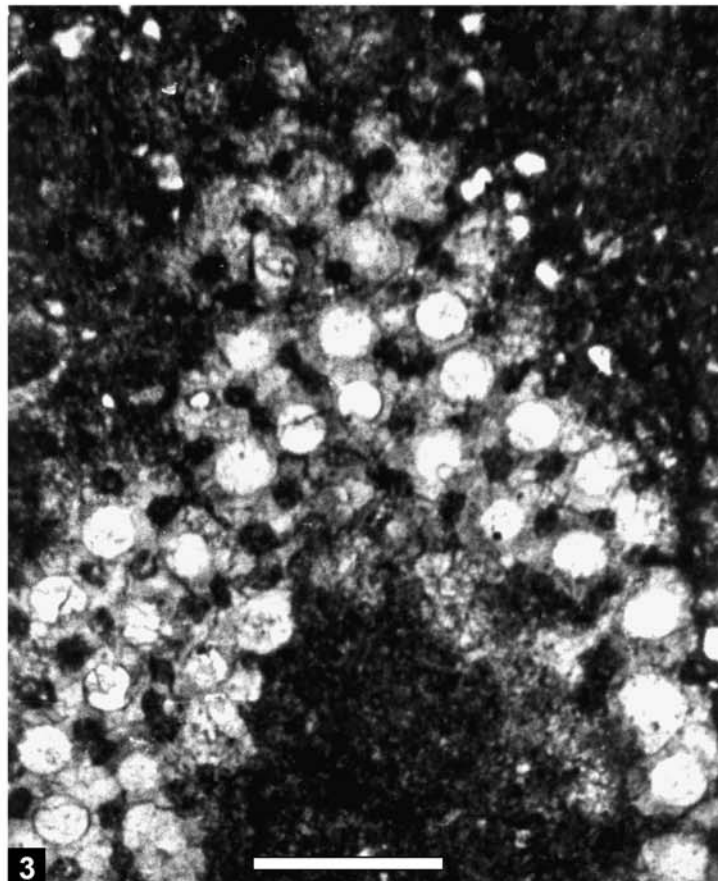
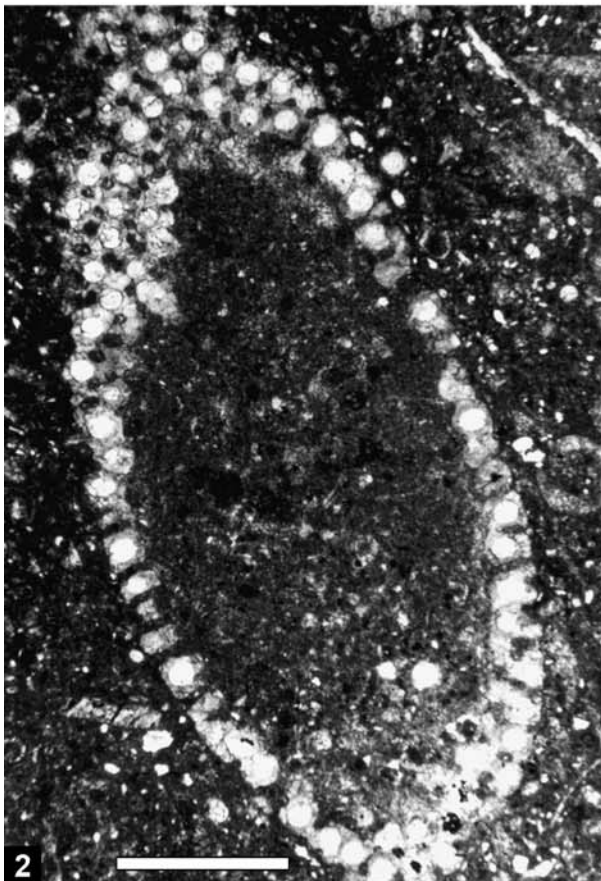
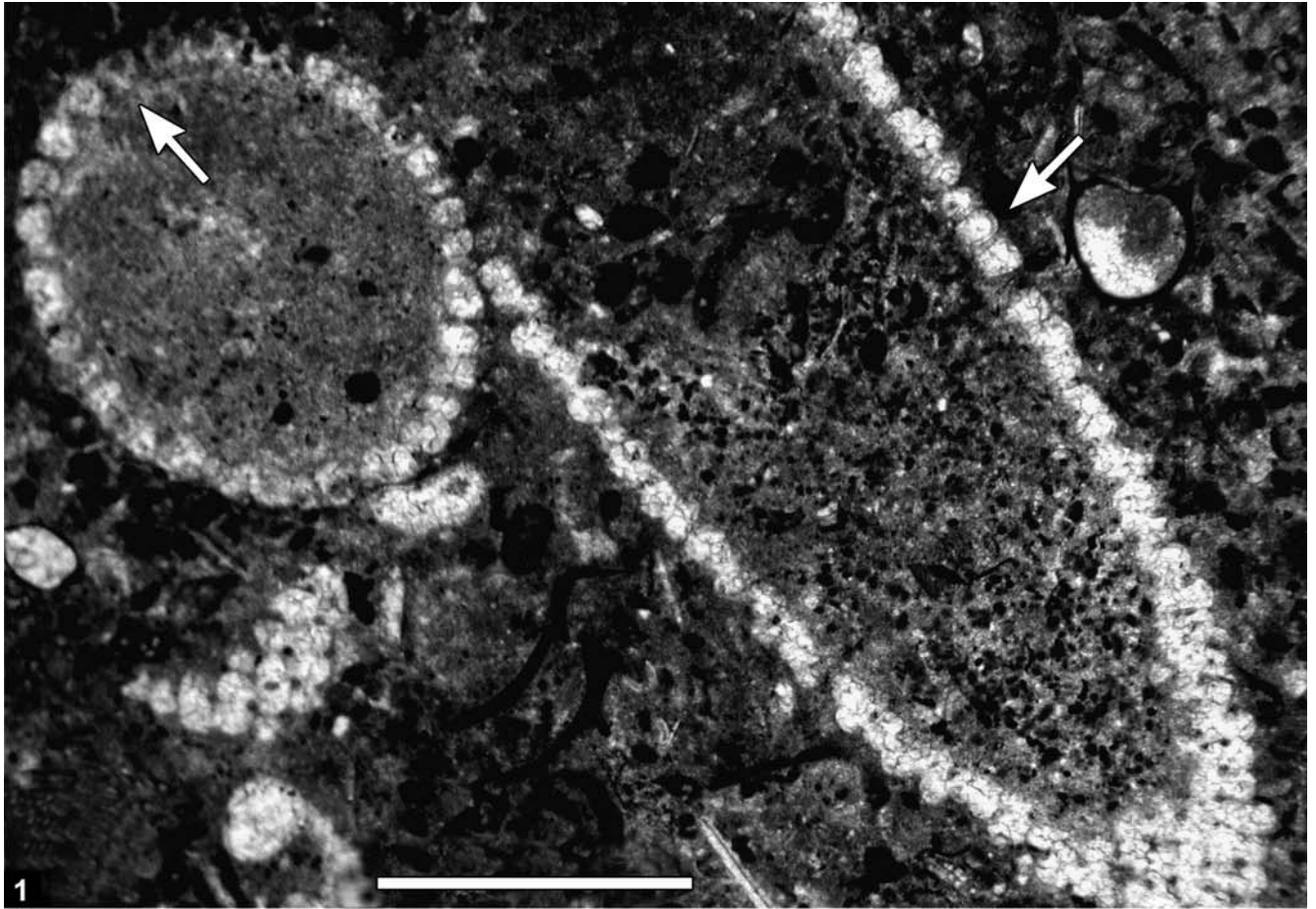


PLATE 3

Figs. 1–6. *Neomeris mokragorensis* sp. nov., from the Late Cretaceous of the Lower Subgroup of the Northern Calcareous Alps.

1. Oblique section showing ampullae and sterile laterals, thin-section BSPG 5212-a-93, scale bar = 0.2 mm.
2. A fragment showing spherical ampullae, thin-section BSPG 5214-a-93, scale bar = 0.2 mm.
3. Benthic foraminifer *Reophax* sp. with agglutinated ampullae of the *Neomeris*, thin-section Pletz 1, scale bar = 0.5 mm.
4. The longitudinal section, slightly oblique, thin section BSPG 5213-a-93, scale bar = 1 mm.
5. A fragmentary tangential section, slightly oblique, thin-section BSPG 5215-a-93, scale bar = 0.2 mm.
6. A transverse section slightly oblique, thin-section BSPG 5213-a-93, scale bar = 1 mm.

Figs. 7–10. Foraminifera and *Charophyta* gyrogonites from the Albian (Vraconian) sequence shown in the Fig. 4.

- 7–8. *Ovalveolina maccagnoae* DE CASTRO, thin slide RR5226 (sample 011552), scale bar = 0.5 mm.
9. *Charophyta* gyrogonites, thin slide RR5218 (sample 011545), scale bar = 0.5 mm.
10. A fragment of the gyrogonites and the microneerineid fragment, thin slide RR5224 (sample 011551), scale bar = 0.5 mm.

