

PROTOLEPTOCERAS GEN. N. — A NEW GENUS OF BERRIASSIAN AMMONITES

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In the course of the last several years the author has been able to collect, from the Berriassian sediments of the Eastern Fore-Balkan region, a considerable collection of very interesting specimens of ammonites with crioceroid coiling, small growth, and simple rib-formation. In the past, G. Mazenot [2] described similar ammonites from the Berriassian of South-Eastern France as *Leptoceras* sp. indet. Later on I. Sapunov [4] and T. Nikolov [3] found such ammonites in the Berriassian stage of the Eastern Fore-Balkan, referring them to the genus *Leptoceras* Uhlig and identifying them with *Leptoceras studeri* (Ooster). The new abundant material collected shows that these identifications were incorrect. The existing common morphological features between the Berriassian ammonites referred to and those of the Barremian species *Leptoceras studeri* (Ooster) are due to *homeomorphy* and not to direct phylogenetic relations.

A detailed investigation of the Bulgarian collection available made it possible to sort out the variations and the stable basic features which furnished grounds to maintain that these ammonites are a novelty to our knowledge on the ammonite content of the Berriassian sediments. That is why it would be desirable to separate them in the new genus *Protoleptoceras* gen. n. whose detailed description will be the subject of a subsequent report by the author.

Family **BOCHIANITIDAE** SPATH, 1922

Subfamily **PROTANCYLOCERATIDAE** BREISTROFFER, 1947

Genus *Protoleptoceras* gen. n.

Type-species. *Protoleptoceras jelevi* sp. n. Berriassian, Boissieri Zone, Eastern Fore-Balkan, Bulgaria.

Generic Characteristics. Ammonites of small growth, with a crioceroid coiling of the shell in an ellipsoidal and flat spiral. Relatively low whorls of compressed cross-section. Development is progressive. The whorls are contiguous at their inner sections without embracing one another. The

periments [7-9], but has found no satisfactory explanation. The relation between the increased incorporation of ³²P into ribosomal RNA and its net synthesis predicted by the model is the same as found after partial hepatectomy [8-10]. As shown in Fig. 4, the same reaction of cellular proliferation is obtained after removal of cells. Here in a group of eight cells the number of cells is reduced to one. This results in four successive divisions leading to a new steady state of 16 cells which stop dividing.

An important conclusion from the simulated curves is that when the steady state is disturbed the cells don't enter directly the mitotic cycle, but there is a period preceding the phase G₁. During this period (D) the production of both repressors R₁ and R_m is initiated. Due to the positive feedback, the production of one of them is quickly stopped and the cell enters either the G₁ period or returns to its initial state. The "choice" depends on the changes induced in the chain C₁ → X₁ → R₁ during the phase of injury (I) and on the parameters of the whole system. This "period of decision" (D) should be present in all cases when the steady state of the cell is disturbed.

The general conclusion can be drawn that the reaction and the time course of the curves simulated by the computer are in good agreement with the experimental data. Although this can not be a rigorous proof of

the correctness of all assumptions made in this study, it favours the idea that the basic mechanisms of autoregulation assumed in the model are correct.

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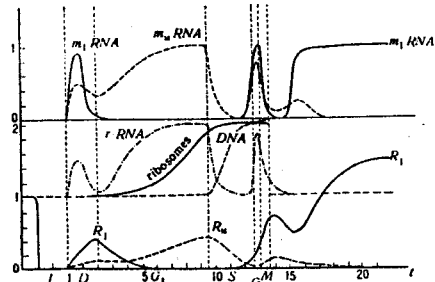


Fig. 3. Effect of the neutralization of R₁ as simulated by the computer

ped and the cell enters either the G₁ period or returns to its initial state. The "choice" depends on the changes

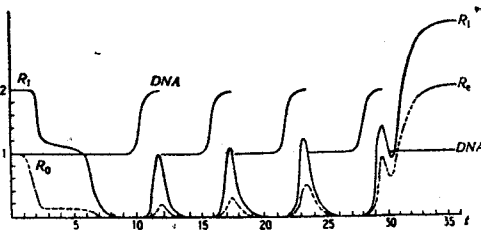


Fig. 4. Effect of removal of cells as simulated by the computer

last whorl is bent like an arch and is detached from the inner whorls. The ornamentation is composed of simple ribs only. They are fine and rather densely situated in the inner whorls, gradually becoming thicker and sparser. All ribs pass through the ventral region without interruption.

Remarks. By the general type of involution and the character of its ornamentation, *Protoleptoceras* gen. n. is closer to *Protancyloceras* Spath from which it probably originates. It differs: 1) in the contiguity of the inner whorls, 2) in its finer ornamentation, 3) in the absence of ventral furrow or band, and 4) in the presence of simple ribs only.

Distribution. The new genus is represented by a species established in the Berriassian stage of Bulgaria and of South-Eastern France in association with Berriassian ammonite species of the genera of *Berriasella*, *Spiticeras*, *Protacanthodiscus*, *Neocosmoceras*, etc.

***Protoleptoceras jelevi* sp. n.**

1907. *Leptoceras* sp. Kilian, p. 183

1939. *Leptoceras* sp. Mazenot, p. 245, pl. XL, Fig. 1, 2, 4 (non fig. 3).

1957. *Leptoceras studeri*: Sapunov, p. 160, pl. III, fig. 4, 5, 6, 8, 9.

1960. *Leptoceras studeri*: Nikolov, p. 192, pl. XXVI, fig. 5, 6; pl. XXVII, fig. 2, 3, 4.

Type. Holotype BAN Cr₁ 1194. Berriassian stage, Zlatarishka River to the north of the village of Razpopovtsi, near the town of Elena, Eastern Fore-Balkan. The species bears the name of the Bulgarian geologist Stoyno K. Jelev who provided the first specimens of these ammonites for investigation.



Fig. 1. *Protoleptoceras jelevi* sp. n., holotype BAN Cr₁ 1194. Berriassian stage, Boissieri Zone, in the section of the valley of the Zlatarishka River to the north of the village of Razpopovtsi, near the town of Elena

Diagnosis. Small ammonites with a crioceroid coiling of the shell. The inner whorls are contiguous. The last whorl is wide apart and arcuate. The ornamentation consists of simple ribs of varying density. All ribs pass

through the ventrum. The dorsal wall is smooth. The variations in the ornamentation of the new species are in the number, thickness, and density of the ribs. Distinction is made between three groups on that basis, namely: a) with dense rib-formation, b) with moderately dense rib-formation, and c) with very sparse rib-formation.

Age. Berriassian stage, Boissieri Zone.

Locality. Eastern Fore-Balkan — the rivers of Zlatarishka, Veselina, Miykovska, Belitsa, Vrana, and Kozya Reka.

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