

CERTAIN STRATIGRAPHY AND CORRELATION PROBLEMS OF THE APTIAN IN BULGARIA

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Aptian sediments are widespread on the territory of North Bulgaria. They manifest a considerable facies diversity and complicated spatial configuration of the individual litho-bodies. In the course of intensive biostratigraphic investigations carried out in Bulgaria in the last 7-8 years, there arose interesting problems related to Aptian sediments stratigraphy and correlation of Aptian deposits in the whole Mediterranean (Tethys) area.

The triple substage subdivision of the Aptian stage is adopted in Bulgaria, each of these substages being further divided into ammonite zones (Table). This zonation pattern has been deduced on the basis of detailed observations on ammonite sequences in selected representative sections of this country's various parts.

Data, very interesting from a biostratigraphic viewpoint, were obtained in the course of studying the lower boundary of the Aptian Stage. The presence of colchidite beds in a number of sections in North-Eastern Bulgaria was shown: near the villages of Ostritsa, Katselovo, Opaka and Gurchinovo; moreover, their stratigraphic ranges are the topmost parts of the Barremian Stage—the basement of the Aptian Stage. In point of fact these results were published as early as 1983 [6] and were confirmed by revisions of the Aptian section in Bulgaria which followed. Taphonomic analyses of ammonite localities in these sections indicated that they were formed under conditions of normal clayey-carbonate sedimentation without any symptoms of interruption and condensation. Ammonite shells of all species found had sizes bigger than the normal dimensions and magnificent ornamentation, i. e. habitation conditions exclusively favourable. For example, the diameter of the g. *Kutatissites* shell varies usually between 60 and 100 mm, while the specimens found in Bulgaria have diameters between 220 and 310 mm or three to fourfold bigger. The same is valid for the other genera: *Procheloniceras*, *Costidiscus*, *Pseudohaploceras*, *Audouliceras*, etc.

Table
Zonal subdivision of the Aptian in Bulgaria

Stage	Substage	Ammonitic zone
Aptian	Upper (Clansaysian)	<i>H. jacobi</i> <i>A. nolani</i>
	Middle (Gargasian)	<i>E. subnodosocostatum</i> <i>E. martinioides</i>
	Lower (Bedoulian)	<i>D. deshayesi</i> <i>P. pachystephanum</i>

The Colchidite 'horizon' in North-Eastern Bulgaria is 1.5-8 m thick. The genus Colchidites is found in its lower part together with the typically Barremian genera: Heteroceras, Hamulina and Anahamulina. In its upper part along with Colchidites ammonites of the g. Procheloniceras are found en masse. This genus marks the first appearance and mass development of the Douvilleiceratidae. We had the chance to come across several specimens in which Colchidites and Procheloniceras are actually next to each other.

All specialists are well aware of the results from studies by the Georgian stratigraphists who showed that the Colchidites horizon should be referred decisively to the uppermost parts of the Barremian stage [1, 2]. These conclusions were also confirmed by French researchers and by finds in South Africa as well [4].

How then should the biostratigraphic facts, established in North-Eastern Bulgaria, be interpreted? In our opinion they reaffirm the point of view that the extinction of individual taxa is a process which has been sudden on rare occasions and is isochronic everywhere. The existence of the so-called 'shelter' is known in the theory, where favourable conditions were preserved and the old faunas continued their existence there over a longer period of time. In all probability, such was the nature of the Early Cretaceous basin on the territory of North-Eastern Bulgaria. This conclusion could establish itself not only because of the delay shown in the extinction of Colchidites at the beginning of the Aptian. Well known is the fact that in North-Eastern Bulgaria *Pseudothurmannia angolicostrata* were found together with *Crioceratites emerici* in the base of the Barremian stage, as well as the abundant finds of *Macroscaphites yoani* in the basement of the Middle Aptian substage. Everywhere in the Mediterranean area, North-Western Bulgaria included, *M. yoani* is considered to be a typical Barremian species.

Obviously, in this case we face the so-called 'transition horizons', well known from stratigraphic theory and practices [3] in which they are found together with faunistic elements from both the underlying and overlaying stratigraphic units. Moreover, several variations for a biostratigraphic solution to trace out the boundary are possible. In Bulgaria the boundary between the Barremian and the Aptian stages passes inside of the Colchidites horizon up to the complete disappearance of the genera Heteroceras and Anahamulina and the appearance of Procheloniceras and Kutitissites. This new biostratigraphic decision to trace it out there has established itself in accordance with the following considerations: (1) because of the determined delay in the dying out of the Colchidites in the Province; (2) in this case prevalence is given to the appearance of the new systemic group of ammonites (g. Procheloniceras of the family Douvilleiceratidae) which is interpreted as simultaneous for the entire Mediterranean area.

The study of the ammonite content of the Upper Aptian (Clansayesian) substage in Bulgaria also resulted in interesting new results. Representatives of the subfamily Venezuelliana, species of the genera Venezuella and Renziella were found for the first time. So far these ammonites were solely known for localities in South America [6], i. e. they were considered to be endemic. In Bulgaria they were found in three sections and everywhere they associated with typical Clansaysian ammonites [7]. Their establishment in Bulgaria's Aptian stage indicates that they are to be found in sediments of a Late Aptian age both in the Caribbean and the Mediterranean areas which in turn allows long-distance correlations.

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