# LOWER AND MIDDLE CRETACEOUS ORBITOLINID-BEARING ROCKS OF HUNGARY

**A. Görög**

**Budapest**

Orbitolinids occur in several late Barremian to early Cenomenian formations of the two megatectonic units of Hungary. The correlation of the studied formations is based mainly on orbitolinid biozones. Generally, orbitofonids occur in the formations of Urgonian facies, which are heterochronous. In addition to these occurrences, layers with orbitolonids may be found in facies transitions outside the Urgonian sequence.

A summary of the biostratigraphic and paleogeographic distribution and of the paleoecology of the orbitolinids in Hungary will be given. A great number of surface and borehole sections was investigated. Besides the traditional approach, the morphological parameters have been statistically evaluated.

Tisza Unit: Villány zone. The orbitolinid-bearing Nagyharsány Limestone Formation (Upper Barremian-Lower Aptian) was recorded in boreholes of the area between the Danube and the Tisza and on surface sections of the Villány Mountains. In the lower part of the sequence, which belongs to the Barremian-Early Aptian *Orbitolinopsis cuvillieri* zone, a southwestern affinity is evident. The sequence above is characterized by the Lower Aptian *Preorbitolina cormyi-wienandsi* and *Palorbitolina lenticularis* zones with *Paleodictyoconus actinostoma*. In the Upper Aptian, the *Orbitolina (Mesorbitolina) texana* zone with *Diytyoconus pachymarginalis* and in the Lower Albian the Simplorbitolina manasi-conulus zone have been recorded. The area of distribution belonged to a large province which extended form southwest Europe to the Middle East.

Pelso Unit: Transdanubian Central Ranges. Orbitolinids occur in large quantities in four formations. The shallow-basin facies of the Vértessomló Aleurit Formation and the Toucasia reef limestone of the Környe Limestone Formation intarfinger partly with the lower part of the paludal-lacustrine-marine Tés Clay Formation; thay can be traced only in boreholes in the foreland of the Vértes Mountains. The transition beds are often orbitolinits, containing *Orbitolina (Mesorbitolina) texana* and *Orbitolina (Mesorbitolina) subconcava*. The lower part of the sequence is characterized by a dominance of *Orbitolina (Mesorbitolina) texana*; upwards in the section, *Orbitolina (Mesorbitolina) subconcava* is more frequent or the even the only species. It indicates a Lower Albian age. In the upper part of the Tés Clay Formation and the overlying Urgonian platform-like reef, the Zirc Limestone Formation can be bound in numerous outcrops of the Bakony Mountains. The revision of *Orbitolina beconica* MEHÉS from the Tés Clay, which is the stratum typicum of this species, is presented. *Orbitolina (Mesorbitolina) aperta*, co-occurring with *Orbitolina (Orbitolina) concava* and *Orbitolina (Orbitolina) sefini*, was determined from the Stoliczkaia dispar ammonite zone of the Zirc Limestone Formation. These data suggest an Upper Albian-Lower Cenomanian age.

## LOWER CRETACEOUS AMMONITE BIOSTRATIGRAPHY AND SEQUENCE STRATIGRAPHY

**Ph. J. Hoedemaeker**

National Museum of Natural History, Leiden, The Netherlands

The Lower Cretaceous succession along the Rio Argos (Caravaca, SE Spain) consists of a cyclic alternation of marly coccolite limestone and marlstone beds. Ammonites constitute 99% of the megafossils. In this continuous Tethyan pelagic section of Barriasien to Barremian age, the position of the various system tracts has been determined and dated by ammonite biostratigraphy. There are several sequences in addition to those marked by Hag et al. (1988) on the Mesozoic-Cenozoic cycle chart.

In this succession, several important tumovers in the ammonite fauna could be demonstrated. Similar tumovers also occur elsewhere in the Mediterranean province at the same stratigraphic levels. They are accompanied by minima in the number of species. These oligotaxis minima are preceded by beds in which the extinction rate greatly exceeds the origination rate. This rate is reversed in the beds following the minima. Accordingly, the ammonite composition of the subjacent and the suprajacent subzones differs considerably.

The supraregional distribution of the zones implies a supraregional cause of the faunal changes: They are ascribed to severe eustatic sea-level drops (Hoedemaeker, 1983). During these drops, the shelf biotopes of many ammonite species were pushed over the shelf edge and severely telescoped. This enhanced selection pressure and ultimate extinction. In the Rio Argos section the levels of faunal tumovers are very close to or coincide with sequence boundaries in which the rates of relative sea-level drops are greatest.

Invariably, oligotaxic minima/faunal turnover dirctly follow pronounced maxima in the number of concurrent ammonite species. These polytaxic maxima are of supraregional significance as well.

They correlate well with major incursions of warmwater organisms into the boreal basins of north Germany (KEMPER & WIEDEROTHM 1987; MUTTERLOSE, 1988, 1991) and equally with major transgressions on platforms of the Mediterranean region (ARNAUD - VANNEAOU, & ARNAUD, 1991) and other part of the world. The maxima are therefore interpreted as coinciding with the highest sea-level stands. The rate of the immediately following relative sea level drops was therefore extraordinarily severe.

However, not each sequence boundary is accompanied by a faunal turnover; this