

MICROFACIES OF UPPER EOCENE CARBONATE ROCKS  
IN BUDAPEST, HUNGARY

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A detailed microfacies analysis of the Upper Eocene carbonate rocks of the Buda Mts. has been worked out /Nummulites -- Discocyclusina limestone, bryozoan marl and lowermost part of Buda Marl/. Ten genera of Rhodophyta, 15 genera of Foraminifera, a hydrozoan, corals, bivalves, gastropods, worms, bryozoans, echinoderms and calcispheres were identified in thin sections of 176 samples from 4 boreholes and 5 surface exposures. Composition, texture, average and maximal grain size of components, energy index and percentage of fossils were determined for each sample and are shown in microfacies diagrams /Fig. 1/. Palaeontological and petrographical characters of the rocks were taken into equal consideration. The diagrams contain interpretative elements as well: supposed depositional depth compared to sea level and wave base; they also contain the delineation and name of microfacies types.

Twenty three microfacies types have been differentiated and 19 of them could be arranged into the microfacies model shown on Fig. 2. The other four types belong to younger formations or to formations of uncertain age.

The 19 microfacies types in the model correspond to 7 distinct sedimentation environments, listed in increasing depth and/or shore distance, as follows:

- conglomerate fan of a rocky coast /microfacies 1A to 2/;
- open circulation lagoon, mostly above wave base /MF 3 to 5 and 8/;
- coral-algal mud-mound, probably below wave base /MF 6A and 6B/;
- carbonate sand shoal, partly emerged above sea level /MF 7/;

- outer part of the shallow shelf with *Discocyclus* banks /MF 9A to 9C/;
- medium deep shelf with bryozoan limestones and marls /MF 10 to 12/ with increasing ration of terrigenous material due to inhibition of carbonate production;
- shelf margin and upper continental slope /MF 13/ with clayey Globigerina-wackestone.

This model represents a transgressive sequence, shorter or longer parts of which are exhibited in the examined sections.

The four microfacies types besides those mentioned in the model are the following:

- an echinoderm-alga-foraminifera-packstone with much rock fragments and the peculiar encrusting foraminifer Gypsina, which forms small tubes around plant stems. This rock was deposited in a shallow marine environment where a rich sea-grass vegetation flourished. Its age is uncertain within Priabonian time.
- Nummulites-floatstone with redeposited larger foraminifers. Younger than the mud-mounds but older than bryozoan marls /Priabonian/.
- Unfossiliferous calcareous sandstone-siltstone deposited within karstic cavities. Younger than the mud-mounds, but older than bryozoan marl.
- Allodapic limestone beds intercalated within Buda Marl /Priabonian/ and Tard Clay /Kiscellian/ sequences /BODA and MONOSTORI, 1972; VARGA, 1982/.

These rocks show that during Late Eocene-Early Oligocene time there was a more or less continuous production of shallow marine carbonate sediments in the Buda Mts.