MICROMINERALOGICAL AND CLAY MINERALOGICAL STUDY OF THE EPLÉNY LIMESTONE FORMATION, ÚRKÚT, HUNGARY

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This presentation reports on the mineralogical study of the Eplény Limestone Formation (Dogger) overlying the Úrkút Manganese Ore Formation in the Bakony Mts., Hungary.

The sequence consists of three types of sedimentary rocks appearing as thin and apparently randomly alternating beds. The three types can easily be distinguished both on the walls in the adits and in the laboratory, during density and grain size separations, in thin sections, X-ray powder diffractograms, chemical and electron microanalytical investigations.

The soft, greenish type of layers has low silica content. It consists of lamellae of Bositra shells and small amounts of siliceous radiolarians and sponge spicules in a micritic–clayey matrix.

In the lamellar, harder, greenish grey transitional type layers the lamellae of Bositra shells are cemented by opal. They alternate with micritic–clayey lamellae similar to the material of the previously described type, containing large numbers of both siliceous and pyritic radiolarians and sponge spicules.

The third type, a hard, grey, silicic limestone is characterised by high silica content, an almost complete lack of sheet silicates, randomly oriented Bositra shells and many (not pyritic) radiolarians and sponge spicules.

All three types have a high carbonate content (27–40 wt%), apatitic fish fossils, quartz grains, muscovite, a little biotite and a small amount of fine-grained pyrite aggregates. It can be seen that the differences between the beds show up mainly in the extent of diagenetic silicification-opal formation and pyritisation and in clay mineral content.

The results of the study include the description of pyritic fossils, the relation between Bositra shells and opal formation and the identification of apatite grains as fish fossils. These results serve as a basis for further research that may provide a better characterisation of this marine succession and supplement new data for the better understanding of chemical and biological processes on the sea floor.

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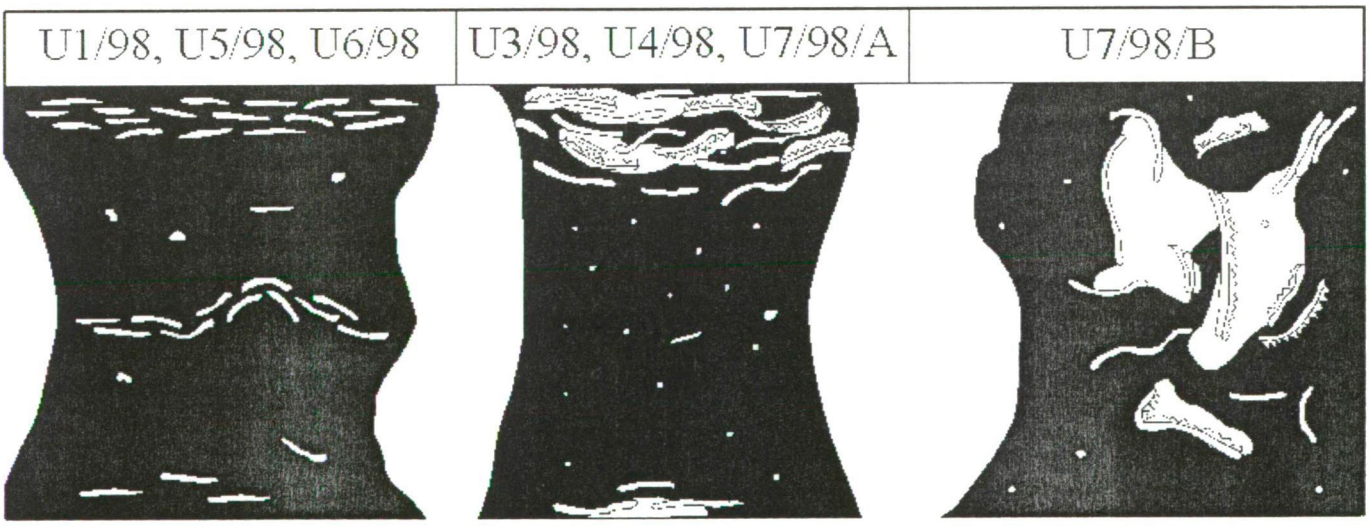

Fig. 1: Schematic comparative drawings of thin sections of the three different rock types described. The height of the picture is about 3 mm. The black parts represent the fine grained clayey matrix, the thin white strips the Bositra shells, while the larger white areas refer to silica precipitation.
The differences among the three rock types are mainly in the size and orientation of the Bositra shells and in the intensity of silica precipitation. The soft greenish rock (samples U1/98 etc.) contains smaller and oriented shells, a larger amount of fish fossils (white spots on the left side figure) and no trace of silica precipitation can be observed. For the lamellar, harder rock type (U3/98 etc.) larger shells in less oriented position are typical. The shells are cemented by silica (opal). Pyritic and siliceous radiolarians and sponge spicules (small white dots on the middle figure) are frequent. The hard, grey rock type contains larger blocks of opal (a syndiagenetic precipitate) and larger shells. No trace of (diagenetic) pyritisation of the radiolarians and sponge spicules (small white dots on the right side figure) can be observed.