

THE PHOSPHORITES OF KHUBSUGUL-THE MODEL OBJECT FOR STUDY OF ANCIENT BACTERIA.

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The Khubsugul (Northern Mongolia) is one of the largest deposits of ancient phosphorites. The genesis of Khubsugulian phosphorites was interpreted as chemical settling of phosphor from the near-bottom waters in the upwelling zones. According to palaeomagnetic and biogeographic data, the Khubsugul Basin was situated in low latitudes, so in hot climatic conditions. All types of the phosphorites were collected for study. The samples were studied by common optical methods and using SEM with micro-analyzer. It was found out, that phosphorites are entirely composed of bacterial communities of different types, mostly cyanobacteria. The cyanobacterial mat was preserved in the phosphorites as micro-stromatolites, micro-oncolites and micronoddles (the latter strongly dominated). The size of micro-noddles is tens or hundreds microns. The micro-noddles are rounded in shape, composed of interlacing phosphatized thread covers of different diameter and globular, sprindle and dumb-bell forms. The pseudomorphoses on purple (?) and some other bacteria of nanometer dimension could be observed between the phosphatized covers and threads. In some cases we observed a full structure of recent mat. Micro-stromatolite structures are better to study by optic microscope in thin section, while the micro-oncolithes and micro-noddles in SEM. The micro-oncolites, found in phosphorites, differ from common ones by smaller sizes. The layers, which form the micro-oncolite, are composed of small coccoid-like forms. But the periphery of the micro-oncolite also contains thread covers, like those in the micro-noddles. The microorganisms state of preservation, especially of cyanobacteria, is unique. This fact gives an opportunity for detailed study of morphology and structure of cyanobacterial mats. Ushatinskaya G.T., Ragozina A.L.