PALEOZOIC ENDOGENIC REGIMES AND METALLOGENIC FEATURES OF ORE-BEARING BLOCKS IN THE BOHEMIAN MASSIF

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1. The inner structure of Bohemian Massif Variscan composed of folded metamorphic complexes is formed by tectonic blocks – synclinoria and anticlinoria – developed at Paleozoic subgeosyncline throughs and uplifts.

Synclinoria are characterized by a reduced ancient thickness of the crust and its sialic part, low-grade metamorphism of Prevariscan basement, and by limited spatial development of postkinematic (orogenic) granites. Anticlinoria in the Bohemian Massif marginal areas have much in common with synclinoria. However, anclinoria in the core of the Bohemian Massif have an increased thickness of the crust and of its sialic part, high-grade metamorphism of the Prevariscan basement and wide development of granites.

2. The differences in the structure of these tectonic blocks resulted from their evolution in different endogenic regimes. The anticlinoria which developed in the uplifted blocks in the core of the Bohemian massif are characterized by intense multistage deep-seated tectonic processes accompanied by the ascent of mantle fluids and of heat flow. In all other tectonic blocks deep-seated tectonic processes developed under relatively moderate thermal regime of the crust.

3. In the Upper Carboniferous endogenic processes caused an intense granite generation in the anticlinoria within the core of the Bohemian massif. During this process enormous geochemically specialized intrusive-anatectic systems were formed in the time interval of 50–70 Ma. In the blocks with homogenous sialic substrate like in the Krušné hory (Erzgebirge) – Smrčiny (Fichtelgebirge) anticlinorium there originated series of granite-leucogranite type. In the blocks with heterogenous structure of varigated composition (Moldanubian anticlinorium) there formed the series of a granodiorite-granite type.

4. Metallogenic specialization of tectonic blocks in the Bohemian Massif and intensity of their ore-forming processes are directly dependent on endogenic regimes. In synclinoria characterized by a weak manifestation of deep-seated petrogenetic processes (the Thuringian, Barrandian and other synclinoria) small-sized accumulations of pyrites-ores of stratiform type originated.

The anticlinoria with an intense spatial development of postkinematic specialized granitoids were the most ore-enriched of blocks of the Bohemian Massif. In spatial and temporal association with the granite series of various petrochemical types many hydrothermal deposits were formed in these blocks: Sn-W, Zn-Pb-Ag-(Cu-Au), Sb, F, U, associated with the granite-leucogranite series (the Krušné hory (Erzgebirge) – Smrčiny (Fichtelgebirge) anticlinorium), and Au, Zn-Pb-Ag-Cu, Sb, U, associated with the granodiorite-granite ones (Moldanubian anticlinorium). Composition variations in the indicated series correlate with geochemical specialization of postkinematic granites and with the specialization of their ore-bearing solutions in halogens: the chloride-fluoride type is characteristic of granite-leucogranite series and the chloride type the granodiorite-granite one.

STRUCTURE OF THE BOHEMIAN MASSIF

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This contribution will examine and comment some aspects of this complex grouping of problems. A brief review of structural division of the Bohemian Massif will be presented with emphasy on alternatives receiving wider acceptance.

Disparity of the main geotectonic zones in the Hercynian fold belt, i.e. Rhenohercynian, Saxothuringian, and Moldanubian is noted. The Moldanubian zone will be discussed in some detail, as this least understood and controversial unit yielded much new information during the last decade. In methodology of large scale tectonic structure analysis there is continuing preference for the tectonostratigraphic approach. At present, the following main units are widely recognized: