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LETTERS OF THE WORKING GROUP ON MANGANESE FORMATION OF INTERNATIONAL ASSOCIATION ON THE GENESIS OF ORE DEPOSITS

REPORT ON RECENT WORK IN MANGANESE ORE RESEARCHES IN CZECHOSLOVAKIA (1966—1970)

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In the last years, it was especially the Algonkian manganese carbonate and pyrite deposit of Chvaletice (E. Bohemia), where new studies on mineralogy and paragenesis have been made.

Detailed mineralogical studies on helvite [F. ČECH and P. POVONDRA, 1969], axinite and Ba-adularia [V. HOFFMAN and F. NOVÁK, 1966], dravite F. NOVÁK and L. ŽÁK, 1970], pyrophanite [L. ŽÁK, in print], and melanophlogite [L. ŽÁK, 1967; in preparation] have been made. Some further Mn-silicates from the deposit are under study. The research of sedimentary and vein Mn-carbonates will also be completed.

As far as concerns the minerogenesis, a new conception of metamorphic processes has been elaborated [L. ŽAK, 1970, 1971]. The sedimentary syngenetic manganese-pyrite ores, genetically connected with a basic initial geosynclinal volcanism, were subjected to a regional epizonal hydrothermal metamorphism. The processes were due to an intraalgonkian phase of the Assyntian orogenesis from a great part. The hydrothermal metamorphism of the ore deposit was most intensive in a tectonic zone, rimming the Chvaletice granite massif. The granite massif follows an important NW-SE tectonic line between the epi- and mesozonally metamorphosed Proterozoic rocks. It is pegmatite-defficient and hydrothermally metamorphosed together with the hanging wall Algonkian sediments. No minerals documenting a temperature above 500° C in the direct granite contact have been observed. The hydrothermal metamorphism of the ore deposit produced fine-grained hornstones with Mn-silicates, pyrite, pyrrhotite etc. and the vein minerals, including Mn-carbonates, Mn-silicates, sulfides and oxides as well. Three etaps of metamorphism can be distinguished, the last one being of a low temperature, Alpine paragenesis type. The succession on veins documents subsequent metamorphic mobilization of the major (Mn, Fe, C, S) and minor or trace (Si, Ti, B, Be, As, Cr, Zn, Pb, Cu etc.) elements of the ore. Metasomatic vein mineral replacements are frequent. The temperature interval from the first metamorphic etap, following the granite intrusion probably, to the third one was estimated to have been between 400 and 100° C. probably. The last etap may be younger than Algonkian.

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