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## Ore Deposits; and Experimental Geochemistry, 2

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08h 30m, April 20

(V93) • FARGUK EL-BAZ (Mineralogisch-Petrographisches Inst., Univ. of Heidelberg, West Germany), *In Situ Sulfurization of Some Minerals in the Missouri Lead Belt*. Pb-Zn-Cu-Fe-Co-Ni sulfide ore minerals occur in upper Cambrian orthoquartzites and dolomites in the southeastern Missouri lead belt. Layered concentrations of marcasite, pyritebravoite, siegenite, and chalcopyrite in the Fredericktown and Higdon districts display diagenetic structures which suggest a syngenetic origin; the source of the ore-matter is volcanic-exhalative. Sulfur in excessive amounts appears to have reacted with certain rock-forming minerals during diagenesis, thereby extracting cations to form sulfides, in place. Sulfur reacted with silicates and oxides as well. Its reaction with biotite grains embedded in dolomite produced pyrite and Ca-K silicates, the composition of which was revealed by the electron microprobe. Much of the Fe of Fe-glaucophanes was leached by reaction with sulfur. In sandstones, S reacted with titanomagnetite and/or ilmenite to form rutile and anatase. Accessible S must have also existed in the immediate vicinity of thorites, where galena formed as a product of radioactive decay. These reactions could have taken place only in situ. They must have occurred under low-temperature conditions. Similar reactions have been proven valid by experimental work, under relatively higher temperatures.