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THE ORIGIN OF THE TUNGSTEN ORES OF BOULDER COUNTY, COLORADO.

T. S. LOVERING.

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T. S. LOVERING.

BOULDER COLO. TUNGSTEN

E.W. to T.S. Lovering, 12/29,41. Comment on his paper Origin of the Tungsten Ores of Boulder Co.,Colo.,
L.makes igneous rock most nearly contemp.with W ores that genetically connected with them. Common sense;should work out time relations in each district. Hulin, Mineralization from asic Magmas,
. L's evidence for close time relation between biotite latite intrusions and W veins is mainly tectonic,similar to my RDM reasoning. Tectonic is best evidence esp.when backed by Newhouse conception that most dike and vein fractures were not inert,permeable, but were forming or reopening when dike or vein came along. L evidence based largely on fact bi-latite dikes carry frags early pyritic vein qtz,but dikes antdedate gold-telluride-tungsten mineralization. This is tectonic evidence: "...definite evidence was found that biotite latite and latitic intrusion breccia were intruded during one of the last of the movements that affected the veins."

Shifting of major channels of circulation owing to IM fault movements. Tectonic channels. Newhoue notion that IM fault movements are expressions of larger tectonic movements that released magmatic solutions, of dike material and related vein matter as well.

Lovering to E.W.,1/12/42.

Yellow Oine Mine,Bldr.Co.,at intersection of the two veins could see 7 periods of alternating movements 1st on 1 vein then on the other.Bilatite porphyry came in between Stages 5 & 6;gold telluride & tungsten ores,between Stages 6 and 7. However,hthere was only one earlier period of mineralization in these veins (qtz-pyrite);thinks other,barren tectonic periods not related to intrusion or the formation of a vein.While few intrusiins near this mine,magma movements at great depth might have been reflected by faulting near the surface,but not by migrat ion of magma near all the places where fracturing occurred. But any purely orogenic movements would according to the law of least work seek out preexisting flaws in crust. Again,relatively shallow crustal movements might not disturb an underlying magma,whereas deep movement would reach down to the magmatic reservoirs. Inclines to think that tectonic movements trigger the release of mineralizing solution rather than that the movements themselves are due to movements of magma- in agreement with Newhouse.

E.W.note: Intrusion commonly accompanies orogeny;which originates which is unknown. Certainly with uplift-origeny major magmatic movements could be the originating cause. But after the start,it would seem that tectonics could guide magmatic movements, and magmatic movements induce faulting & ~~faulting~~ folding. Thus with the rise of a geanticline tension fissures could guide magma upward;but magma,induced by some layer of little resistance to move laterally, could produce the type of lateral crustal movement,in the upper layers,shwn at Pachuca bythe fact antithetic shear planes renewed themselves-margin of glacier, secondary crustal movements. Thus a double action would double results.