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LATE CRETACEOUS AGE FOR MOLYBDENITE MINERALIZATION IN CUSTER COUNTY, IDAHO*

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About 86 m.y. ago, hydrothermal solutions produced a stockwork of quartz-molybdenite-pyrite veins within a small, isolated quartz monzonite stock that is probably a cupola or satellite pluton related to the Idaho batholith. A somewhat larger stock crops out about a mile to the northwest, and the west border of the main Idaho batholith lies about 5 miles to the southwest as shown on the regional map of Ross (1937). Several scheelite deposits, some of which contain molybdenite, are found in the contact zones adjacent to the batholith (Choate, 1962, p. 99-100) and the larger stock (Cook, 1956, p. 22-23). Biotite from a sample of the Idaho batholith from this area gave an age of 94.5±1.9 m.y. (written communication, 1971, from R. F. Armstrong of Yale University). Thus, it seems very probable that this molybdenite-bearing stock was emplaced about 94 m.y. ago and was mineralized about 86 m.y. ago.

The mineralizing solutions sericitized large parts of the stock and destroyed the primary mafic mineral biotite, but produced coarse muscovite and (or) biotite in intimate association with molybdenite in the selvages of the quartz-molybdenite-pyrite veins. The molybdenite is largely confined to the stockwork of quartz veins rather than being disseminated through the quartz monzonite.

Both molybdenite and scheelite mineralization is widespread in this part of Idaho, being associated with intrusive rocks of either Late Cretaceous or Eocene age. Scheelite is most commonly found in contact zones, whereas molybdenite is most commonly found within the intrusive rock with the very important exception of the large low-grade molybdenite deposits in the contact aureole of the White Cloud stock.

SAMPLE DESCRIPTION

1. USGS(D)-D2215 K-Ar (muscovite) 85.9±3.0 m.y.
(biotite) 86.9±3.0 m.y.

Molybdenite vein material (Sec. 2, T11N, R16E; 44°19′09″N, 114°32′09″W; from the dump of an exploration tunnel of Cyprus Mines, Inc., on Pat Hughes Creek, Custer Co., ID) in a quartz monzonite stock. Analytical data: (Muscovite) K_2O = 9.95% & 9.81%; $\overset{*}{Ar}^{40}$ = 12.81 x 10^{-10} moles/gm; $\overset{*}{Ar}^{40}/\Sigma Ar^{40}$ = 88%. (Biotite) K_2O = 9.56% & 9.51%; $\overset{*}{Ar}^{40}$ = 12.51 x 10^{-10} moles/gm; $\overset{*}{Ar}^{40}/\Sigma Ar^{40}$ = 87%. Collected by: C. M. Tschanz, U. S. Geological Survey; analyzed by: R. F. Marvin, H. H. Mehnert, and Violet Merritt, U. S. Geological Survey. Constants used are: λ_ϵ = 0.585 x 10^{-10}/yr; λ_β = 4.72 x 10^{-10}/yr; K^{40}/K_{total} = 1.22 x 10^{-4} gm/gm.

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