THE MT. ANTERO GRANITE, SAWATCH RANGE, COLORADO [1]

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ABSTRACT: The Mt. Antero granite is the youngest of seven separate igneous intrusives that make up the Mt. Princeton batholith. Biotite from the Antero granite has a K/Ar age of 30.8 m.y. The granite formed by differentiation of a quartz monzonitic magma. The granitic fraction was deficient in water as indicated by the less than 6 percent hydrous minerals, few pegmatites, and a lack of hydrothermal alteration. Mean trace metal contents of copper, lead, zinc, and molybdenum in the Antero granite and related aplites and pegmatites are 6.5 ppm, 11.8 ppm, 25.1 ppm, and 1.9 ppm, respectively. Except for molybdenum, the trace metals are considerably lower than reported felsic igneous rock averages. Copper and molybdenum show a positive correlation which suggests similar distribution patterns. Zinc and lead do not show correlation with each other or with copper or molybdenum. The zinc may be related to biotite and the lead to potash feldspar.

INTRODUCTION

Regional geologic studies of the Sawatch Range have shown that the area is a north-northwest-trending uplift with a broad crest and sharply folded and faulted limbs (Tweto and Sims, 1963). The Mt. Antero area is at the southeastern end of the Sawatch Range, within the Mt. Princeton batholithic complex. Crawford (1913) described most of the intrusive rocks of the complex. Detailed studies of the southwestern (Dings and Robinson, 1957), northern (Brock and Barker, 1966), and southeastern (Pulfrey, 1970) portions of the batholith have been completed. Detailed reports on pegmatites of the area are available (Landes, 1934; Switzer, 1939; Adams, 1953). The present report presents data on petrogenesis of the batholithic complex, as well as data on trace metal contents of the Mt. Antero granite and genetically related pegmatites and aplites.

REGIONAL GEOLOGIC SETTING

The Mt. Antero region is flanked on the east by the Upper Arkansas-Rio Grande rift, and to the west the upthrusted margin of the Sawatch uplift appears to have limited the extent of the Mt. Princeton batholith. The area lies within the Colorado mineral belt, which has regional northwest-trending folds and foliation and northeasterly-trending shear zones and Tertiary igneous rocks (Tweto and Sims, 1963). However, Tertiary igneous activity appears to have been concentrated along the following east-trending zones: (1) West Elk-Mt. Princeton-Whitehorn-Cripple Creek zone, and (2) the Twin Lakes-Grizzly Field-Whiterock-Elk Mountains zone. Hypabyssal intrusives intrude foliated rocks within or adjacent to the mineral belt, while extrusive rocks are more common outside or at the extreme ends of the mineral belt. There are notable exceptions, such as the Grizzly Peak rhyolite field southeast of Aspen (Fig. 1).

The Mt. Antero region (Fig. 1) consists of Precambrian metasedimentary and igneous rocks and several igneous intrusive masses of Tertiary age, which are locally covered by Tertiary and Quaternary deposits. The Precambrian rocks are schists, migmatites and gneisses. They are intruded by the Tertiary Mt. Princeton batholithic complex (Fig. 1). The batholithic complex includes the following rock units:

Youngest	Mt. Antero granite
	Mt. Aetna quartz monzonite
	Quartz latite porphyry
	Mt. Princeton quartz monzonite
	Andesite
	Mt. Pomeroy quartz monzonite
Oldest	Gneissic quartz monzonite

The relative age of Mt. Antero granite, quartz latite porphyry, and Mt. Aetna quartz monzonite are unknown, but all three intrude the other rocks of the batholith (Fig. 1; Dings and Robinson, 1957; Pulfrey, 1970).

The following discussion is restricted to the Mt. Princeton batholithic complex, and specifically to the Mt. Antero granite and its cogeners.

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