PETROLOGY OF THE ORDOVICIAN(?) BARNARD AND SILURIAN SHAW MOUNTAIN AMPHIBOLITES, CHESTER DOME, VERMONT

CARROLL, W. E., Geology Department, Colorado College, Colorado Springs, CO 80903; SCHNEIDERMAN, J. S., Dept. of Geology, Pomona College, Claremont, CA 91711-6339; NOBLETT, J. B., Geology Department, Colorado College, Colorado Springs, CO 80903

The Barnard and Shaw Mountain amphibolites are metabasalts surrounding the Chester dome. New petrographic and chemical data strongly suggest that the Ordovician (?) Barnard Fm. Formed in the same environment as the Shaw Mt. Both units should be regarded as Taconic to post-Taconic.

In the field, the Barnard can be recognized by a rounded and massive appearance, felsic bands, amygdaloidal nature, and the presence of previously unreported pillow structures. Thin, discontinuous manganese and iron-rich quartzite layers in the Barnard suggest contemporaneous deposition of iron formation. A ten-meter thick quartzite conglomerate separates the Barnard from the Shaw Mt. which has a slabby weathering pattern.

Both units are amphibolites composed of plagioclase, hornblende, actinolite, relict cpx, chlorite and sphene. The two units are petrographically and chemically indistinguishable. Little change has occurred in the bulk chemistry of these units since their formation. Both units are hypersthene to quartz-normative tholeiitic basalts. On a spider-plot these units are intermediate between modern MORB and island arc basalts (IAB). They are 10x-enriched in light REE, show a slight Eu enrichment, and resemble tholeiites intermediate between MORB and IAB.

On a tectonic setting discriminant diagrams (V-TiO_2, Sr-Zr, Al_2O_3/TiO_2-TiO_2, CaO/TiO_2, Zr-TiO_2, Nb-Zr-Y, Ti-Mn-P_2O_5), the two units are indistinguishable and plot in the area of overlap between MORB and IAB. This chemistry is typical of modern back-arc basalts. The conformable relationship between the two units and their mineralogic and chemical identity are new evidence suggesting deposition of these units in a Taconian or post-Taconian back-arc basin.