

Presentation of the Roebling Medal for 2008 of the Mineralogical Society of America to Bernard W. Evans

DONNA L. WHITNEY

Department of Geology and Geophysics, University of Minnesota, Minneapolis, Minnesota 55455, U.S.A.

It is my honor and pleasure to introduce Bernard Evans as this year's recipient of the Roebling Medal. In his quest to investigate how mineral chemistry and structure can be used to understand lithospheric evolution, Bernard has made fundamental contributions for 50 years, and is a former recipient, in 1970, of the MSA award.

A brief synopsis of the highlights of Bernard's research over the years must include mention of his classic work on muscovite breakdown and aluminosilicate phase equilibria, accomplished during his years as a postdoc and professor at Berkeley in the 1960s. At that time, Bernard was a pioneer in developing the electron microprobe for use in petrologic studies, transforming the fields of mineralogy and petrology and making possible the important advances in applications of phase equilibria that soon followed, as well as many firsts in microanalysis of minerals.

Although Bernard subsequently became well known as a metamorphic petrologist, it is important to mention that some of his most significant early accomplishments involved element partitioning between minerals and basaltic melt. In fact, magmatic phase equilibria has been a theme throughout his career. For example, Bernard investigated magmatic epidote in the 1980s and has, more recently, worked on the pre-eruptive conditions at Mt. Pinatubo.

In the 1970s, after moving to the University of Washington in Seattle, Bernard made important contributions, many with Volkmar Trommsdorff in Zürich, to understanding the phase equilibria of metamorphosed ultramafic rocks. His body of work on serpentinization is critical reading today for those investigating water in the mantle, water-rock interaction at divergent zones, and the chemical and dynamic consequences of the dehydration of subducting slabs.

The 1980s was the decade of blueschists for Bernard and many of his students. This research involved field-based study of blueschist facies rocks on the Seward Peninsula, Alaska, the Cycladic Islands, and the Shuksan in his backyard in Washington. His 1990 *Lithos* paper has had a particularly major impact. This thermodynamically rigorous (and highly cited) contribution provided simple and elegant petrogenetic grids that were a major step forward in understanding the phase relations of subduction-zone rocks.

Bernard has long been interested in amphiboles, perhaps not

surprising for a former student of Bernard Leake, and has published many papers on amphibole crystal chemistry and phase equilibria. In the 1990s, in collaboration with Mark Ghiorso, he focused on the thermodynamic properties and P - T - f_{O_2} relations of quadrilateral amphiboles. Although he retired as a faculty member in 2001, he has continued his amphibole research, as well as working on the Fe-Ti oxides.

These are just some of the topics Bernard has worked on in his career, but each one has resulted in something new and interesting that helps us understand the petrogenesis of the crystalline rocks. It is very fitting that the recent volume on *Landmark Papers in Metamorphic Petrology* was edited by someone who has written so many such papers.

Words and phrases commonly used to describe Bernard are careful, detailed, thorough, persistent, cheerful, polite, personable, and kind. These might sound like rather mild words, but it is significant that they are often paired with words like giant, visionary, and pioneer. Bernard has been described as a profound influence, an independent creative force, and an international treasure.

I was fortunate to be a student of Bernard's in the 1980s and early 1990s, when he had a large and dynamic group of graduate students. Bernard's love of rocks and minerals and thermodynamics was contagious, and he gave us a solid background in metamorphic mineralogy, petrology, and microprobeology. He also gave his students (mostly) free rein to do whatever research interested us most. For example, while some in the group worked on blueschists, I studied migmatites, and Peter Kelemen did what Peter describes best as "metamorphic petrology."

Bernard is a rare example of someone who gets to the big picture via thorough and comprehensive analysis of "the details"—the crystal chemistry and thermodynamic properties of minerals. He may well be an end-member (i.e., pure) example of a curiosity-driven scientist. In fact, I recall from my grad school days that whenever someone said "That's academic" in Bernard's presence, he responded "That's what we're here for."

For 50 years, Bernard has discovered significant research problems, investigated them in his thorough and creative way, and taught us all new and interesting things about minerals, rocks, and Earth systems. And so, it is with great pleasure that I introduce today the 2008 Roebling Medalist, Bernard W. Evans.