

## Acceptance of the Mineralogical Society of America Roebling Medal for 2008

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Mr. President, Members and Guests:

When I received President Barbara Dutrow's telephone call in Rome, my first reaction was to wonder what on earth were the Selection Committee thinking? I can name dozens of my contemporaries whose scientific accomplishments easily match mine. Certainly, Barb's call quite took my mind off the business at hand, which was, of all things, amphibole nomenclature. I can only conclude that my supporters must have written extraordinarily eloquent letters on my behalf, and of course I thank them very much for doing so. I humbly and gratefully accept this award.

The list of previous recipients of the Roebling Medal is awesome; one finds oneself in illustrious company. What most impressed a non-scientific friend when she checked the MSA web site was seeing the name Linus Pauling on the list of past recipients. Fortunately, she did not notice that only one of the sixty-nine recipients was a woman. Clearly, it's time for change.

I think all of us here really enjoy the science that we do, and wouldn't have chosen any other vocation. It affords us tremendous satisfaction, lots of travel, is only occasionally tedious, and in practical terms it earns us a living. Not so many other professions offer all this. Most important is the opportunity our science provides to exercise one's curiosity, and I suppose doing so is what brings me to the podium here today.

I cannot claim to have had any specific grand, guiding agenda. I always wanted to dig into the petrogenesis of crystalline rocks: how and why they acquired their chemical, mineralogical, and microstructural properties; and what they could tell us about things on a grander scale. Having formed by natural processes, they approximate chemical equilibrium to greater or lesser degrees, and so can be treated with quantitative phase petrology. This has allowed me to explore a great diversity of natural chemical systems—as you will see this afternoon, when I shall cheerfully link rhyolites with serpentinites, strange bedfellows perhaps. I have always found the comparison and reconciliation of input facts and data from the field, thin section, chemical analysis, experiment, and thermodynamic calculation, to be a rewarding exercise.

Long ago, I applied to King's College London to read for a degree in geography. But while waiting to start, I read the professor's new book on the spirit and purpose of geography. Sadly, but in retrospect fortunately, this encouraged me to change my major to geology. I was enthralled by A. Kingsley Wells' course on rock-forming minerals, which was much more fun than ancillary math and physics, and I guess that set me off on my career. Doctorate work at Oxford focused on a chunk of fascinating high-grade Dalradian rocks in Connemara, Ireland. I was among



the few students at Oxford not studying layered mafic intrusions under L.R. Wager and G.M. Brown, but I had the good fortune to learn from Richard Lambert, Knut Heier, Ross Taylor, and, in the field, Bernard Leake.

Shortly after, I flew off west to start experimental work as a post-doc under Bill Fyfe at University of California, Berkeley. Bill is a great ideas man, and he encouraged me to drop staurolite in favor of a crystal weight-change study of the stability of muscovite, an approach to sluggish reaction-reversals that was later successfully exploited by other students of his. (During time off, Bill Crawford helped me to speak American English.) Although very different in approach, Frank Turner and Bill Fyfe fostered an academic environment of unconstrained inquiry into petrology and geochemistry, and through the 1960s when I was there, they infused many students with a life-long fascination for metamorphic rocks, among them some well-known names: Mike Holdaway, Eric Essene, Dugald Carmichael, Ed Ghent, Weecha Crawford, Derrill Kerrick, and Ned Brown. Berkeley was indeed an interesting and stimulating place. As many will remember, the campus was the scene of ongoing social unrest in the 1960s; speeches were delivered, tempers flared, and the

authorities responded with tear gas. Happily this did not stop the progress of science. In 1963, I was asked to take charge of a spanking new ARL microprobe. It was distinctly more analog than digital, but nevertheless one could obtain good quantitative analyses, although multi-element minerals were a challenge. The possibility of acquiring micro-scale analyses of minerals *in situ* was a sent-from-heaven gift to the petrologist. My task for the next several years was to see what cool new things this instrument could reveal in diverse branches of petrology and mineralogy.

I moved north to the University of Washington, Seattle, in 1969, where, among other things, the mountains and skiing were closer to hand, and I got a new microprobe. This did not preclude shifting my principal field targets to the Alps, where I enjoyed two decades of collaboration with Volkmar Trommsdorff, who seemed to know where all the best rocks were to be found in that neck of the woods. He was very much at ease in the mountains, yet carried with him an empowering understanding of phase petrology. I shall never really know if we just stumbled onto so many rewarding things or whether he had shrewd premonitions as to what we would find in each locality.

A blueschist conference in 1983 and encouragement from Bob Forbes and Alison Till steered me toward the Seward Peninsula in

Alaska, a flat-lying terrane of high-*P/T* rocks that was anomalous for its west coast location in featuring unmistakable collisional (as in the Alps) rather than Pacific-margin qualities. The rigors of wilderness geology in the north eventually lost their novelty, and so later I embarked with Mark Ghiorso on a study of the thermodynamic properties of the amphibole quadrilateral, based on new single-crystal XRD refinements of octahedral-site occupancies. This work, and a sabbatical in Orléans, unexpectedly renewed an interest of mine in silicic volcanic rocks.

I would not want to forget to mention the encouragement and enthusiasm of generations of undergraduate and graduate students at the University of Washington, many of whom have gone on to do great things. Maybe they have forgotten they named me Commander Buzz of the Intergalactic Space Patrol and supplied me with futuristic boots and a helmet; I never quite found out why. They all have been very supportive, and contact with them has been an important part of my life. The same can be said of numerous post-docs who now constitute a global circle of good friends. I look forward to tomorrow's all-day petrologic truth session kindly organized in my honor by Donna Whitney and Ron Frost. Finally, I want to express my appreciation to the National Science Foundation for its support of my research over so many years.