

THE PAST PRESIDENTS' MEDAL FOR 2000 TO GREGORY M. ANDERSON

Greg Anderson is known throughout the world for his extraordinarily thorough approach to experimental work and for the theoretical application and interpretation of the resulting data. Never being content with empirical data, he is always testing and evaluating them against thermodynamic predictions for the reactions that occur in rocks and ore deposits. He has instilled the importance of this approach in a large number of graduate students. Greg provides help, instruction, and insight in the use and interpretation of thermodynamics and phase equilibria to colleagues at the University of Toronto, across Canada, and around the world.

Greg started his career at McGill and then moved to the University of Toronto for his graduate work, where he came under the influence of F. Gordon Smith. His Ph.D. thesis was an experimental study of the solubility of lead sulfide and its applications in nature, a subject that has remained close to his heart to this day. On leaving Toronto, he spent four years at Penn State University, where he collaborated with Wayne Burnham on further studies of mineral solubilities at high pressures and temperatures. He returned to the University of Toronto in 1965 to set up a state-of-the-art experimental laboratory, including rocking furnaces for measuring mineral solubilities, and internally heated gas apparatus.

His long-term association with a former M.Sc. student, Dave Crerar, led to the publication of "*Thermodynamics in Geochemistry*" in 1993, of which a revision has just come out, and to the "*Thermodynamics of Natural Systems*" in 1995. These textbooks alone would ensure Greg's place and standing as a premier scientist in Canada and the world. Greg has shown himself to be one of Canada's leading exponents of the importance of taking a quantitative approach to the solution of geological problems, ranking with the very best in the world.

Ladies and Gentlemen, I take great pleasure in presenting to you this year's Past Presidents' Medal, Greg Anderson.

James Nicholls, Past President

To begin, I would like to thank the MAC for choosing me for this honor. If you read the lives of the great scientists, as I like to do, you soon realize that your own achievements are really quite minor, compared to what

can be achieved and has been achieved by others. However, I suspect that now is not the right time to suggest that the MAC has made a mistake.

Of course, learning to do science is an apprenticeship of sorts, and the people one learns from have a great influence. In my case, the first and one of the best scientists I ever knew was F. Gordon Smith, my Ph.D. supervisor. He was ahead of his time in several ways, for example in realizing the importance of fluid inclusions, and he taught the first undergraduate course in computing for geologists in Canada, or perhaps anywhere. He was a ferocious critic of sloppy thinking. For a time, he had a rubber stamp that said something like "A measured value without an estimation of its uncertainty is useless", which he would stamp all over Ph.D. theses.

Although I did experimental work with Smith (I think the whole project cost about \$300, in those pre-NSERC days), I really learned what experiments are all about with Wayne Burnham at Penn State. You may have heard about people with "good hands" in the laboratory. Wayne did things in the lab that were just phenomenal. I sometimes say the best thing I ever did at Penn State was to mention to Burnham that it would be very useful to know the partial molar volume of H₂O in silicate melts, never dreaming that it was even possible to do such a thing. Before I left, he was doing it.

Penn State had a number of other really distinguished people, like Frank Tuttle, Pete Wyllie, Hu Barnes, Rustum Roy, Joe Greig, Mackenzie Keith, E.F. Osborne, to name a few. I learned something from all of them. As a grad student, I had absorbed the Tuttle and Bowen "Granite Memoir", and was amazed to find that Tuttle actually walked on the ground like an ordinary person. I used to love to talk to Joe Greig about early days at the Geophysical Lab, and he taught a course in phase equilibria that Gibbs himself would have been proud of. Because of my interest in aqueous chemistry and ore deposits, my relationship with Hu Barnes has been long and beneficial, although we disagree about almost everything. I still recall our first meeting, which lasted what seemed like an eternity, and was more grueling than my Ph.D. oral exam.

Others influenced me through their work and publications. Of these, I have to salute in particular Hugh Greenwood. We first met at an AGU meeting, when he

was at the Geophysical Lab and I was at Penn State. His enthusiasm for the work I was doing was very encouraging to a beginner, even though in retrospect, the work he was doing was even more exciting. Hugh had an almost unparalleled ability to excel in each of theoretical, field and experimental work, with deep insight into each. His work was a constant inspiration. I admire him tremendously.

At the University of Toronto, I have been fortunate to inhabit a department relatively free of personal squabbles, where the other faculty never seemed to mind my retiring ways, and where I could really respect and admire the achievements of most of them. Of others I have interacted with, I'd like to mention especially Yvon Héroux and André Chagnon, not only because it was a pleasure to work with them, but because it provided several excuses to go to Quebec City, one of my favorite places.

In all of this, my wife Khodjasteh has provided constant love and support.

But, important as all these personal influences and contacts are in one's career, even more important are things we often take for granted, which make up our scholarly environment. We live in a society that supports universities, where individuals are given the public's money to pursue their curiosity-fed research wherever it leads – a remarkable thing. Sometimes there is an economic payoff, such as the discovery of lasers or insulin, and that is sometimes used as the justification for having universities. However, the real value is in having a community of scholars devoted to discovering the fundamentals of nature or of societies, as opposed to their superficial appearances. Surely the great benefit to our young people who spend a few short years at university is to learn something of these fundamental truths, and more importantly, to learn how difficult it is to know anything with absolute certainty, before they go to the relatively trivial pursuit of wealth, fame, and power. To be a part of all this is a wonderful privilege.

Another thing we sometimes take for granted is the fact that many of our best scholars take the time to

organize professional societies and meetings such as this, where the diversity of challenging ideas presented each year is quite amazing. The time and effort devoted to these tasks go largely unrewarded, but are nevertheless essential parts of scientific progress. I have always been grateful to those who undertake these tasks.

To have a career of constant intellectual excitement, of self-education, pursuing ideas I thought were interesting, is reward enough. To have recognition from my peers in the form of this award is icing on the cake. Thank you all very much.

Gregory M. Anderson
University of Toronto



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