THE HAWLEY AWARD FOR 1986 TO JUDITH B. MOODY, JOE E. JENKINS AND DANN MEYER

Ladies and gentlemen,

One of the most important activities each year at this time is our awarding of medals and prizes for outstanding achievements in the fields of mineralogy, petrology, ore deposits, and contributions to the Mineralogical Association of Canada.

It is my pleasure at this point to introduce this year's recipients of the Hawley Medal, which is awarded annually to the authors of the best paper of the year in *The Canadian Mineralogist*. The committee has chosen, after the usual careful and difficult deliberations, a paper by Judith B. Moody, Joe E. Jenkins and Dann Meyer entitled "An Experimental Investigation of the Albitization of Plagioclase". If I may quote from the citation prepared by the committee,

"The paper is a significant study of an important low-temperature and low-pressure alteration process of basalts. It is a major step in a long-term systematic study that has been carried out by Dr. Moody and her students. The sluggish rates of reaction in this system have presented the experimentalist with difficult problems that have been successfully met and overcome. The application of the scanning electron microscope to the recognition of the growth and dissolution of minerals in the reaction products and, hence, to the recognition of the direction of the reactions was first used by Dr. Moody in the 1970s during her Ph.D. experimental studies at McGill University on the iron-bearing serpentines; this approach provided the key to identifying the direction of progression of the reactions. The experimental results and their interpretation have been successfully applied to observations in the field and help to clarify the phase relationships of plagioclase in low-grade regimes, help to define the peristerite miscibility gap and help to make a choice between the solvus model and the two-phase binary-loop model proposed to explain the observed plagioclase relationships."

Before I allow the recipients who are here today to have the floor, I'll give you a brief introduction to them.

Judith B. Moody received her B.Sc. degree in 1964 from the University of Michigan, which also awarded her the M.Sc. degree in 1967. She received the Ph.D. degree from McGill University in 1974, for her work on the serpentinization of the iron-bearing olivine. She has won six scholarships and awards, taught at the University of North Carolina, and has worked for the last five years in the nuclear-waste-management program at the Batelle Institute. Her Ph.D. thesis and much of her work since then have emphasized the importance of fully characterizing the phases in experimental runs, especially by the intelligent use of the scanning electron microscope. It is indeed appropriate that this long attention to detail should result in her winning the Hawley medal.

Judith's co-author, Dann Meyer, who worked with her on this work at North Carolina, is now a Ph.D. student at the University of New Mexico at Albuquerque, New Mexico. He received the B.A. degree from the University of Pennsylvania in 1972, and the M.S. degree from the University of North Carolina in 1978. If this paper is a fair sample of what Meyer is able to do, we should expect great things from him in the future.

Judith's co-author, Joe E. Jenkins, received the B.S. in geology from the University of Delaware in 1978, and the M.S. degree in 1980 from the University of North Carolina, where he worked on the albitization study. He is currently with Grynberg Petroleum in Denver, Colorado; although he cannot be here today, he has, I understand, important input to the words of acceptance that are to come from Judith and Dann.

Judith and Dann, it gives me the greatest pleasure to present to you the Hawley Medals for 1986, and I would be pleased if you could carry Joe's medal to him with our compliments.

Ladies and Gentlemen, I present your Hawley Medalists.

Citation by Hugh J. Greenwood
President, Mineralogical Asssociation of Canada

Ladies and gentlemen,

Rosabeth Moss Kanter, in her recent book *The Change Masters,* has stated: "The potential exists for an American corporate Renaissance, with its implied return to greatness . . I argue that innovation is the key. Individuals make a difference, but they need the tools and opportunity to use them. They need to work in settings where they are valued and supported, their intelligence given a chance to blossom. They need to have the power to be able to take the initiative to innovate."

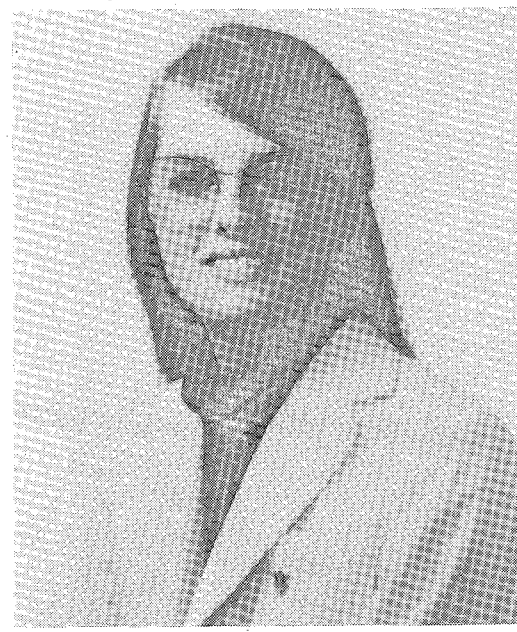
What I would like to do today is to state clearly that as a university professor, I was given the opportunity to show that I could do excellent and innovative science, and that many of the issues addressed in Kanter's book also apply to the highly creative world of basic science research. I would also like to emphasize that individuals, given the opportunity to rise to their best, do rise in an environment that encourages and supports them.

The innovation in my life related to the Hawley Medal started at least 12 years ago in my Ph.D. defense at McGill University, when I had to respond to the questions raised by the external examiner, Professor George Skippen. I more than adequately defended my Ph.D. thesis with the questions he raised, but I was left thinking because of the grade he gave me, good, when I received an excellent by the internal examiner and a very good at my thesis defense. But what Professor Skippen did is ask, in his questions, why did I do the petrological laboratory experiments that I did; he provided me with a challenge, by stating that if I wanted to continue to do experimental petrology, then I should carry out a very careful experimental design before I started the experiments. I would state that I have met Skippen's challenge in the design of the plagioclase experiments because I am here today to accept this award. The metamorphic alteration of calcic plagioclase to albite + clinozoisite is a very slow reaction in the geological environment. The fact that we were able to reproduce in the laboratory what is actually observed in metamorphic rocks only came from careful experimental design, as well as extensive characterization of both the starting materials and run products.

The next step in innovation is being provided with the tools and the opportunity to use them. I accepted the job as an assistant professor and, in my first academic year, wrote a U.S. National Science Fund proposal to obtain the money to build an experimental petrology laboratory and do research. I received word that I had been granted the NSF award, and next I had to plan how I was going to build the high-pressure - high-temperature laboratory in order to do the experiments. The next key person to enter the picture is Professor John Holloway, who was an invited speaker at my university in the Fall, 1975. He spent several days helping me design the laboratory. John's help was excellent and important because I was starting from scratch. Holloway received an unexpected reward for doing that because he received my laboratory when I left university life. John's help with designs made a substantial difference in the speed in which the laboratory was built.

The next person critical to my success in building the lab was Ralph Lewter, the Physics shop manager at the university. I made the decision to involve them in building the laboratory because they had an excellent reputation at the university for doing quality work of a highly varied nature. Therefore, I walked into Lewter's office in January 1976 and began to talk to Ralph. I had nothing in design drawings or in writing; the majority of the key constraints in design came from my head or his experience. We made a clear list of those items that I could purchase *versus* those that he had to build. We also together did design drawings of the high P–T laboratory so that his workers could do the necessary building in a timely fashion. The laboratory was built in less than 8 months because of the high quality of the work done by the key builder, Hal Mann.

Next, Dann Meyer arrived as a graduate student research assistant in the late summer of 1976 to begin testing equipment that was purchased and built. Dann and I were immediately tested in our support in a manner that neither one of us wanted or necessarily could have predicted. On Labor Day, 1976, we were in the lab on Saturday afternoon testing the high-P equipment. One of the thermocouples failed at 5 kilobars and hit Meyer in the chest. The close proximity of the Department of Geology to the university hospital resulted in my having Dann in the emergency room in less than 10 minutes. We walked, and he was carried there physically when he could no longer walk. To make a long story short, he was not badly hurt, but he spent several days in the hospital. He even today walks around with a very small piece of thermocouple in his chest. Dann immediately responded to me that he was coming back as soon as his wound healed. We redesigned the thermocouple high-pressure seal and also designed a substantial cover for the high-P cold-seal thermocouple (internal to high-P vessel) so that if it failed again, it would not strike anyone because the thermocouple would be shielded. With Dann's thesis work and continued help from Jenkins, we together resolved the greenschist–amphibolite facies boundary in mafic rocks. This work was published in the *American Journal of Science.*



JUDITH B. MOODY

The next key innovative person to arrive on the scene was Joe Jenkins, who picked up where Dann left off on the plagioclase work. Joe's thesis forms the basis of the Hawley Medal. Joe arrived in the fall of 1978. He said to me that he didn't see why we were doing these experiments; I said that with continued work and the contents of my course, he would understand the experimental design. He did understand by the spring of 1979 and said that he could hardly wait to see the results of the experiments. In addition, Jenkins rose to the stimulation of another key player in this continued saga, my spouse, Thomas Worsley. Professor Worsley was writing a paper for publication at the same time as Jenkins was completing the data interpretation for his Master's thesis. Joe asked me: "If sedimentary petrologists can do three-dimensional diagrams, can't we do them also?" What resulted is the beautiful Figure 3 (T–composition–frequency) in our plaglioclase paper. Therefore, both Joe Jenkins and Dann Meyer rose to the occasion by producing excellent work in an environment that was creative and supportive to them.

JOE JENKINS

In conclusion to Kanter's statement on innovative work, I would like to come back to my McGill Ph.D. thesis, on the dedication page, where I referenced Solange Chaput-Roland's book *The Second Conquest – Reflections II*: "And yet it seems ludicrous to think that Marie Curie, to whom humanity owes such a huge debt, did not have the right to vote." Women have made significant progress in nontraditional fields for women in the last 12 years, but we still have significant progress to make. Given the technological complexity of the latter part of the 20th century and the 21st century, we in the democratic North American world need people of scientific and engineering excellence, whether they be women or men. Therefore, the Mineralogical Association of Canada's first Hawley Medal to a woman, with her excellent colleagues, is a step toward the future. Thank you very much for your recognition of the scientific innovation and creativity in our work on a classic metamorphic process: the albitization of plagioclase.

Judith B. Moody

I am honored that the Mineralogical Association of Canada has chosen our work for this year's Hawley Medal. Our paper is an eloquent revision of the very tedious 200-page tome that is my Master's thesis. Neither version though truly reflects the hours of stimulating discussion, the excitement of discovery, or the frustration of a 6-month experiment lost because of contamination.

DANN MEYER

I regret that I cannot be present here today. I would like to thank my coauthors for the fascinating collaboration. I would like to thank Judith specifically for the 8 years of constant support and friendship that she has given me. In addition, this paper owes its existence to Judith's drive and determination.

Thank you very much.

Joe Jenkins

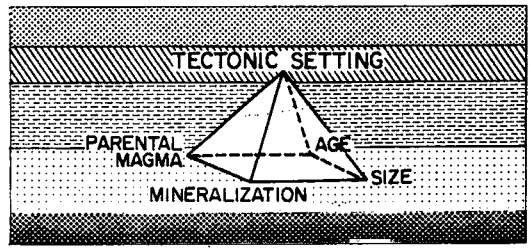
I thank the Mineralogical Association for the Hawley Award and your recognition of our stimulating, but often frustrating, efforts to publish the results of four years of experimental studies.

I also recognize the generosity of my employer, the International Technology Corporation, for making it possible for me to join you today.

And I reserve my most special gratitude for my talented and skilled coauthors, particularly our senior author, Dr. Judith Moody, who introduced me to the experimental approach to the resolution of petrological and geochemical problems, consistently encouraged her students, and maintained her dedication and faith in our work. I am truly honored by this award. Thank you.

Dann Meyer

GEOLOGICAL SOCIETY OF SOUTH AFRICA



Indaba* on the Tectonic Setting of Layered Intrusives

organised by the University of Pretoria
venue: GSO Conference Centre, Pretoria. 27.7 - 28.7.1987

The aim of the meeting is to provide a forum for informal discussions on the relationships between, and possible interdependence of, the tectonic setting, size, age, mineralization, and parental magmas of layered igneous bodies.

---------- **CALL FOR PAPERS** ----------

Contributions dealing with the theme of the Indaba are invited and prospective authors are requested to submit provisional titles by **30th November 1986.**

The official language of the meeting will be English and no translation facilities will be available.

A second circular will be issued in January 1987. This will include instructions related to registration and the submission of abstracts.

N.B. The Indaba takes place immediately before the **5th Magmatic Sulphide Field Conference** (3. - 13. August 1987) in Zimbabwe.

* Zulu word to describe a meeting for the purpose of discussion.