

September '71 to September '74 was one of substantial growth in stature for all parts of that Department.

Papike served 3 years on the Lunar Sample Analysis Planning Team (LSAPT) which was responsible for developing the philosophy and techniques for studying the lunar samples most efficiently and for allocating samples to investigators. His service came during the most active mission period when rapid program evolution was necessary to study the complicated rocks and soils being collected. He also served on the committee for lunar landing site selection, and with the working group involved in planning the astronauts' activities on the lunar surface. In 1973 NASA awarded him its Medal for Exceptional Scientific Achievement for these contributions as well as for his work on the lunar minerals themselves.

Let me tell you a little about his personality. Professionals and students respond to his special kind of enthusiasm, the sense of being where it's at, all spiced with ready praise and humor. Jim learned from his father to love the game of ice hockey, and only a bad knee injury in a high school game kept him from becoming a professional hockey player. Indeed, I have sometimes thought that Jim tends to pursue the gentle and persistent search for natural truth with the vigor typical of the game of ice hockey! Not only does he like to play, he much prefers to win. But if there

are winners, there must, unfortunately, be losers. To avoid losing he usually arises at 5 to 5:30 and drives himself constantly to do the job better. He is fortunate to have a most charming and helpful wife, and she surely deserves her place of honor today.

Jim exudes team spirit either as captain or team member, and sometimes board checking is the only defense. I recall an example when Jim gave a talk at the Geophysical Laboratory of the Carnegie Institution, where some pyroxenes have been studied. He announced only half in jest, that some people were now calling Stony Brook "The pyroxene capital of the world." A Geophysical Lab staffer checked effectively: "Name two!"

In the lunar program the rules were being made while the game was being played. Jim was a member of the 'rules committee' (LSAPT), but also was a playing team captain. Many of his LSAPT colleagues, though in similar potentially conflicting circumstances, recognized his competitive instincts by awarding him a big ten-gallon Texan hat—in the blackest shade of black—by which he is now most easily recognized around Houston.

Mr. President, although there is more, I sense I have said too much already about the first decade in the career of this extraordinary young scientist. I present you Professor James J. Papike, the 24th recipient of the Mineralogical Society of America Award, for his research in petrologic crystal chemistry.

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## Acceptance of the Mineralogical Society of America Award for 1974

JAMES J. PAPIKE

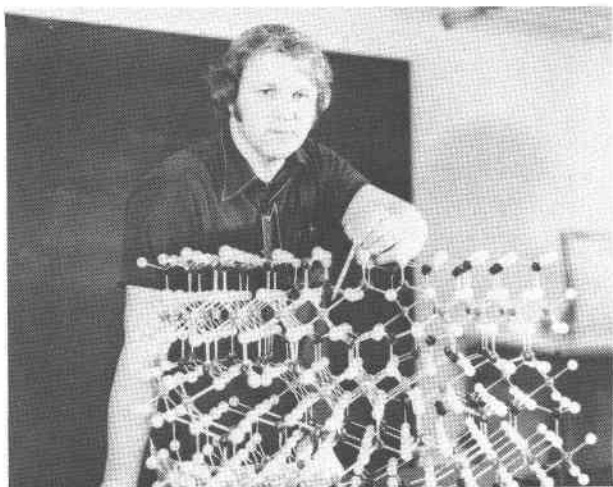
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President Bailey, Colleagues and Friends:

Although, as many of you know, I am rarely at a loss for words, I find giving today's remarks a very difficult task. I say this because it is difficult to be singled out as deserving of the M.S.A. Award when many other equally or more deserving candidates have not received it. The only way I can

feel more comfortable in standing here before you is to accept this award more for a philosophy that I deeply believe in, and have advocated, than in any personal recognition.

About a year ago, after an evening of beer drinking with friends, I heard a gentle knock on my hotel room door. I opened the door to see Dave



Stewart, who announced that I had been selected for the M.S.A. Award. After hearing the news and being only half awake, I went back to sleep for a while. When I woke up, I didn't honestly know whether I had dreamed the whole thing or not. After several colleagues congratulated me that day, I began to believe it was true and started to think about what I would say today.

My love for the outdoors and eventually geology started in a very natural way in northern Minnesota. My father introduced me at a very early age to the wonders of nature on our weekend fishing, hunting, and trapping expeditions. I was not convinced that my interest in the outdoors would be translated into a desire for professional training in geology until one hot summer afternoon while I was working deep in an open pit iron ore mine on the track gang. That afternoon an engineer came to us and told us to move the tracks to a different location where the next ore would be taken. The combination of not finding tamping ties, carrying ties and driving spikes to my liking, combined with an intense curiosity of how engineers decided on the logistics of mining, led me to the conclusion that I would become an engineer. My father and mother enthusiastically endorsed that decision.

I chose the South Dakota School of Mines in Rapid City, South Dakota, for several reasons. First, I could transfer there after one year of junior college training in my home town, Eveleth, Minnesota. Second, I could finish the degree requirements in only three additional years and,

lastly, the Black Hills provided a ready source of field experience during the academic year so that I could spend summers earning money to support my college expenses. My original thought was to terminate with a degree in engineering and take a job. My advisors at South Dakota, especially George Rapp, who introduced me to the wonderful world of mineralogy, would not hear of it.

I returned to Minnesota for my graduate training and arrived at the same time as Tibor Zoltai and Bill Phinney, and one year after Paul Gast. These three all had tremendous influence on my thinking, and I am grateful for their guidance. I decided early that my main interest was in finding out how rocks formed and only had to decide which approach I would take. Tibor Zoltai convinced me that crystallography and petrology could be a powerful combination and advised me on a thesis on the crystal chemistry of scapolite. I left the University of Minnesota in the summer of 1964 with my wife, Pauline, and our three children. It was clear to me at that time that it was largely Pauline's support, encouragement, and tolerance of my long hours at the university that were the key to whatever success I had up to that point. Little did she realize that my long hours and obsession with science would continue to this day.

After receiving my Ph.D., I joined the U. S. Geological Survey in Washington, D. C., for five of the most enjoyable years of my life. I decided two things very early when I arrived in Washington—first, that I would devote all of my scientific energy to trying to understand the petrologic significance of rock forming silicate crystal chemistry with emphasis on amphiboles and pyroxenes, and second, that I would try to obtain a university position after about five years of research experience so that I could share my new found knowledge with students. During the five years in Washington, I learned so much from so many people, it is difficult for me to identify a few that deserve special mention. I owe special thanks to Mac Ross who taught me to look at the grubby crystals because they might have a story to tell, to Joan Clark for teaching me careful and meticulous laboratory procedures, and to Dan Appleman for insight into crystallographic calculations. Although I owe so much to all of the petrologists with the U.S.G.S., I must single out Dave Stewart whose gentle and tactful criticisms of my work kept me on my toes.

When the time came for me to join a university, I had several choices of rather prestigious institutions and also an offer from an unknown university at Stony Brook, New York. The positions at the *known* universities were all of the type where I would fill a hole in a structured and rather rigid program. At Stony Brook there was the chance to start from scratch, make my bed and, of course, then have to sleep in it. Through Chairman Oliver Schaeffer's big gamble, the petrologic army comprised of Ted Bence, Don Lindsley, Charlie Prewitt, and myself marched on Stony Brook to set up a petrology program together with Bob Dodd and Gil Hanson who were already there and laying the ground work. Ted, Don, Charlie, and I continue to collaborate on many research problems, and I owe deep appreciation to all of them for the many things they taught me. At Stony Brook two major research areas have dominated my research efforts for the last five years: high-temperature crystal chemistry of silicates, in close collaboration with Charlie Prewitt, Gordon Brown, Maryellen Cameron, and Shigeo Sueno, and lunar petrology with Ted Bence, Don Lindsley, and Ken Cameron. During this time I became heavily involved with the lunar program in what I consider to be the most exciting time of my life. I especially enjoyed and benefited from my association with the Lunar Sample Analyses Planning Team (LSAPT) where I learned how important

the other guy's thing is. By working closely with geophysicists, organic and inorganic geochemists, and petrologists, I learned the importance of a multi-disciplinary approach to solving major lunar problems. This approach is branded on my mind and I hope to be involved in such cooperative efforts in the future on terrestrial problems as well as in analyses of additional solar system samples.

My interests at this time continue to be in the application of crystallography to petrologic problems, "petrologic crystal chemistry" with applications to lunar rocks, deep sea basalts, and upper mantle assemblages. I plan to continue doing my thing with the realization that I am only providing one type of insight which must be integrated with many other types of data for the correct solution to major petrologic problems.

I close my remarks today with a thanks and two reminders. Thank you all for paying tribute to a philosophy that I very much believe in and for picking me to receive the M.S.A. Award. The first reminder is to petrologists—always remember that rocks are nothing more than collections of minerals. The second reminder is to crystallographers and mineralogists—always remember that minerals are nothing more than parts of rocks.

I thank you.