ACCEPTANCE SPEECH MSA AWARD

GEORGE C. KENNEDY, *University of California at Los Angeles, Los Angeles, California*

Mr. President, Dr. Frondel, Ladies and Gentlemen:

It would be less than honest for me not to indicate how pleased I am to receive the award of the Mineralogical Society of America. In part this pleasure stems from the fact that you are also honoring my students and colleagues, whose work and ideas have contributed inmeasurably to every paper I have published.

I would like now to take a leaf from the book of Julian R. Goldsmith, your MSA award recipient of a year ago, who spoke of you as a captive audience. I would like to speak of the difficult and exciting work which lies ahead in the field of experimental Petrology.

Research in several laboratories over the last few years has shown that the mineral phases which exist at the surface of the earth are not the mineral phases to be expected at depths of only a few kilometers or a few tens of kilometers. Indeed, it now appears that the vast majority of all rock forming minerals which appear on the surface of the earth cannot exist at depths of as little as 100 kilometers in the earth's crust, and a very large fraction of the phases undergo transitions at depths of as little as 30 kilometers. It is, however, in these deeper zones of the earth's crust that most magmas form by partial melting and it is probably here that our major differentiation processes take place. The trend of compositions of magmas during crystal differentiation is, of course, very dependent upon the composition of the phases forming and being extracted. It is equally obvious that trends of differentiation in magmas where feldspars are being extracted will be totally different from trends of differentiation in magmas where the dense polymorphs of feldspar such as various of the jade family of minerals are being extracted. I suspect strongly that the solution to vexing problems such as the origin of the alkaline rocks and certain ultramafic complexes, awaits an understanding of the differentiation processes at these depths. The experimental Petrologist then must over the next few years, examine the equilibrium relations between magmas and high pressure phases. This is going to be extremely difficult work but most exciting work, which is certain to yield big dividends. The next decade in Petrology will see advances as marked as has the last.