ACCEPTANCE OF THE MINERALOGICAL SOCIETY OF AMERICA AWARD

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

It is with great personal pleasure that I accept the Mineralogical Society of America Award as representative of the Geophysical Laboratory. Few young men have had the exceptional opportunities that have been afforded me at the Geophysical Laboratory, and I am constantly aware of the fact that others given the same opportunities might have achieved far more important results. I have been surrounded by distinguished scientists willing to give counsel, provided with all the necessary experimental equipment, availed of liberal grants for field work and travel, given complete freedom from divergent duties, and assisted by outstanding, enthusiastic coworkers—all these advantages would cause anyone to accept such an honor *personally* with reluctance and humility. It should be clear that the published works on which this award is judged represent the cumulative effort of the Geophysical Laboratory. I hope you will forgive me if I cherish a small part of this award as my own.

I would like to take this opportunity to tell you of the thread which connects my various projects and publications. The main objectives of my research are, first, the quantitative evaluation of the grades of metamorphism and, second, an understanding of the origin of basalt. The $MgO—Al_2O_3—SiO_2—H_2O$ paper, for which the award is given, was aimed at the synthesis and stability range of chlorite and cordierite, two major constituents of the metamorphic rocks. Next the micas were tackled and the results of that work were presented in part last year with my colleague Hans Eugster. Yesterday you may have heard of the successful studies on the common garnet. Now it will be possible to measure the pressures and temperatures of the reactions marking some of the isograds.

While these steps are being taken, I am also working on the basalt problem. First, it was necessary to measure the melting points of minerals under pressure. In the course of the development of the apparatus for these extreme conditions, the α-β quartz transition was studied up to 10,000 bars. Then the apparatus was given a real trial on the change of melting point of diopside under pressure. This was followed by investigation of the diopside-water, anorthite-water and albite-water systems. Recently I have put some of these data to use in determining the

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system anorthite-diopside-forsterite-water, which closely approaches the mineralogy of a basalt. Under way is work on the system albite-anorthite-water, also critical to the basalts.

In all these experiments water is an important constituent. An analysis of the role water plays in metamorphism was presented at the recent Columbia University Symposium on the Crust of the Earth. Some accused me of employing thirsty rock worms. Others described the water deficient region as Yoder's leaky umbrella. Of course, there were those blunt scholars who thought I was in the excess water region—"all wet." For these reasons, I encourage you to study carefully the critical role of water in metamorphism and other processes.

Again I would like to thank the Society for bestowing this honor upon me and I will endeavor to fulfill its purposes.