THE AMERICAN ASSOCIATION OF PETROLEUM GEOLOGISTS

Distinguished Lecture Tour

Comparative Geology of the Inner Planets:
Geological Characteristics of Earth, Moon, Mars, Venus and Mercury

by

Edward J. Zeller

BIOGRAPHICAL DATA

Born:

November 6, 1925, Peoria, Illinois

Education:

1946	A.B.	Geology, University of Illinois
1948	M.A.	Geology, University of Kansas
1951	PhD.	Geology, University of Wisconsin
1950		Wisconsin Alumni Research Fellowship

Experience:

1941-46	Project Associate, Department of Chemistry, University of Wisconsin
1956-59	Assistant Professor of Geology, University of Kansas
1959-63	Associate Professor of Geology, University of Kansas
1961-62	Senior Postdoctoral Fellowship, NSF, Physukalisches Institut, Universitat Bern, Switzerland
1963-Pres.	Professor of Geology, University of Kansas
1963-Pres.	Professor of Physics, University of Kansas

Currently, Dr. Zeller is the principal investigator for two research contracts entitled "Radiation Damage and Chemical Reactions Induced in Crystalline Solids by High-Energy Proton Bombardment" & "Study of Natural Radiation Damage in Minerals by Electron Spin Resonance and Thermoluminescence," for the United States Air Force and the Atomic Energy Commission respectively. He is also a co-investigator for two inter-disciplinary grants entitled "Production of Organic Compounds by Proton and Deuteron Irradiation of Inorganic Solids" and "Radiation Damage Studies in Solids with Electron Nuclear Double Resonance & other Techniques" for the National Aeronautics and Space Administration.

In 1969, he was consulted on the effects of radiation damage in lunar dust as a possible hazard for lunar surface operations. He was involved in planning and safety evaluation for both the Apollo 11 and 12 missions. Doctor Zeller is the author of numerous papers.

ABSTRACT

Through the efforts of N.A.S.A. and the Russian Space programs, we have greatly increased our knowledge of the surfaces of our immediate neighbors in the solar system. Photographs of the surfaces of the moon and Mars will be shown together with similar and contrasting photos of earth surface features. In addition, a summary of the seismic measurements and the lunar rock analysis data from the Apollo program will be presented to provide an overview of the similarities and contrasts between the earth & the moon.

Radar imaging studies conducted by United States investigators and the excellent information provided by the Russian soft landing has permitted us a limited look at the surface beneath the dense and cloudy atmosphere of Venus. Even this restricted view makes it possible to reach a number of interesting conclusions about the planet. Mercury has not been visited by spacecraft, but radar and optical telescopes have furnished information about the rotational properties as well as some indication of its surface characteristics.

By means of a review of the available data, a basis is provided from which geologic comparisons can be made among the inner planets.