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BACKGROUND ON ANTHONY W. ENGLAND

Anthony Wayne England, 25, who has just been selected as a scientist-astronaut by the National Aeronautics and Space Administration, is a geophysicist who will complete the requirements for the doctor of philosophy degree in geology and geophysics from the Massachusetts Institute of Technology this coming September.

He specializes in studying the fundamental physical properties of the solid materials that make up rocks and minerals and other solid substances. In effect, he is a solid state physicist who directs his particular interest to the materials that make up planets and celestial bodies such as the earth and the moon.

While completing his doctor's thesis -- itself considered an important piece of fundamental work in solid state physics of great value to geophysicists -- he also has been assisting in designing the experiments that one day will be carried out on the moon to determine the characteristics of the material from which the moon is formed.

For his doctoral thesis, Mr. England has determined what are called the equations of state of three dense oxides -- spinel, magnetite and calcia. These are important components of solid materials found everywhere, including the materials from which the moon is no doubt formed. In effect, Mr. England, in his thesis, determined the state of some geologically interesting solids under conditions of high temperature and pressure.

The England thesis is considered scientifically important because, from his basic equations, other geophysicists may be able to determine from seismic data the materials and conditions in the earth's or moon's interior. In addition, his work yields fundamental data on interatomic forces.

Mr. England, who has been a National Science Foundation Fellow for three consecutive years, has been doing his graduate research under the direction of Dr. M. Gene Simmons, professor of geophysics. At the same time, he has been assisting Professor Frank Press, Head of the Department of Geology and Geophysics, along with Professor Simmons, Assistant Professor David W. Strangway and others in the department in designing for NASA's Apollo Applications Program (AAP) some of the experiments that will be performed both on the moon and with moon materials that astronauts bring back to earth.

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(Professors Simmons and Strangway, for example, already have been selected to receive samples from among the lunar surface rocks that the first Apollo astronauts bring back to earth. They will use the samples in a series of laboratory experiments dealing with the elastic, electrical, thermal and magnetic properties of the moon rock.)

Mr. England's AAP work has focussed on experiments that will be conducted on the moon, presumably by scientist-astronauts, possibly even himself, now that he has been named a scientist-astronaut. One experiment Mr. England has helped design deals with a means of measuring the electrical conductivity of the material in the deep lunar interior. He is co-author with Professors Simmons and Strangway of a scientific paper to be published soon in the Journal of Geophysical Research describing the anticipated deep lunar electrical conductivity.

Also working under the AAP contract from NASA, Mr. England used his thesis equations of state to make predictions about the seismic depth structure of the moon (i.e., the velocities of sound as it propagates through various depths of the lunar interior). Using these preductions, Professor Press and others have been able to make detailed extrapolations about the seismic characteristics of the moon.

Mr. England will begin his role as a scientist-astronaut in mid-September when he reports to NASA's Manned Spacecraft Center at Houston, Tex., for six months of intensive astronaut training. That will be followed by a year of flight training where he will become a supersonic jet pilot. It is anticipated that he will be involved primarily with the Apollo Applications Program, the program designed to make scientific use of the capabilities resulting from the Apollo Program.

Mr. England was born May 15, 1942, in Indianapolis, Ind., but his family moved to West Fargo, N.D., when he was 11. He took only three years to graduate from the West Fargo High School and was valedictorian in the Class of 1959. In high school, he was on the football and track teams.

He entered M.I.T. in the Fall of 1959 and received the S.B. and the S.M. degrees in geology and geophysics simultaneously in February, 1965. His master's thesis, performed under Professor W. F. Brace, was an examination of the effect of cracks on the elastic constants of a solid. The master's thesis was published in the Journal of the American Ceramic Society.

For summer employment, Mr. England has worked as a power line crewman in North Dakota, an assistant with a Texaco, Inc., field seismic crew in New Mexico and

Arizona, and as an electronics technician in an M.I.T. laboratory. At M.I.T. he took part in intramural sailing and his hobbies include mountain climbing, skin diving, tennis and amateur radio.

Mr. England is married to the former Kathleen Ann Kreutz of Fargo and they presently make their home at 69 Summer St., Watertown, Mass. They have no children.

Mr. England is the son of Mr. and Mrs. Herman U. England of West Fargo. His father is regional manager of the Hartford Insurance Group with offices in Fargo. He has two brothers, Ethan, 23, of Indianapolis, and Michael, 18, of West Fargo, and a sister, Alice, 20, also of West Fargo. No members of his immediate family have been associated with aerospace activities, but his brother-in-law, Michael Kreutz, is a pilot with Trans World Airlines and recently completed a tour of duty as an Air Force pilot in Viet Nam.

Mr. England is a member of the American Geophysical Union, the Society of Exploration Geophysics, the American Geological Institute, the American Association for the Advancement of Science, and the Society of Sigma Xi.

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