Geophysicist Anderson Wins Crafoord

The Royal Swedish Academy of Sciences is to award the 1998 Crafoord Prize in geosciences, with special emphasis upon "the dynamics of the deeper parts of the Earth," to Don L. Anderson, the McMillan Professor of Geophysics, and Adam M. Dziewonski of Harvard University for their fundamental contributions to our knowledge of the structures and processes in Earth's interior. The prize, valued at $500,000, will be presented at a ceremony on September 16 in Sweden.

On hearing that he had been awarded the prize, Anderson said, "I think it's very significant that deep-Earth geophysics is being honored by this award. It is rare for our field to be acknowledged in this way. I am really delighted that Adam Dziewonski, a close colleague of mine, is also being honored for his work. Most people, when they think of geophysics, think of earthquakes, but seismologists do other things, such as x-raying Earth using seismic tomography to see what is going on in the deep Earth."

Caltech president David Baltimore congratulated Professor Anderson and noted that "the Institute is very proud and pleased that Don will be receiving the Crafoord. It is exciting news. Don's work is truly deserving of this great prize. He is one of the world's most prominent scientists in the area."

According to the Royal Academy, Anderson and Dziewonski have together developed a generally accepted standard model of how Earth is organized and of the dynamics of the processes at its core and in its mantle that govern continental drift, volcanism, and earthquakes.

Anderson and his team have investigated changes arising from the pressure deep down in Earth's mantle. Sudden changes in the rock types at depths of 400 kilometers and 660 kilometers are explained by conversions undergone by the rock types, so that they contain minerals entirely unknown at Earth's surface. At 400 kilometers, the mineral olivine, common in lava, changes to spinel, a high-pressure mineral. At 660 kilometers, the mineral perovskite is formed, a mineral otherwise only produced in the laboratory at very high pressures and temperatures. Anderson's research has shown that such changes in composition of the mantle may explain the occurrence of tensions in Earth's crust that can lead to earthquakes.

Anderson and his research team have also used seismic data to study convection currents in the mantle, important for understanding continental drift and volcanism. Recently, Anderson has also used geochemical and chemical-isotope methods not only for mapping Earth's development, but also for understanding the development of the moon, Mars, and Venus.

Anderson was born in 1933 in Maryland and received his doctorate in geophysics from Caltech in 1962. He has been a leading figure in "deep-Earth" research since the 1960s. He was director of the Seismological Laboratory at Caltech from 1967 to 1989. In 1989 he published his *Theory of the Earth*, a remarkable synthesis of his broad and provocative research and a guide for geo-researchers from different fields for future exploration of the dynamics of the deep parts of Earth.

The Crafoord Prize is awarded at a ceremony held on September 16, Crafoord Day. On this occasion, the prizewinner gives a public lecture and the Royal Academy organizes an international scientific symposium on a subject from the chosen discipline of the year.

The Anna-Greta and Holger Crafoord Fund was established in 1980 to promote basic research in mathematics, astronomy, the biosciences (particularly ecology), the geosciences, and polyarthritis. Both an international prize and research grants to Swedish scientists are awarded among the scientific fields mentioned above. □—*RT*

Honors and Awards

Michael Alvarez, associate professor of political science, has, along with coauthor Jonathan Nagler, been selected by the Midwest Political Science Association to receive the 1998 Robert H. Durr Award for their paper, "A New Approach for Modeling Strategic Voting in Multiparty Systems." The award is for the best paper applying quantitative methods to a substantive problem in political science.

Michael Brown, assistant professor of planetary astronomy, has been awarded an Alfred P. Sloan Research Fellowship. Sloan recipients are selected on an extraordinarily competitive basis from a group of nominees representing the very best of young scientists.

Peter Dervan, the Bren Professor of Chemistry, and chair of the Division of Chemistry and Chemical Engineering, and Caltech Trustee David Ho (BS '74), director of the Aaron Diamond AIDS Research Center in New York City, have been elected to membership in the Institute of Medicine of the National Academy of Sciences. The Institute is a unit of the National Academy but with separate membership; it is based in the biomedical sciences and health professions.

Richard Flagan, professor of and executive officer for chemical engineering, has been awarded the Thomas Baron Award in Fluid-Particle Systems by the American Institute of Chemical Engineers.

Daniel Kevles, the J.O. and Juliette Koepfli Professor of the Humanities, has been elected a fellow of the Society of American Historians, in recognition of the literary and scholarly distinction of his historical work.

Rod Kiewiet, professor of political science, has been awarded a 1998 Haynes Foundation Faculty Fellowship for his proposal, "Educational Finance in California in Comparative Perspective."

Wolfgang Knauss (BS '58, MS '59, PhD '63), professor of aeronautics and applied mechanics, has been awarded the Kapitsa Medal by the Russian Academy of Natural Sciences. He was honored for his contribution to understanding the time-dependent mechanical behavior of polymers and composites.

Michael Ortiz, professor of aeronautics and applied mechanics, has been elected a fellow of the U.S. Association of Computational Mechanics for his contributions to the field of computational mechanics.

Anatol Roshko (MS '47, PhD '52), the Theodore von Kármán Professor of Aeronautics, Emeritus, is the recipient of the 1998 AIAA Fluid Dynamics Award, presented by the American Institute of Aeronautics and Astronautics "for outstanding contributions to the understanding of the behavior of liquids and gases in motion as related to needs in aeronautics and astronautics." Roshko is internationally known for his research in areas vital to aerospace engineering, vehicle aerodynamics, and wind and ocean engineering.

Thayer Scudder, professor of anthropology, has been appointed to the World Commission on Dams, which is being organized by the World Conservation Union and the World Bank to review the costs and benefits of large dams throughout the world. Scudder is an authority on resettlement and social issues related to river-basin infrastructure development.

Thomas Tombrello, the William R. Kenan, Jr., Professor and professor of physics, and a graduate of Rice University, has been selected by the Association of Rice Alumni to receive one of its 1998 Distinguished Alumni Awards, awarded on May 9 in Houston. The award is the highest honor bestowed by the association for "excellence in one's chosen field."

Alexander Varshavsky, the Smits Professor of Cell Biology, has received the 1998 Novartis-Drew Award in Biomedical Science, for his work on "the ubiquitin system and intracellular protein degradation."

Gerald Wasserburg, Crafoord laureate and the John D. MacArthur Professor of Geology and Geophysics, will receive the title of Docteur Honoris Causa from Rennes 1 University, France, at an official ceremony on June 30.

Professor of Aeronautics and Applied Mechanics Wolfgang Knauss (BS '58, MS '59, PhD '63) and Robert McEliece (BS '64, PhD '67), the Puckett Professor and professor of electrical engineering, have been elected to the National Academy of Engineering.

Ahmed Zewail, Pauling Professor of Chemical Physics and professor of physics, is the recipient of the Southern California section of the American Chemical Society's 1997 Richard C. Tolman Medal for his pioneering work in femtochemistry. □