

AAS Honors Wetherill and Others

The American Astronomical Society has announced several of its award winners for 2003.

The Henry Norris Russell Lecture-ship will go to **George W. Wetherill**, director emeritus of the department of terrestrial magnetism at the Carnegie Institution of Washington. The award citation reads, in part, "One of the truly original thinkers in planetary astronomy, George Wetherill pioneered the application of modern physics and numerical simulations to the formation and evolution of terrestrial planets." The citation goes on to state that his "geochronology concepts underpin all astronomical radiometric dates. He and his colleagues took the lead in experimental and theoretical studies demonstrating that the meteorites and some Moon rocks are at least as old as the oldest Earth rocks, thereby establishing the first radiometric chronology for the inner solar system. Through pioneering applications of numerical and analytical simulations, he demonstrated that runaway accretion can account for the assemblage of planetesimals into planets."

Donat Wentzel, professor emeritus of astronomy at the University of Maryland, College Park, will receive the George Van Biesbroeck Prize for his "outstanding and sustained contributions during three decades to astronomy education in this country by stimulating the American Astronomical Society to become and remain engaged in education, and internationally, through the International Astronomical Union, by guiding the commission on the teaching of astronomy and by working for the growth of astronomy programs in developing countries."

The Newton Lacy Pierce Prize will go this year to **Xiaohui Fan**, assistant professor of astronomy at the University of Arizona, in Tucson. Fan is being recognized for his "systematic discovery of high redshift quasars in the Sloan Digital Sky Survey. These quasars are the best probe to date of the epoch of the formation of the first objects in the universe; their discov-

ery enabled identification of the end of the epoch reionization."

Matias Zaldarriaga has been chosen as the recipient of the Helen B. Warner Prize. An associate professor of astronomy and of physics at Harvard University, Zaldarriaga is being honored for his "incisive, major contributions to the theory of cosmic microwave background (CMB) anisotropies." The citation adds that he "developed a new method of computing the CMB fluctuation power spectrum, demonstrated that linear polarization anisotropies in the CMB are a cosmological discriminant, and pioneered the study of gravitational lensing effects on the CMB."



Wetherill

The Joseph Weber Award for Astronomical Instrumentation will be presented to **Frank Low**, Regents Professor Emeritus at the University of Arizona's Steward Observatory. Low is recognized for "extraordinary ingenuity in the development of infrared instrumentation and observatories, including bolometers, the Lear Jet and Kuiper Airborne observatories, and the IRAS [In-

frared Astronomical Satellite] and SIRTIF [Space Infrared Telescope Facility] space missions."

The AAS Education Prize will go to **Jay Pasachoff** for his "eloquent and informative writing of textbooks from junior high through college, for his devotion to teaching generations of students, for sharing with the world the joys of observing eclipses, for his many popular books and articles on astronomy, for his intense advocacy on behalf of science education in various forums, [and] for his willingness to go into educational nooks where no astronomer has gone before." Pasachoff directs the Hopkins Observatory and is the Field Memorial Professor of Astronomy at Williams College in Williamstown, Massachusetts.

The Dannie Heineman Prize for Astrophysics, given jointly by AAS and the American Institute of Physics, will go to **Rashid Sunyaev** for his "visionary insights into the interaction of radiation and matter on scales from the universe to black holes." Sunyaev is director of the Max Planck Institute for Astrophysics in Garching, Germany and chief scientist at the Space Research Institute of the Russian Academy of Sciences in Moscow.

Robert Duncan, Christopher

Thompson, and Chryssa Kouveliotou will share the Bruno Rossi Prize, given by the high-energy astrophysics division of AAS, for Duncan and Thompson's prediction of, and Kouveliotou's observational confirmation of, "the existence of magnetars, neutron stars with extraordinarily strong magnetic fields." Duncan is a research scientist in astrophysics at the University of Texas at Austin. Thompson is an associate professor at the Canadian Institute for Theoretical Astrophysics in Toronto. Kouveliotou is a senior research scientist with the Universities Space Research Association on detail at NASA's Marshall Space Flight Center in Huntsville, Alabama.

Robert Howard will receive the 2003 George Ellery Hale Prize from AAS's solar physics division. He is being honored for his "pioneering discoveries of fundamental properties of solar magnetic and velocity fields; initiating modern instrumentation and archiving methods for long-term solar observations; and selfless mentoring, collaboration, and leadership of solar physics research programs and institutions." Howard, now retired, was the first director of the National Solar Observatory.

The solar physics division also announced the winner of the first Karen Harvey Prize, which is given for significant contributions to the study of the Sun early in a person's professional career. **Dana Longcope**, associate professor of physics at Montana State University, is being recognized with this prize for his "contributions to the study of the Sun's magnetism in the areas of separator reconnection and flux-tube physics."

AAS's division for planetary sciences has announced that **Robin Canup** is the winner of the 2003 Harold C. Urey Prize. Canup, assistant director of the space studies department at Southwest Research Institute in San Antonio, Texas, will receive the prize for her "groundbreaking research contributions on the Moon's origin and dynamical evolution."

Franklin Institute Names Award Winners for 2003

Twelve individuals, including two Nobel Prize winners, will be honored in a ceremony this month at the Franklin Institute in Philadelphia for their various achievements in physics,

chemistry, Earth science, electrical engineering, civil engineering, computer and cognitive science, and the life sciences. Of the award recipients, eight are being recognized for physics-related work.

John N. Bahcall, Raymond Davis Jr., and Masatoshi Koshiha are sharing the Benjamin Franklin Medal in Physics for their "work that led to an understanding of neutrino emission from the Sun." Bahcall, Richard Black Professor of Natural Sciences at the Institute for Advanced Study in Princeton, New Jersey, "provided the theoretical basis for the experimental work of first Davis, and then Koshiha," reported the Franklin Institute. Using an underground detector at the Homestake Gold Mine in South Dakota, Davis discovered a striking shortfall in the Sun's neutrino output. Koshiha led the creation of the Kamiokande water-Cherenkov detector in Japan; the detector's ability to measure the energies and arrival times and directions of individual neutrinos confirmed and expanded Davis's provocative result. Davis, emeritus research chemist at Brookhaven National Laboratory, and Koshiha, emeritus professor of physics at the University of Tokyo, were two of the three winners of the 2002 Nobel Prize in Physics (see PHYSICS TODAY, December 2002, page 16).

The Bower Award and Prize for Achievement in Science is going to **Paul B. MacCready**, chairman of AeroVironment Inc in Monrovia, California. MacCready, "in the spirit of the Wright brothers, has created a series of innovations in the fields of soaring, meteorology, human- and solar-powered flight, upper atmospheric research, and unoccupied and miniature aircraft." The citation adds that, for "half a century, his exceptional contributions have expanded the frontiers of the science and technology of aeronautics, aeronautical materials, structures energy conservation and utilization, and autonomous and automatic flight." The award carries a cash prize of \$250 000.

Robin M. Hochstrasser is receiving the Benjamin Franklin Medal in Chemistry for "pioneering the development of ultrafast and multidimensional spectroscopies and their applications to gain fundamental molecular-level understanding of the dynamics in complex systems (condensed phases of biomolecules), including energy transfer in solids, reaction mechanisms in liquid solutions, the binding of small molecules on hemoglobin, and the observation of structural changes in proteins."

He is the Donner Professor of Physical Sciences at the University of Pennsylvania.

Two recipients are sharing the Benjamin Franklin Medal in Earth Science. **Norman A. Phillips** and **Joseph Smagorinsky** are being recognized for their "major contributions to the prediction of weather and climate using numerical methods." According to the institute, their "seminal and pioneering studies led to... an understanding of the general circulation of the atmosphere, including the transports of heat and moisture that determine the Earth's climate." Phillips's "leadership fostered the development of effective methods for the use of observations in data assimilation systems" and Smagorinsky "played a leading role in establishing the current global observational network for the atmosphere." Phillips retired in 1988 from his position as a principal scientist, for 14 years, with the National Weather Service's National Meteorological Center (now the National Centers for Environmental Prediction) in Marlow Heights, Maryland. Smagorinsky retired in 1983 as the director of the National Oceanic and Atmospheric Administration's Geophysical Fluid Dynamics Laboratory in Princeton, New Jersey.

The Benjamin Franklin Medal in Electrical Engineering is being bestowed on **Bishnu S. Atal** for his "important work on voice coding, including the concept of speech analysis-by-synthesis coding, leading to the CELP (Code-excited Linear Predictive) Coder." According to the institute, Atal did pioneering work on Linear Predictive Coding methods that analyze and synthesize speech signals. His invention of the CELP Coder reduced the size of bandwidth needed to transmit speech, thus expanding the carrying capacity of the limited area of the electromagnetic spectrum that cellular callers use. Atal retired in 2002 as a technical director with AT&T Labs in Florham Park, New Jersey.

Sunyaev to Receive Cosmology Prize

Rashid Sunyaev, a pioneer in the field of physical cosmology and x-ray astronomy, will be awarded with the Peter Gruber Foundation's 2003 Cosmology Prize this July at the general assembly of the International Astronomical Union in Sydney, Australia. The foundation, which is based in St. Thomas, US Virgin Islands, gives this prize each year to recognize

individuals who have made groundbreaking contributions in cosmology. Sunyaev will receive a gold medal and a cash prize of \$150 000.

Director of the Max Planck Institute for Astrophysics in Garching, Germany, and chief scientist at the Space Research Institute of the Russian Academy of Sciences in Moscow, Sunyaev is being honored for his "pioneering studies on the nature of the cosmic microwave background and its interaction with intervening matter." He was "one of the most important and prolific members of the Moscow group that pioneered relativistic astrophysics," adds the citation. With the group's "illustrious leader [Yakov B.] Zeldovich, he studied the relic radiation from the Big Bang, leading to early tests of cosmological models that are still valid and have provided impetus to one of the most active areas of observational cosmology."

Sunyaev's contributions have had great import. He collaborated in landmark studies of the early universe and, with Zeldovich, was the first to describe what is known as the Sunyaev-Zeldovich effect. Also with Zeldovich, he predicted in 1970 the existence of acoustic peaks in the spectrum of angular fluctuations of cosmic microwave background radiation; the peaks were discovered in recent years (see PHYSICS TODAY, August 2002, page 18). He and Nikolai Shakura developed a standard model of disk accretion onto black holes. And, more recently, Sunyaev led the international teams that constructed and operated the Granat orbiting x-ray observatory (1989-98) and the Kvant x-ray observatory (1987-2001) at the MIR Space Station.

He continues to work actively on the theory of the boundary layer between an accretion disk and the surface of a neutron star, on the physics of quasars and microquasars, on x-ray binaries as tracers of star formation in distant galaxies, and on turbulence in the hot gas in clusters of galaxies. And he is the leading Russian participant in the European Space Agency's INTEGRAL gamma-ray observatory. "Through continuing collaborations around the globe," says the foundation's citation, "Sunyaev remains among the most effective scientific bridges between East and West."

German Physical Society Gives Awards

At its annual meeting in Hannover, Germany, last month, the German Physical Society honored the follow-