



ROHRER

from many sources—including lunar laser ranging and very-long-baseline interferometry—to determine and predict the Earth's orientation in space. The high spatial and temporal resolution of the new sources of data have contributed greatly to our knowledge of the peculiar motions and short-term variations of the Earth's spin.

Kaplan receives the Gillis Award for his computer work at the observatory. For example, he has worked on the programs for producing planetary ephemerides, for plotting sky diagrams, and for certifying astronomical computations.

C. A. Barth receives NASA distinguished service award

Charles A. Barth, director of the Laboratory for Atmospheric and Space Physics at the University of Colorado, Boulder, was awarded the NASA medal for Distinguished Public Service.

Barth was cited for his outstanding work on the Solar Mesosphere Explorer, proposing and establishing the project and helping to make it a highly successful scientific mission.

The project, which completed its second year of successful operations in October, was designed to observe and measure the natural processes which form ozone in the upper reaches of the Earth's atmosphere and determine the impact of solar activity on those processes. The satellite—the only NASA-launched satellite currently operated by university students—surprised researchers last year when its on-board instruments detected and observed the eruption of the El Chichon volcano in Mexico. The sulfuric acid and debris from one of the largest volcanic eruptions of the century were tracked as they spread a veil across the northern hemisphere. This information on the volcanic eruption has provided an unprecedented chance to observe a large-scale natural disruption of the chemistry of the atmosphere.

AAS presents Chretien awards to Chalabaev and Madore

The second annual Henri Chretien Awards of the American Astronomical Society have been given to Almas Chalabaev of the Observatory of Paris, Meudon, and to Barry F. Madore of the University of Toronto's David Dunlap Observatory to support further astronomical research.

Chalabaev was awarded \$10 000 for an investigation of the infrared spectra of radiating dust and other relatively cool bodies in H II regions—hot, ionized hydrogen clouds that contain young,

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The \$73 000 Faisal award—one of five presented this year—was presented to Binnig and Rohrer by King Fahd of Saudi Arabia in a ceremony in Riyadh. The awards recognize outstanding scientific achievements that benefit mankind. Both scientists were nominated by the Research Council of the Swiss National Science Foundation.

Binnig received his doctoral degree from the Johann Wolfgang von Goethe University in Frankfurt am Main, Federal Republic of Germany. He joined IBM in 1978.

Rohrer was awarded his PhD degree by the Eidgenössische Technische Hochschule in Zurich and came to IBM in 1963.

Naval Observatory awards for research achievement

The US Naval Observatory has presented the Simon Newcomb Award for research achievement to Don Pascu and Dennis D. McCarthy. The observatory also presented the first Captain James M. Gilliss Award for outstanding service to George H. Kaplan.

Pascu receives the Newcomb Award for his innovative work with natural satellite observations. Early in his career, he invented the "Pascu mask" to reduce the brightness of a planetary image on a photographic plate; the mask allows one to obtain clear images of faint satellites. Pascu's data on the satellites of Jupiter and Saturn contributed to the great successes of the Voyager missions. Recently he has worked with charge-coupled devices, assisting in the discovery of a new satellite of Saturn and in observations of Nereid, one of the satellites of Neptune.

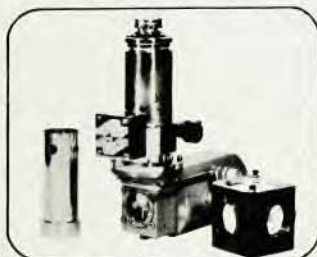
McCarthy receives his Newcomb Award for his work on the Naval Observatory's geodetic information system. This system coordinates data

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From 1968 through 1971, Chalabaev was a member of the radiophysics faculty at Tomsk University, Siberia. He joined the Moscow University faculty of physics in 1971 and stayed there until 1975, when he moved to the Astrophysical Institute of Alma-Ata and the Sternberg Astronomical Institute, both in Moscow. There, he worked on his doctoral degree until leaving for France in 1980.

Madore was presented with \$8500 by the AAS to perform research on the use of infrared techniques to calibrate the distance of Cepheid variable stars, which are important in determining the distances to nearby galaxies. Infrared wavelengths, which are less affected by scattering, absorption and other blanketing phenomena as well as cyclic variations in brightness, should provide a simpler method to calibrate the distances to the Cepheids through their period-luminosity relation.

Madore is currently associate professor of astronomy at the University of

Toronto. He was awarded his BS degree by the University of Southern California and his MS and PhD degrees (1974) in astronomy by Toronto. From 1974 to 1978, Madore was a research assistant at Cambridge University. He returned to Toronto in 1978.

in brief

Wayne M. Polyzou, of the MIT Center for theoretical physics, has become assistant professor of physics, and **Steven R. Spangler**, formerly at the National radio Astronomy Observatory, has become assistant professor of astronomy, both at the University of Iowa.

Chia-Wei Woo is the 14th president of San Francisco State University. In addition to his administrative duties, he will continue his research on phase transitions and low-temperature physics. He will also remain an adjunct professor of physics at the University of California at San Diego.

obituaries

Gregory Wannier

Gregory Wannier died suddenly at the age of 71 on 21 October 1983 in Eugene, Oregon, where he was emeritus professor in the physics department of the University of Oregon. He was one of the most profound and original of the pioneers of theoretical condensed-matter physics. Although he was also one of the least recognized through formal honors in relation to his achievement, his work was always highly valued by his colleagues in the field. Among his collaborators, scientific friends and associates were a remarkable number of physicists now well known in very diverse fields: for example, A. N. Holden, Erich Vogt, Elizabeth A. Wood, Charles W. Misner, Elliott Montroll, P. A. Piroué and Conyers Herring, in addition to those mentioned below.

Characteristically, Wannier's contributions involved deep and elegant mathematics as well as unexpected physical insights. The mathematics often survives in the methodology of the field even after the physics has been superseded. For instance, his paper on "Wannier excitons," the main reason his name is remembered, also introduced the immensely fruitful idea of the "Wannier function" and provided the first example of the ubiquitous "effective mass" theory of defect and excitonic states. In the course of this work, he developed his less well-known generalized treatment of the



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Coulomb functions, which was later mined by Thomas Kuhn and John H. Van Vleck, and by Frank Ham, as the basis of the quantum defect: norm-conserving pseudopotential methods of band theory.

Perhaps his most remarkable achievement was overshadowed by its stimulation of an even more remarkable one: the Onsager solution of the two-dimensional Ising model. In 1941, three years prior to Lars Onsager's solution, Wannier, with Hendrik Kramers, pioneered the transfer matrix methods used by Onsager and later workers, locating the critical point and correctly conjecturing its symmetrical, logarithmic nature. In 1949 he gener-