

GEOPHYSICISTS RECEIVE HONORS AT AGU MEETING

During the most recent meeting of the American Geophysical Union, held last December in San Francisco, several individuals were honored for their contributions to geophysics.

AGU's highest honor, the William Bowie Medal, was presented to **Irwin I. Shapiro** of Harvard University. The award citation said Shapiro "has pushed the limits of geodesy to the very edges of the universe, using the signals from the extragalactic radio sources (quasars) to measure the motions of lithospheric plates, to monitor variations in the rotation of the Earth and to determine the flattening of the Earth's fluid core." The citation went on to say that Shapiro was "arguably the first person to recognize the potential power of [very-long-baseline interferometry] for geophysical studies and quickly became the intellectual and spiritual leader of the geodetic VLBI community." Shapiro is the director of the Harvard-Smithsonian Center for Astrophysics and the Paine Professor of Practical Astronomy and a professor of physics at Harvard.

The James B. Macelwane Medal went to **Margaret A. Tolbert**, an associate professor of chemistry at the University of Colorado's Cooperative Institute for Research in Environmental Sciences, in Boulder. "Her studies of reactions on ice surfaces were pioneering among the laboratory works that advanced scientific understanding of Antarctic ozone depletion and the role of surface reactions on polar stratospheric clouds," the award citation said. (AGU awarded two other Macelwane Medals in 1993, at its spring meeting; see PHYSICS TODAY, De-



Irwin I. Shapiro

cember, page 61.)

The 1993 recipient of the Walter H. Bucher Medal was **Aleksey N. Khramov**, a researcher at the Oil Research and Geology Prospecting Institute in Saint Petersburg, Russia. The citation called Khramov "one of the great pillars on which paleomagnetism has been built worldwide," and it said that he was "the first person to realize the significance of paleomagnetic data from Europe and Asia showing that the Ural Mountains represented the site of the collision between these formerly separated continents."

Kirk Bryan was awarded the Maurice Ewing Medal, given jointly by AGU and the US Navy for contributions to ocean geophysics. Bryan was honored for his "pioneering development of a comprehensive numerical ocean model and for his research over more than 30 years into the physics of ocean circulation and the mechanisms of climate change." Bryan is retiring this month as a

senior researcher at the National Oceanic and Atmospheric Administration's Geophysical Fluid Dynamics Laboratory, located in Princeton, New Jersey.

AGU presented the 1993 Harry H. Hess Medal posthumously to **Alfred E. Ringwood**, who died in November. Among other things, the citation praised him for leading "a pioneering experimental effort that characterized many of the phase transitions in the Earth's mantle." Ringwood was a professor in the Research School of Earth Sciences at the Australian National University in Canberra.

FRANKLIN INSTITUTE MEDALS GO TO BRAAT, COLGATE

At ceremonies this month at the Franklin Institute in Philadelphia, **Joseph J. Braat**, the chief scientist of Philips Research Laboratories in Eindhoven, the Netherlands, will receive the Edward Longstreth Medal, and **Stirling A. Colgate** of Los Alamos National Laboratory will be honored with the John Price Wetherill Medal. The citation commends Braat for "major scientific and practical contributions to the field of optical data recording." Colgate is being honored for "his fundamental contribution to the understanding of stellar collapse and supernova explosions."

OBITUARIES

John Gatenby Bolton

John Gatenby Bolton, a pioneer of radio astronomy, died in his home in Buderim, Queensland, Australia, on