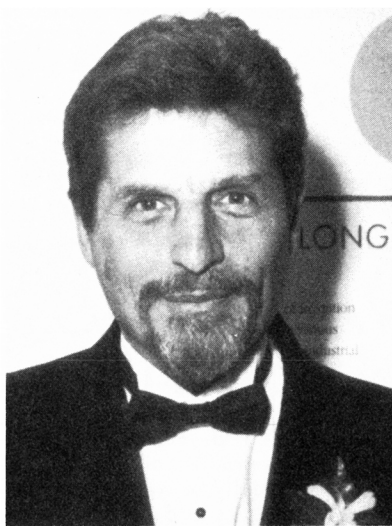




David Bohm



Yakir Aharonov



Slobodan Ćuk



R. D. Middlebrook

example, the effect is shown by a two-slit electron beam diffraction experiment if a solenoid having a diameter much smaller than the distance between the two slits is placed between the slits. With current flowing in the solenoid, the magnetic field is zero outside the solenoid but nonzero inside. However, the nonzero electromagnetic potential outside causes a phase shift in the two beams, resulting in an interference pattern different from the ordinary two-slit one.

Bohm received his PhD in theoretical physics from the University of California, Berkeley, in 1943. He worked at the university's Radiation Lab until 1946, when he became an assistant professor at Princeton University. In the 1950s he worked at the Universidade de São Paulo in Brazil, at the Technion in Haifa, Israel, and at Bristol University in England. In 1961 he became professor of physics

at Birkbeck College, where he is now professor emeritus.

After receiving his PhD in theoretical physics from Bristol University in 1960, Aharonov served on the physics faculty at Yeshiva University. He became a professor of theoretical physics at Tel Aviv University in 1967. Since 1973 he has also been a professor of theoretical physics at the University of South Carolina, Columbia.

The Delmer S. Fahrney Medal for leadership in science and technology was awarded to Timothy Coffey. Coffey was cited for his "research in atmospheric physics and related plasmas and for his distinguished management of the Naval Research Laboratory in Washington, DC," where he is director of research.

Coffey earned his PhD in physics from the University of Michigan in 1967. He headed the plasma dynam-

ics branch of the plasma physics division of NRL from 1971 to 1975, when he was named superintendent of the plasma physics division. In 1980 he was appointed associate director of research for general science and technology at NRL, and in 1982 he assumed his current title.

Coffey has contributed to the theory of nonlinear oscillations, theoretical plasma physics, relativistic electron beam theory and ionospheric and space plasma theory. During Coffey's tenure as NRL's director of research, scientists there have launched six major spacecraft, studied the nature and possible uses of high- T_c superconductors, demonstrated an all-optical towed acoustic array and investigated self-organizing biological systems.

The Edward Longstreth Medal was given to two scientists at Caltech, R. David Middlebrook and Slobodan Ćuk, for "pioneering and expediting the development of integrated magnetics and switched-mode power conversion."

Ćuk and Middlebrook combined the inductors and the transformer, ordinarily separate magnetic components, into a single integrated magnetic structure on a common magnetic core. The new device became known as the Ćuk converter. The input and output filtering inductors in a dc-to-dc switching converter are up to 100 times more efficient than when they are separate components, while component size can be reduced by an order of magnitude.

Middlebrook received his PhD in electrical engineering from Stanford in 1955, and he has been a professor of electrical engineering at Caltech since then. Ćuk was awarded a PhD in electrical engineering from Caltech in 1977, and he is currently an associate professor of electrical engineering there.

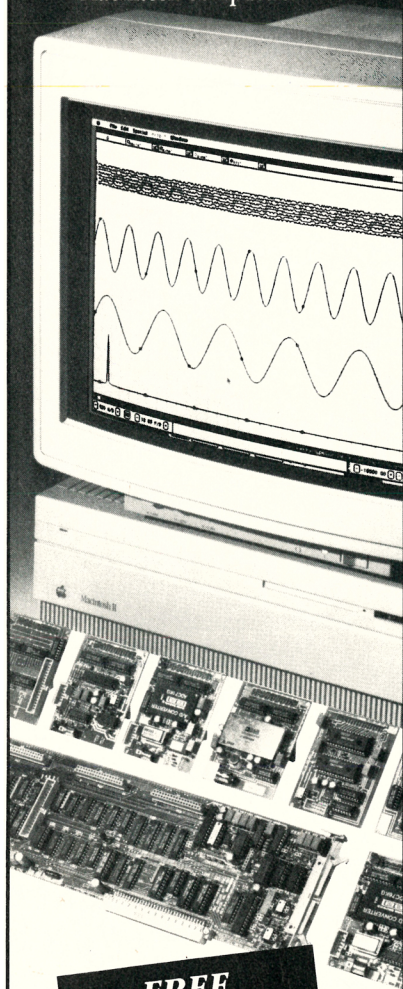
AGU RECOGNIZES CONTRIBUTIONS TO GEOPHYSICS

At the May meeting of the American Geophysical Union, Don L. Anderson of Caltech was presented with the 1991 William Bowie Medal, the group's highest honor. Anderson was cited for his studies of the structure and composition of the Earth.

In the 1960s, the citation said, Anderson and his colleagues showed that Love and Rayleigh waves are explained by two velocity discontinuities in the mantle. With his students, Anderson has used surface-wave and body-wave data to confirm these dis-

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Don L. Anderson

continuities and also to study the inelastic structure of the mantle and core and to map the mantle velocity structure in relation to its position. In 1981 Anderson, with Adam Dziewonski, produced a model for the elasticity of the Earth. The model requires the assumption of some anisotropy, which Anderson has shown is essential in mapping upper mantle velocities. The citation also praised Anderson's model of the constitution of the Earth's interior, calling this work "one of the truly great scientific achievements of our day."

Anderson earned a BS (1955) from Rensselaer Polytechnic Institute and an MS (1959) and a PhD in geophysics and math (1962) from Caltech. Since 1962 he has been on the Caltech faculty. He served as director of Caltech's Seismological Laboratory for 22 years and is currently the Eleanor and John R. McMillan Professor of Geophysics.

Also at the May meeting James W. Dungey, a professor of physics emeritus of Imperial College in London, received the Fleming Medal for geomagnetism research. Much of Dungey's work has centered around the study of the magnetosphere and its properties. The citation noted in particular his work on the reconnection model of the solar wind-magnetosphere coupling and his proposal that magnetospheric hydromagnetic waves are the source of geomagnetic pulsations. The citation also mentioned that Dungey and collaborators deduced the external source of the Van Allen belts.

Dungey earned a PhD in mathematics from Cambridge University in 1950. He joined the faculty of Imperial College in 1963 and was a professor of physics there until his retirement in 1984.

Roderic Jones of the University of Cambridge and Thomas Herring of MIT each received the James B. Macelwane Medal, which recognizes achievements by young researchers.

The award citation for Jones praised his retrieval of abundance profiles of atmospheric trace gases from satellite-measured spectral irradiance data; he later used these profiles to deduce the water vapor content of stratospheric air upon its entry from the troposphere. As part of the Airborne Antarctic Ozone Experiment Jones and his colleagues demonstrated the importance of the temperature and radiation history of air parcels in determining their photochemical evolution.

After receiving a PhD in atmospheric physics from Oxford University in 1984, Jones worked for the British Meteorological Office. In 1990 he became a lecturer in the chemistry department at Cambridge.

Herring was cited for his pioneering use of radio interferometry in the study of geodesy. One of his most notable results, the citation said, was the demonstration of errors in the accepted theory of the Earth's nutation. He has also used very-long-baseline radio interferometry data to measure the contemporary rate of separation of the North American and Eurasian plates.

After earning a PhD in geophysics from MIT in 1983, Herring worked as a research associate at Harvard University. In 1989 he became the Kerr-McGee Associate Professor of Geophysics at MIT.

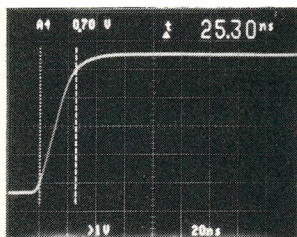
AGU presented the first Edward A. Flinn III Award to Robert Watson, program director of NASA's Process Studies Program Office. The Flinn Award recognizes contributions by individuals in facilitating, coordinating and implementing research activities. Watson, whose specialty is atmospheric chemistry and climate, is perhaps best known for his work on stratospheric ozone. He served as the US adviser for negotiations of the Vienna Ozone Convention and the Montreal Protocol and was director of the Antarctic Ozone Expedition. Watson received a PhD in gas-phase chemical kinetics from Queen Mary College of London University in 1973. From 1976 to 1987 he was a researcher at the Jet Propulsion Laboratory, and for part of that time he also served as a program scientist at NASA headquarters. He officially moved to NASA in 1987.

Eugene Linden, a writer at *Time* magazine, was presented with the 1991 Walter Sullivan Award for excellence in science journalism. Lin-

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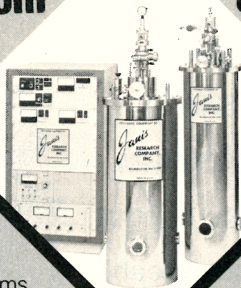
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den was chosen for his *Time* article "The World's Water," which described the often damaging effects of human activity on the planet's water supply. Linden received a BA in English literature from Yale University in 1969.

At its December 1990 meeting AGU presented the Horton Award to Garrison Sposito, a professor of soil physical chemistry at the University of California at Berkeley. He was cited for "inspiring research into the foundational physics of the theory of transport in natural porous media." Sposito received a PhD in soil science from Berkeley in 1965. He then joined the Sonoma State University faculty. Sposito moved to the University of California at Riverside in 1974 and joined the Berkeley faculty in 1988. (Several other individuals were recognized at the December 1990 AGU meeting; see *PHYSICS TODAY*, January 1991, page 81.)

OBITUARIES

William George Penney

William George Penney (Lord Penney), who died on 3 March 1991, was best known for his contributions to atomic energy, particularly for leading the development of the British atomic bombs.

Penney was born on 24 June 1909 in Gibraltar, where his father was stationed with the British army. He was a brilliant student at Imperial College, London, and published his first paper at the age of 20. He worked with Ralph de Laer Kronig, partly in London, partly in Groningen, the Netherlands, and together they developed the "Kronig-Penney

William George Penney

