

we hear that

IEEE Medal of Honor to Norman Foster Ramsey

The Institute of Electrical and Electronics Engineers has presented its highest award, the Medal of Honor, this year to Norman F. Ramsey of Harvard University, for "fundamental contributions to very high accuracy time and frequency standards exemplified by the cesium atomic clock and hydrogen maser oscillator."

Born in Washington, D.C., on 27 August 1915, Ramsey studied in the United States and England, receiving a PhD from Columbia University in 1940 and a DSc from Cambridge University in 1964. His diverse research interests have led to key contributions in determining magnetic moments, the structural shape of nucleons, the nature of nuclear forces and the thermodynamics of energized populations of atoms and molecules. Notably, Ramsey invented the method of using separated oscillatory fields for exciting resonances, which provides extremely high resolution in atomic and molecular spectroscopy and forms the practical basis for the most precise atomic clocks. Additionally, in collaboration with his

students, he invented the atomic-hydrogen maser, which allows still greater spectroscopic resolution and serves as the basis for atomic clocks having the highest levels of stability for periods extending to several hours.

During World War II, Ramsey joined the MIT Radiation Laboratory where he headed groups that developed the first three-centimeter-wavelength magnetrons and the related radar systems; later he became a group leader at Los Alamos Laboratory. In 1947 he joined the faculty at Harvard University, becoming Higgins Professor of Physics in 1966.

Ramsey was the executive secretary of the group that established Brookhaven National Laboratory and the first chairman of its physics department. He served as the first science adviser to the Secretary General of NATO from 1958-59. He was a founding Trustee of Universities Research Association for the construction of the 200-GeV accelerator at Batavia, Illinois, and served as president of the Association from 1966-72. A fellow of The American



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Physical Society, Ramsey served as president of APS from 1978-79 and has been the Chairman of the Board of Governors of the American Institute of Physics since 1980.

1983 Ernest O. Lawrence Awards

Energy Secretary Donald Hodel has presented the 1983 Ernest Orlando Lawrence Memorial Award to five scientists and engineers, each of whom will receive a medal, a citation and \$5000. The award is given to US citizens who are at relatively early stages of their careers and already have made noteworthy contributions to the development, use or control of atomic energy. The recipients of the 1983 Lawrence award are James F. Jackson, Michael E. Phelps, Paul H. Rutherford, Mark S. Wrighton and George B. Zimmerman.

Jackson, who earned his PhD in nuclear engineering at the University of California and currently works as personnel director at the Los Alamos National Laboratory, is recognized for his contributions to reactor safety, including work on the transition phase of breeder reactors and on physical

techniques to assess the safety of light-water and breeder reactors.

Phelps, a nuclear chemist at the School of Medicine, University of California, Los Angeles, has made outstanding contributions to nuclear medicine, notably the development and application of positron tomography to the study of human brain chemistry.

Rutherford received his PhD in physics from Cambridge University; he is now associate director of the Princeton Plasma Physics Laboratory. In his research, Rutherford contributed to the basic theory of plasma confinement, plasma instabilities, plasma transport and impurity behavior; his work has helped produce, in recent years, an excellent agreement between computer simulations and experimental results.

Wrighton, professor of chemistry at MIT, received his PhD from Caltech.

He is honored for his insights into inorganic photoprocesses, particularly processes that occur at semiconductor surfaces, and for imaginative advances in the modification of electrodes, including incorporation of catalytic materials.

Zimmerman, a computational physicist at Lawrence Livermore National Laboratory, is recognized for his work in developing computer methods for problems in fusion research. He is best known as the principal creator of LASNEX—said to be the world's most complex physics simulation program—which simulates the processes expected to occur in inertial-confinement fusion.

ACA Awards to Jerome Karle and Herbert A. Hauptman

Jerome Karle and Herbert A. Hauptman received the A. Lindo Patterson Award of the American Crystallogra-