

FRANKLIN INSTITUTE HONORS LORENZ, OATLEY AND MADEY

At its annual Medal Day, held in April this year, the Franklin Institute presented its medals for achievements in science.

Edward Lorenz (MIT) received the Elliott Cresson Medal for his "discovery, recognition and interpretation of dynamical chaos in physical systems, and for his impact upon the scientific, mathematical and technological communities." Lorenz pioneered the study of chaos while examining unexpected results that had cropped up in his work on weather systems. He found that in numerically simulated weather systems, dramatically different states could develop from nearly identical initial conditions. In illustrating this phenomenon with the simplest available model, he encountered the now-familiar strange attractor.

Lorenz received his AB (1938) from Dartmouth College and his AM (1940) from Harvard University, both in mathematics, and his SM (1943) and ScD in meteorology (1948) from MIT. He became a member of the MIT research staff in 1948, and is

Edward Lorenz



now a professor emeritus of meteorology at MIT.

The Howard N. Potts Medal went to Charles W. Oatley (University of Cambridge). Oatley was cited for his "preeminent contributions, in both technical and leadership roles, in the development of the scanning electron microscope." In this type of microscope a sample is exposed to an electron beam and the sample surface is mapped according to the intensity of the backscattered electrons or induced secondary electrons. The resulting images give the illusion of three-dimensionality, and typically have a resolution of about 50 Å.

Oatley received his undergraduate degree in physics in 1925 from Cambridge, worked in industry for a short time and then joined the staff of King's College, the University of London, in 1927. He worked on radar during World War II, and by the war's end he was in charge of the army radar establishment. In 1945 Oatley became a lecturer in the engineering department and a fellow of Trinity

Charles W. Oatley



College at Cambridge. He is now an emeritus professor there.

John M. J. Madey (Duke University) received the Stuart Ballantine Medal for his "creative and consistent scientific effort in the development of the free-electron laser, and for its tremendous impact on science and engineering." The light that these lasers emit is generated by fast-moving electrons, and is therefore not confined to particular emission frequencies, as in traditional lasers. FELs can produce radiation ranging in wavelength from the millimeter to the ultraviolet range. Madey originally conceived the free-electron laser in his junior year as an undergraduate at Caltech.

Madey received his BS (1964) and MS (1965) degrees from Caltech, and his PhD in physics (1971) from Stanford University. He was on the Stanford faculty from 1981 until 1988, when he took his current position as professor of physics and director of the Free-Electron Laser Laboratory at Duke University.

—MATTHEW SIEGEL

John M. J. Madey

