

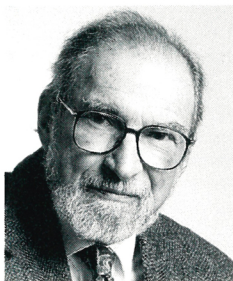
WE HEAR THAT

ASA Honors Dyer and Sparrow in Indiana

At last month's meeting of the Acoustical Society of America in Indianapolis, two individuals received recognition for their accomplishments.

The Gold Medal, ASA's highest honor, was presented to **Ira Dyer**, who was cited for his "contributions to ocean acoustics, structural acoustics and aeroacoustics and for dedicated service to the Society." The medal citation also praised Dyer's efforts as a mentor and leader in acoustics education, as well as his research on Arctic acoustics and, more recently, structural acoustics. Dyer is the Weber-Shaughness Professor in the ocean engineering department at MIT.

Victor W. Sparrow, an assistant professor of acoustics at Pennsylvania State University, received the R. Bruce Lindsay Award. He was chosen for his "contributions to nonlinear acoustics, outdoor sound propagation and structural acoustics." The award citation noted in particular Sparrow's work in computational acoustics.



IRA DYER

Lightman Garners Gemant Award from AIP

The Andrew Gemant Award, given by the American Institute of Physics to individuals who have linked physics to the arts and humanities, goes this year to **Alan P. Lightman**, a professor of science and writing at MIT. "Not satisfied with a distinguished career in theoretical astrophysics, [Lightman] went into science writing, history of science and the writing of fiction based on his thorough understanding and love of theoretical physics," the award citation stated. Particular note was made of Light-

man's two works of fiction, *Einstein's Dreams* and *Good Benito*. His collection of essays, *Dance for Two*, was recently published by Pantheon.

IN BRIEF

Paul A. Fleury is now dean of the school of engineering at the University of New Mexico in Albuquerque. Until February, Fleury had been the director of the materials and processing research laboratory at AT&T Bell Laboratories in Murray Hill, New Jersey.

The John Scott Award of the American Philosophical Society was presented last November to **John C. Mather**, a scientist at NASA's Goddard Space Flight Center in Greenbelt, Maryland. Mather was the scientific leader of the Cosmic Background Explorer Project. The citation said "his measures of the spectrum of the cosmic microwave background radiation and the detection of minute temperature fluctuations in this radiation have confirmed predictions of the Big Bang model of the early universe."

At the International Conference on the Structure of Surfaces to be held this July in Aix-en-Provence, France, **John B. Pendry** will receive the first Surface Structure Prize. The award recognizes Pendry's "far-reaching, diverse, fundamental and practical contributions to the field of quantitative surface

structure determination." Pendry is a professor of theoretical solid-state physics, head of the solid-state theory group and dean of the Royal College of Science at the University of London's Imperial College of Science, Technology and Medicine.

Edward Hinds became a professor of physics at the University of Sussex in Brighton, England, in January. Hinds, who had been on the physics faculty at Yale University, is also director of the new Sussex Centre for Optical and Atomic Physics.

The Indian Academy of Sciences has elected **André Martin** to be a foreign fellow. Martin is a senior staff member emeritus in the theory division of CERN.

The National Organization of Test, Research and Training Reactors has established an award in the name of **Robert E. Carter**, who is a senior member of the technical staff at the Rockville, Maryland, office of the Idaho National Engineering Laboratory. Carter is the first recipient of the award, which has been created to recognize significant accomplishments and dedicated service to the research reactor community.

Keshav N. Shrivastava, a professor in the school of physics at the University of Hyderabad in India, has been named the university's dean of faculty.

OBITUARIES

Samuel L. McCall

Samuel L. McCall, a distinguished member of the technical staff at AT&T Bell Laboratories, died of cancer on 18 October 1995 at the age of 55. Born in Panama City, Florida, he received his BS from Florida State University in 1962 and his PhD in physics from the University of California, Berkeley in 1966. He was still a doctoral candidate when, in the mid-1960s, he codiscovered self-induced transparency with his thesis adviser, Erwin Hahn. The two showed that optical pulses can travel unattenuated through linearly absorbing systems if the intensities of the pulses are high enough to "self-induce" transparency by non-

linear interaction with the absorber.

Sam spent the major portion of his research career at Bell Labs in the physical research laboratory. He was especially gifted with deep physical insight, which resulted in his making many pioneering contributions in the fields of nonlinear optics and lasers, including optical bistability, distributed feedback lasers, vertical-cavity semiconductor lasers, quantum state interferometers, microdisk lasers, photonic bandgap systems and quantum-wire lasers. He also pioneered demonstrations of adaptive telescope mirrors and contributed to the understanding of supernovae phenomena.

Examples of his more applied work include an analysis of distributed Bragg reflectors of great interest for



SAMUEL L. MCCALL

semiconductor lasers and his important contributions to vertical-cavity surface-emitting lasers that may well find broad applications in optical data links. His analysis of Bragg reflectors typifies his approach to many problems. He wrote the forward and backward propagating wave amplitudes as a two-state spinor wavefunction and then showed that the coupling of these states in the grating is equivalent to a time-dependent Schrödinger equation with Pauli spin matrices in the Hamiltonian. This elegant analysis makes possible simple solutions to problems in which shifts are introduced into the gratings to stabilize the lasing mode frequency.

Sam will be remembered by his many friends for his deep and broad intellect. He was the source of wisdom one consulted to understand almost any problem. He would always start his explanations at the most fundamental level and expand them by using many examples. He was especially capable of carrying out theoretical calculations where rigor was appropriate, but in considering new phenomena, he could ignore the confines of mathematical rigor and quickly line up all kinds of possible mechanisms, discarding the improbable ones and homing in on the right one.

Sam will also be remembered for his wonderful baritone voice, his love of the outdoors and especially for his storytelling and sense of humor. He was an expert at castigating the arrogance and pretentiousness of this world with his sharp (often politically incorrect) humor. His critiques of physics research by both his colleagues and others outside Bell Labs made him famous (or infamous to some). But we all gained new insight from the sharp criticism. Sam was a sensitive human being and a wonderful

friend to many of us. We will miss this lovable genius.

RICHARD E. SLUSHER
PHILIP M. PLATZMAN

Lucent Technologies
(formerly AT&T Bell Laboratories)

Murray Hill, New Jersey

ERWIN L. HAHN
University of California, Berkeley

Lawrence C. Biedenharn Jr

Lawrence C. Biedenharn Jr, a well-known mathematical and theoretical nuclear physicist and James B. Duke Professor of Physics Emeritus, died on 12 February of cancer in Austin, Texas, where he lived after retirement from Duke University.

Biedenharn was born on 18 November 1922 in Vicksburg, Mississippi. His undergraduate studies at MIT were interrupted by World War II, which he spent in the US Army Signal Corps and in completing his bachelor's degree in absentia. Returning to MIT in 1946, he concentrated on theoretical nuclear physics, receiving his PhD in 1949 under John Blatt.

His lifelong pursuit of symmetries in nuclear (and later particle) physics began with his early publications. He extended Eugene Wigner's definition of time reversal to the realm of relativistic quantum mechanics. His work with Blatt and Murray E. Rose on the use of the rotation group in the theory of nuclear reactions and angular correlations in nuclear decays culminated in two review articles published in *Reviews of Modern Physics* in 1952–53; among that journal's most frequently cited articles, the two reviews are still standard texts.

After leaving MIT, Biedenharn spent two years at Oak Ridge National

Laboratory. In 1952 he became an assistant professor at Yale University, where he began his work on Coulomb excitation of nuclei. In 1954 he joined the faculty of Rice University, where he became an associate professor in 1956. Five years later, he moved to Duke University as a full professor. His work on the excitation of nuclear states by electrostatic forces led to a classic textbook, *Coulomb Excitation*, which he coauthored with Peter J. Brussard (Oxford U. P., 1965).

Biedenharn's interest next brought his formidable mathematical talent to bear on the role of symmetry groups in quantum physics. He and his collaborators generalized the Wigner–Racah calculus of tensor representations for the angular momentum group to other continuous symmetry groups, especially the unitary groups that play an important role in the classification of elementary particle states. This work culminated in two monographs, written with James Louck, *Angular Momentum in Quantum Physics* and *Racah–Wigner Algebra in Quantum Theory*, which were published as part of the *Encyclopedia of Mathematics and Its Applications* (Addison-Wesley, 1981).

Biedenharn's significant contributions to group theoretical methods in physics led to his worldwide recognition as one of the foremost leaders in modern theoretical physics. His research had a significant impact on both nuclear physics and condensed matter physics.

From 1985 until he retired from Duke in 1993, Biedenharn was the editor of the *Journal of Mathematical Physics*. In 1989 he published a widely cited paper about the quantum group $SU(2)_q$ in which he introduced the q -analog of the algebra of boson operators. In the following years, he contributed significantly to the popularization of the mathematics of quantum groups for theoretical physicists. His *Quantum Group Symmetry and q -Tensor Algebras* (World Scientific, 1995), coauthored with Max Lohe, appeared only a few months before he died.

Biedenharn was known to his colleagues and his many students as a man of erudition and manifold interests, which penetrated virtually every aspect of human life. His scientific productivity kept a steady pace throughout the years and even accelerated toward the end of his career.

He had a great love for music and was a devotee of chamber music in particular. His keen intellect will be remembered by his colleagues and coworkers.

EDWARD G. BILPUCH
HORST MEYER
BERNDT MÜLLER

Duke University
Durham, North Carolina



LAWRENCE C. BIEDENHARN JR