

National Science Board honors DuBridge

The National Science Board has chosen Lee A. DuBridge, president emeritus of the California Institute of Technology, to receive the third Vannevar Bush Award. Given from time to time, this honorary award was established by the National Science Foundation in 1980 to recognize the distinguished statesmen of science and technology for their outstanding contributions to the nation's welfare. The award is intended not just to honor the contributions made by the individual recipients, but also, by recognizing exceptional leaders within the scientific community, to acknowledge the importance of the contributions made by the scientific enterprise as a whole.

The Vannevar Bush Award, which includes a medal struck especially for the occasion along with the citation, has been presented only twice before—to James R. Killian Jr, retired honorary chairman of the corporation of the Massachusetts Institute of Technology, and to William Oliver Baker, retired chairman of the board of Bell Telephone Laboratories.

DuBridge has served the scientific community in many capacities—as teacher, administrator, adviser and scientist—and his leadership frequently opened new areas to further exploration. The NSF cited him

For pioneering in vision, boldness and drive in the exploration, charting and settlement of new frontiers in science, technology, education and public service. As youthful head of the World War II Radiation Lab he conquered new reaches of the electromagnetic spectrum, and thus helped deny to his country's enemies the conquest of Europe and the Pacific. As a charter member of the National Science Board he assisted the pilot of an infant agency to negotiate the passage between the Scylla of academic suspicion and the Charybdis of bureaucratic misconceptions. As leader of a great educational institution and as adviser to Federal agencies and to a President, he opened new frontiers in the use of science for the public good. Always the most genial and



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amicable of men, he nevertheless continues to stand as stern centurion on the ramparts, zealously defending the best traditions of quality science and freedom for inquiry.

After obtaining his PhD in 1926 from the University of Wisconsin, DuBridge spent two years at the California Institute of Technology under a National Research Council fellowship. He taught at Washington University from 1928 to 1934, and then joined the faculty at the University of Rochester, where he remained until 1946, serving as chairman of the physics department

and dean of the faculty of arts and sciences. In 1946 he became president of the California Institute of Technology, serving in that capacity until 1969, when he became president emeritus.

DuBridge was the director of the Radiation Laboratory of the Massachusetts Institute of Technology from 1940 to 1945. As director he coordinated the wartime efforts of the armed forces, industry and a staff of nearly 4000 scientists and technicians, to create and to produce radar systems for defense. He served on the Naval Research Advisory Committee (1945–1951) and the Air Force Science Advisory Board (1945–1949). He was a member of the first General Advisory Committee of the newly-formed Atomic Energy Commission in 1946, and on the first National Science Board in 1950. He continued to serve on the NSB from 1958 to 1964 and was its vice chairman from 1962 to 1964. His advocacy of the government's role in supporting basic research led him to organize a group of scientists to inform Congress and the public about the importance of basic research. DuBridge also was a member of the Presidential Science Advisory Committee from 1969 to 1972 and served as President Nixon's Science Adviser from 1969 to 1970.

His research has included work on nuclear disintegration, photoelectric and thermionic emission, dc amplification and circuits, radar and biophysics.

Kumar Patel receives Townes Award

The Optical Society of America has presented the Charles Hard Townes Award for 1982 to Chandra Kumar Naranbhai Patel of Bell Laboratories. The Townes Award is given annually to recognize "outstanding experimental or theoretical work, discovery or invention in the field of quantum electronics." The prize is made possible by a donation from Bell Labs and consists of a silver medal and a \$1000 cash prize.

The Society honored Patel for "his pioneering contributions to quantum electronics, including the discovery of

many gaseous laser systems, particularly the CO₂ laser; his invention and development of the spin-flip Raman laser; his high-resolution studies for pollution detection in the atmosphere; and his contributions to the acousto-optic techniques for measuring small optical absorptions."

Patel, who has been the director of the Physical Research Laboratory at Bell Labs since 1976, did his undergraduate work at the University of Poona in India. He came to the United States and in 1961 obtained a PhD in electri-



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cal engineering from Stanford University. He then joined the technical staff at Bell Labs.

His research interests have included work with many aspects of lasers and laser action as well as investigations of nonlinear optics, work on high-resolution spectroscopy and the development of techniques for detecting pollution in the atmosphere and stratosphere. Recently Patel has been exploring weakly absorbing condensed materials to characterize quantitatively their spectral properties using a pulsed laser and an acousto-optic detector based on a piezoelectric transducer.

views with Albert Einstein in which Einstein provided new current and retrospective views of his work on relativity and on the origins of his ideas. Published, these became an important primary source in the history of this significant chapter in modern physics. Shankland was also author of a textbook, *Atomic and Nuclear Physics*, contributed many articles to encyclopedias and scientific journals, and served as an associate editor of both the *American Journal of Physics* and of the *Journal of Scientific Instruments*. He was also president of Associated Midwest Universities and a member of both the physical sciences division of the National Research Council and of the Governing Board of the American Institute of Physics. Always avoiding the limelight, he was an outstanding scientific statesman of his generation, particularly of the period in which the US assumed world leadership in physics.

LESLIE L. FOLDY

Case Western Reserve University

obituaries

Robert S. Shankland

Robert S. Shankland, Ambrose Swasey Professor of Physics at Case Western Reserve University for more than 40 years, died 5 March 1982 at the age of 74. Following his retirement in 1976, he continued to engage in his scientific and other interests, in particular, in his contributions to the best in architectural acoustical design through his consulting activities.

Born in Willoughby, Ohio, in 1908, Shankland studied under Dayton C. Miller, at Case School of Applied Science, where he received his BS, and Arthur C. Compton at Chicago, under whom he earned his PhD. He returned to Case to become head of the physics department on Miller's death in 1940 and continued his affiliation with Case to the end of his life.

During World War II he headed the Underwater Sound Reference Labora-

tory at Columbia University, charged with calibration and testing of underwater sound equipment, served as chairman of the US Navy Underwater Measurements Committee, and in 1943 was a scientific representative to the United Kingdom.

His scientific career, spanning many interests, centered on architectural acoustics, nuclear and reactor physics, and the history of physics. He published extensively on acoustics and served as consultant for innumerable churches, concert and lecture halls, and other structures with large rooms. He promoted recognition of the concept that sound diffusion is as important for concert hall acoustics as are balanced reverberation and the absence of echoes. As a result of his close association with George Szell during the latter's directorship of the Cleveland Symphony, he stressed the importance of design elements in the stages of performance halls to improve the ability of members of musical ensembles to hear each other clearly and thereby to play together better. His exceptional expertise benefited not only from his own fine musical taste and Szell's knowledge and observations, but also from his extensive studies of the acoustics of performance halls from Greek theaters, through churches and cathedrals of every age, to modern concert halls.

Following World War II he was a frequent summer collaborator at the Lawrence Radiation Laboratory in Berkeley. He participated in early experiments with the first synchrocyclotron, including the first experiment to yield information on the p-wave proton-proton interaction. Later he was a consultant for many years and the first acting technical director of the materials testing reactor at Idaho Falls.

On five occasions in the mid-fifties he conducted personal scientific inter-

Ralph A. Goodwin

Ralph A. Goodwin professor of physics at the United States Naval Academy, Annapolis, Maryland, died 3 May 1982 at the age of 69.

Born in Chariton, Iowa, he earned an AB at Simpson College in 1935 and PhD at Iowa State University in 1939. He was an instructor in physics at North Dakota State in 1939-40 and an assistant professor at Kansas State, Fort Hays, in 1940-41.

In 1941 he joined the civilian faculty of the US Naval Academy, where he remained until his death. He was chairman of the physics department 1950-59 and 1974-78. In 1944 he was co-author of *Physics*, USNA Edition.

Through the years, Goodwin maintained an interest in experimentation, especially in optics, but his natural curiosity often led him into other fields, such as the mechanism of regulation. In the summers of 1971-73, he was a member of the staff for an NSF-sponsored *Short Course in Lecture Demonstrations for College Teachers*, held at the Naval Academy.

E. R. PINKSTON

J. R. SMITHSON

United States Naval Academy

Julius Ashkin

Julius Ashkin, professor of physics at Carnegie-Mellon University, died 4 June 1982, after a lengthy illness. As a theoretical physicist, he made significant contributions to statistical mechanics, nuclear physics, and elementary-particle physics. As an experimental particle physicist, he was a leader in two of the most crucial experi-



SHANKLAND