Five scientists win E.O. Lawrence awards

The US Department of Energy has presented the 1980 E. O. Lawrence Memorial Award to five scientists for their outstanding work in atomic energy. The recipients are: Donald W. Barr (Los Alamos Scientific Laboratory); B. Grant Logan (Lawrence Livermore Laboratory); Nicholas P. Samios (Brookhaven National Laboratory); Benno P. Schoenborn (Brookhaven), and Charles D. Scott (Oak Ridge National Laboratory). Each received a medal, a citation and $5000 at a special DOE awards ceremony on 16 October in Washington, D.C.

The Lawrence Award is given to US citizens who are early in their scientific careers and who have made "recent meritorious contributions to the development, use or control of atomic energy." It was established in 1959 in honor of Ernest Orlando Lawrence, the inventor of the cyclotron and former director of the two California laboratories at Berkeley and Livermore that bear his name.

The five winners of the Department of Energy's E.O. Lawrence Award for 1980. From left to right: Donald Barr, Benno Schoenborn, B. Grant Logan, Nicholas Samios and Charles Scott.

Donald W. Barr has spent his entire professional career with the radio-chemistry/nuclear chemistry group at Los Alamos. He came there immediately after he received his PhD in chemistry at the University of California in 1957. Barr soon established "an outstanding career in nuclear diagnostics." DOE cites his "keen and imaginative insight into the complex relationship between radiochemical test data, fundamental physical and chemical phenomena, and the detailed behavior of . . . test devices." Barr has also done important work in radiochemical diagnostics, particularly in the areas of critical-assembly activation measurements and elementary-particle cross-section measurements.

Since 1974, two years after completing his doctoral engineering studies at the University of California at Berkeley, B. Grant Logan has worked on the magnetic-fusion energy program at Livermore. Logan is the co-inventor of the tandem-mirror fusion concept, the leading alternative to the tokamak approach to fusion power. From 1976 to 1979, he was the principal contributor to a series of improved conceptual designs of the tandem-mirror reactor, including a promising axisymmetric "cusp" magnet design. He also co-invented the "thermal barrier" that has improved the outlook for the tandem-mirror project.

Nicholas P. Samios, senior physicist and chairman of the Brookhaven physics department, received his PhD from Columbia University in 1957. He joined Brookhaven in 1959 after instructing at Columbia for the previous three years. The Energy Department describes Samios as "one of the outstanding experimental high-energy physicists in the world . . . " In 1964, he led the experimental group that discovered the Ω^--particle, the existence of which was predicted by Murray Gell-Mann. More recently, in a bubble-chamber experiment, Samios found the first charmed baryon, a discovery that clarified the interpretation of the psi/J particle.

Benno P. Schoenborn is senior biophysicist at Brookhaven; he joined the laboratory in 1967. He earned his doctoral degree in physics at the University of New South Wales, Australia in 1962. DOE mentions his leadership "in three fields—the interaction of inert gases with proteins; the structures of large biological molecules and cellular components; and the use of neutron diffraction and scattering to determine biological structures." He was the first to investigate the interaction of inert and anesthetically active gases with macromolecules at the molecular level. This led him to the discovery that gases such as dichloromethane, when bound to sickle-cell hemoglobin, could make sickled blood cells normal.

Charles D. Scott, who is associate director of the chemical technology division at Oak Ridge, joined the Laboratory in 1957. Scott took his PhD in chemical engineering in 1966. DOE says "Scott is a recognized authority in the application of chemical and engineering principles to the development and deployment of chromographic separation systems and advanced analytical instrumentation." His contributions to nuclear energy include the invention of processes for producing uranium feed materials, for nuclear reactor fuel reprocessing and for coolant clean-up technology relating to high-temperature gas-cooled reactors.

Franklin Institute awards eleven medals

In October, the Franklin Institute awarded medals to eleven scientists for their outstanding scientific and technological achievements. The medalists

include Lyman Spitzer, Jr, Riccardo Giacconi, Stanley G. Mason, Ralph A. Alpher, Robert Herman, Emil Wolf and Jerome B. Wiesner.

The Institute presented Lyman Spitzer Jr, Charles A. Young Professor of Astronomy at Princeton University, with its highest award, the Franklin Medal. Spitzer received the award "for his contributions to the disciplines of astrophysics and physics, particularly his theories of star formation, evolving stellar systems and plasma physics, and for his development of satellite-borne astronomical observatories and a major laboratory for the study of controlled thermonuclear fusion." Spitzer proposed the theory that stars are formed from contracting interstellar gas clouds and identified the important roles played by angular momentum, dust grains and the general galactic magnetic field in this process. Spitzer earned his MA (1937) and PhD in astrophysics (1938) at Princeton. A former American Physical Society Maxwell Prize winner, he was a member at the Yale University faculty until 1947, when he came to Princeton.

The 1980 Eliott Cresson Medal went to Riccardo Giacconi, professor of astronomy at Harvard University and associate director for high-energy astrophysics at the Harvard Smithsonian Center for Astrophysics, for his work on x-ray astronomy. Giacconi is the inventor of the x-ray telescope, a device that has permitted scientists to detect the farthest astronomical objects yet discovered. The University of Milan granted Giacconi his doctorate in physics in 1954. After two years at Indiana University and then two more at Princeton, he became executive vice-president and member of the board of directors of American Science and Engineering, Inc. He held this position until 1973, when he joined the Harvard University and Smithsonian Observatory staffs. In 1966 Giacconi received the AAS Warner Prize.

Stanley G. Mason, Otto Maass Professor of Chemistry at McGill University, won the Howard N. Potts Medal "for his development of the science of microrheology," the description of the motion of suspended particles in flowing liquids. Mason completed his doctoral studies in physics at McGill in 1939. From 1941 to 1945 he worked for the division of atomic energy of the National Research Council of Canada. He then came to the Pulp and Paper Research Institute of Canada, retaining the position of head of the physical chemistry division when he joined the McGill faculty in 1966.

Ralph A. Alpher, physicist with the General Electric Research and Development Center in Schenectady, N.Y., and Robert Herman, professor of transportation and physics at the University of Texas at Austin, shared the John Price Wetherill Medal for their prediction of the existence of residual cosmic blackbody radiation and their work on nucleosynthesis. The prediction and detection of background microwave radiation in the universe is regarded as a major piece of evidence in support of the big-bang theory. The pair are also responsible for developing a new method of analyzing lead-isotope abundances that yielded an unambiguous figure for the maximum age of Earth's crust.

Alpher received his doctoral degree in physics from George Washington University in 1948. He was a physicist at the Applied Physics Laboratory, Johns Hopkins University for eleven years prior to his arrival at General Electric. Princeton granted Herman an MS and PhD degree in physics in 1940. He was on the faculties of City College of New York and the University of Pennsylvania before joining Johns Hopkins in 1942. Thirteen years later Herman went to the traffic science department of the General Motors Corporation Research Labs. In 1976 he came to the Texas faculty.

The Albert Michelson Medal has been given to Emil Wolf, professor of physics and optics at the University of Rochester, "for his many outstanding contributions to the theories of physical optics and coherence and his contributions as an author, editor and academician." The Institute stated that many of the recent developments in diffraction theory, image formation, radiative transfer and the inverse scattering problem had been influenced by Wolf's work. He was also co-author (with Max Born) of the famous text, *Principles of Optics*. Wolf obtained his PhD in 1948 from Bristol University, UK. He worked at Cambridge University, the University of Edinburgh and the University of Manchester before he joined Rochester in 1959. Wolf won the Optical Society of America Ives Medal in 1977.

Jerome B. Wiesner, president emeritus and Institute Professor at MIT, was awarded the Delmer S. Fahrney Medal for outstanding leadership in science and technology. Recently retired as the thirteenth president of MIT, Wiesner was science adviser to the President during the Kennedy and Johnson Administrations. The Franklin Institute terms him a "recognized authority on microwave theory, communications science and engineering, radio propagation phenomena and science policy." He earned MS (1938) and PhD degrees in engineering (1950) from the University of Michigan. Wiesner's association with MIT has continued since 1942.

Other medal winners in nonphysics-related fields are: Avram Goldstein of Stanford University (Franklin Medal for work on brain peptides and endorphins); Leonard T. Skeggs, Jr, of the US Veterans Administration and Case Western Reserve University (Edward Longstreth Medal for the development of an automatic blood analyzer); Bruce N. Ames of the University of California, Berkeley (Bolton L. Corson Medal for the development of a simple test for carcinogenicity in edibles) and Robert B. Johnston and his co-workers at the Port Authority Transit Corp, Camden, N.J. (George R. Henderson Medal for the "planning, design, construction and operation of the Lindenwold High Speed Line).

obituaries

John Gaston Fox

John Gaston Fox, professor of physics at Carnegie-Mellon University died suddenly on 24 July 1980. He had been a member of the physics department since 1946 and was planning to retire after the present academic year. With his death, we have lost a talented colleague and valued friend.

Fox had a research career that covered a wide range of fields. His MSc was obtained in 1937 at the University of Saskatchewan where he worked with Gerhard Herzberg on molecular spectroscopy. He then went to Princeton University for doctoral study and became associated with Milton G. White and others working with the original Princeton cyclotron. The research involved production of radioactive isotopes; of particular importance were results on Coulomb energy differences of light isobaric nuclei.

After receiving his PhD in 1941, Fox joined the Hercules Powder Company in Wilmington, Delaware as a research physicist. He was always amused to recall that one of his first tasks there was to investigate methods to test the failure of paper under repeated folding. His main work there was to apply spectroscopic techniques to the measurements of detonation temperatures of explosives. Fox left Hercules in 1945 for Los Alamos Scientific Laboratory and a year later came to the physics department of Carnegie Institute of Technology. He participated in the construction of the 440-MeV syn-