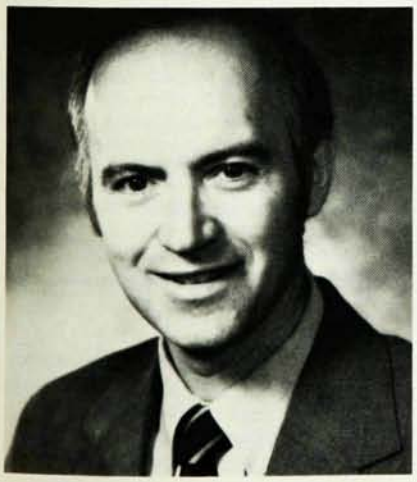
China, Hefei, Anhui, China) and Humitaka Sato (Research Institute for Fundamental Physics, Kyoto University, Kyoto, Japan) received first prize for an essay titled "Is the periodicity in the distribution of quasar redshifts an evidence of a multiply connected universe?" in which they interpret the periodicity of the quasar red-shift distribution assuming that the universe is a topologically compactified manifold similar to a three-dimensional torus. Louis Crane (University of Chicago) and Lee Smolin (Yale University) received second prize for "Spacetime foam as the universal regulator." Z. C. Wu (Syracuse University) was awarded third prize for "Spacetime is 4-dimensional." Mark J. Bowick and L. C. R. Wijewardhana (Yale University) were awarded fourth prize for "Superstring gravity and the early universe." T. Goldman, M. V. Hynes and Michael Nieto (Los Alamos National Laboratory) received fifth prize for "The gravitational acceleration of protons."

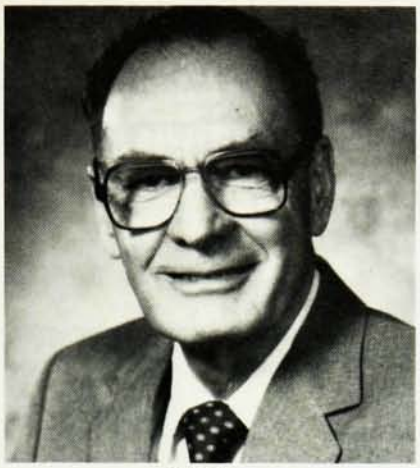
American Crystallographic Association honors two

The American Crystallographic Association last August presented the triennial Warren Award for Diffraction Physics to Bennett C. Larson and the first Buerger Award to William R. Busing, both of Oak Ridge National Laboratory.

Larson was cited for his "pioneering nanosecond time-resolved diffraction studies showing the mechanism of laser annealing of silicon using synchrotron x radiation." After receiving his PhD in physics from the University of Missouri in 1970, Larson joined the solid-state division at Oak Ridge. In 1981 he and his collaborators at Oak Ridge and Cornell University began a series of experiments using the pulsed radiation of the Cornell High-Energy Synchrotron Source to achieve nanosecond resolution in time-resolved x-ray diffraction experiments. This resolution represents an improvement of a thousandfold over that obtained using conventional x-ray sources. They have since used these techniques to study in detail the melting–crystallization phase change associated with pulsed-laser annealing of solids. Subsequent refinements in the techniques have allowed Larson and his colleagues to determine both the overheating necessary to sustain a melting velocity of 10 m/sec and the undercooling necessary to sustain a crystallization velocity of 6 m/sec in silicon and germanium.

LARSON





BUSING

Busing was honored for his contributions to crystallographic computing and the study of interatomic forces in crystals. He received his PhD in chemistry in 1949 from Princeton University. Busing held academic appointments at Brown University (1949–51) and at Yale University (1951–54) before joining the chemistry division at Oak Ridge. Over the last 30 years he and his collaborators have written, tested and freely distributed computer programs for data analysis and the refinement of crystal structures by the method of least squares. For many years these programs were the only ones available that correctly calculated standard errors for such quantities as interatomic distances and angles. In 1965 Busing and his coworkers pioneered the automation of diffractometers by means of a minicomputer; such systems are now standard equipment in chemical laboratories. More recently Busing has developed methods for modeling molecules and crystals in terms of potential-energy functions.

obituaries

William Harrington Evans

William Harrington Evans, retired thermodynamicist at the National Bureau of Standards, died on 24 June 1985 at the age of 64, after surgery complicated by arteriosclerotic cardiovascular disease and diabetes. Evans was born on 26 February 1921 in Salem, Oregon, and attended Iowa State University (1942–44). After a brief period of employment at the US Naval Ordnance Laboratory, Washington, D.C., he returned to graduate study at Oregon State College, where he worked under E. C. Gilbert and was awarded a PhD degree in 1947.

Evans joined NBS in July 1947 and remained there until his retirement in 1977. He specialized in the analysis and evaluation of chemical thermodynamic data and coauthored the widely used reference work *NBS Circular 500: Selected Values of Chemical Thermodynamics Properties* (1952) and its successor volume, *NBS Tables of Chemical Thermodynamics Properties* (1982).

Evans pioneered the automated systems that are currently used at NBS to sort and organize thermodynamic data by chemical formula or by property and to retrieve and print these data as camera-ready copy. The present format of the annual *Bulletin of Chemical Thermodynamics* is a monument to his ingenuity and industry; he was a major contributor and associate editor of the *Bulletin* for 15 years. In addition Evans served as a principal consultant to the international CODATA Task Group on Key Values for Thermodynamics from the time of its inception in 1968. After his retirement Evans continued to serve in these capacities and as a consultant to the chemical-thermodynamics-data center at NBS until his death.

In connection with his work at NBS, Evans became interested in methods for calculating thermal functions of gaseous molecules from spectroscopic and molecular data. The resulting computer programs that he wrote, which are currently in use in many other scientific laboratories, illustrate his devotion to careful analysis and scientific rigor.

An avid devotee of science fiction, Evans was a member of "First Fandom," an organization of science-fiction fans who started reading or collecting science fiction before 1 January 1938. He coedited two science-fiction books: *The Worlds of E. E. Smith*, with the late Ron Ellis; and *The Index of Science Fiction Fanzines*, with the late Robert K. Pavlat.

DAVID GARVIN
D. D. WAGMAN
National Bureau of Standards