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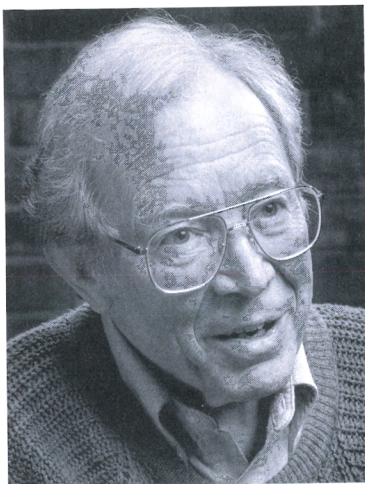
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CARSON DUNNING JEFFRIES

a distinguished lifelong career.

Carson was one of those happy scientists who liked nothing more than working productively in his laboratory with his own hands. He organized his experimental projects with consummate skill and carried them out with incredible speed. One would find him in his lab, day and night, almost oblivious to whatever else was going on in the world, often obtaining publishable results within a matter of weeks. These skills and his pure joy in doing new physics enabled him to enter emerging fields with great effectiveness. He did world-class research in nuclear magnetic resonance and electron spin resonance (1952–71), optical pumping and dynamic nuclear polarization in solids (1956–71), electron-hole liquids in semiconductors (1972–83), nonlinear dynamics and chaos in solids (1981–95) and nonlinear processes in high-temperature superconductors (1987–95).

Within these categories his work had many highlights. He made the first experimental observation of the isotropic spin-spin exchange in metals. About the same time as Anatole Abragam in Paris, he formulated means and methods for the dynamic polarization of nuclei in solids by the saturation of forbidden microwave transitions. This procedure provided sufficient proton polarization to enable him, with Owen Chamberlain, to realize the large polarized targets required for nuclear-scattering experiments. Carson was the first to demonstrate the existence of giant electron-hole droplets in semiconductors, a development that stunned the Russian theorists who first postulated the existence of droplets. Earlier, in 1969, he had been the only American participant invited to the USSR for the 25-year jubilee conference at Kazan

celebrating the discovery of paramagnetic electron resonance.

Carson enriched the campus by his extraordinary activities as an artist of professional standing. Self-taught, he started with abstract painting and went on to kinetic sculpture. He was one of the earliest practitioners of laser art. He specialized in displays that were musically controlled, working with eminent composers such as John Cage.

His memorial is the lasting image in the minds of colleagues, former students, friends and family of an inspiring human being.

ERWIN L. HAHN
WALTER D. KNIGHT
ALAN M. PORTIS
JOHN H. REYNOLDS

*University of California, Berkeley
Berkeley, California*

A. J. C. Wilson

Arthur James Cochran Wilson, a leader among the world's crystallographers for almost half a century, died quietly at his home in Cambridge, England, on 1 July 1995. He remained active in research into his eighties, his last paper appearing in *Acta Crystallographica* in the year of his death.

Born in Springhill, Nova Scotia, Canada, in 1914, Arthur Wilson was educated at King's Collegiate School in Windsor, Nova Scotia, and received his BSc in 1934 and MSc in 1936 from Dalhousie University. MIT awarded him his first PhD in 1938 for his study of the heat capacity of ferroelectric Rochelle salt between –30 and +30 °C. In 1937 he won an 1851 Exhibition Scholarship, which took him from MIT to St. John's College, Cambridge, and the Cavendish Laboratory. There he earned a second PhD in 1942, nominally under Lawrence Bragg but effectively supervised by Henry Lipson.

At Cambridge, Wilson was concerned with three aspects of crystallography. His thesis measurements of the thermal expansion of aluminum and lead, which involved the precise determination of lattice constants, led to a general investigation of the various factors that influence the position, shape and intensity of x-ray powder diffraction lines. His second interest—in crystal imperfections through a study of stacking faults in Co and in the alloy Cu₃Au—led to his general treatment of diffraction effects produced by small, distorted or otherwise imperfect crystallites. He subsequently published a book, *X-Ray Optics* (1949; 2nd ed., 1962, Methuen), which has formed the starting point for much research in the field and is still a frequently consulted reference.

Wilson's third interest concerned the analytic power of crystallographic statistics; this interest arose while he was reviewing a paper submitted to *Nature* in 1942 on the determination of absolute from relative x-ray intensity measurements. The complex method used in the paper stimulated his development of a simpler and much more direct approach—the Wilson plot—that was later published alongside the original paper. Although the practical value of his method was not appreciated immediately, the Wilson plot is frequently used to this day.

After three years in Cambridge, Wilson moved to Wales, where he accepted an appointment as lecturer in the physics department of University College, Cardiff. He became senior lecturer and director of the Viriamu Jones Laboratory in 1946, then professor of physics and head of the department in 1954. He was appointed professor of crystallography in the physics department at the University of Birmingham in 1965, remaining there until his retirement in 1982, when he was made emeritus professor. He returned to Cambridge, where he took on the chairmanship of the International Union of Crystallography Commission on International Tables and the editorship of *Mathematical, Physical and Chemical Tables*, volume C in the series entitled *International Tables for Crystallography*.

During the last three decades of his life, Wilson concentrated his research primarily in four areas: the probability distribution of x-ray intensities, x-ray optics in relation to powder diffraction, the effects of bias on experimental quantities and space group distribution theory. His interest in statistical distributions led to numerous rigorous studies of the underlying theory for over half a century. He showed that centrosymmetric crystals have an intensity distribution demonstrably different from those lacking inversion centers, and that different kinds of symmetry elements in crystals have characteristic effects on the distribution, as also have anomalous dispersion, atomic heterogeneity and other variables. He examined the sources of uncertainty in x-ray intensities and the effects they have on the quantities derived from them by various fitting procedures. He was able to show why some space groups rarely appear in nature.

Under Wilson's direction, the Cardiff group provided standard data over a period of almost 30 years for the Powder Diffraction File. The PDF is used to identify unknown substances, and this means of identification is the most widely used application of powder diffraction. Together with the late William Parrish, formerly of Philips Labo-

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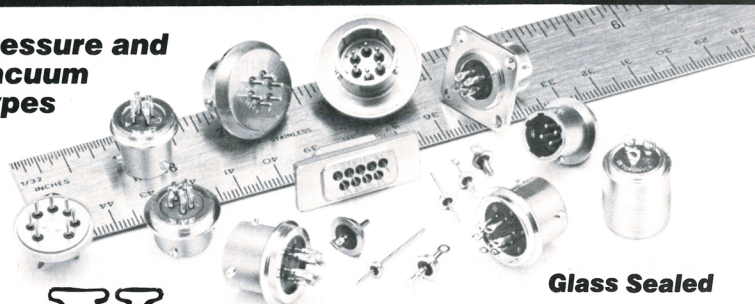
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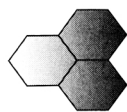
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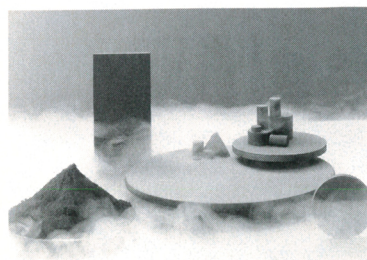
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ratories, Wilson was a pioneer in the development of the modern powder diffractometer; Parrish was responsible for its design and characterization in the late 1940s and early 1950s, and Wilson developed the theory of diffractometry and other aspects of powder diffraction.

Wilson had a lifelong interest in the presentation and dissemination of scientific information and also in good nomenclature. He was editor of the IUCr's *Structure Reports* from 1948 to 1960 and of *Acta Crystallographica* from 1960 to 1977. He served as vice president of IUCr from 1978 to 1981. He also served as associate editor of the *Proceedings of the Royal Society* from 1978 to 1983. In addition, he published four other books on x-ray diffraction, three of which became standard texts.

Arthur Wilson was a gracious, friendly and highly reliable physicist whose death leaves a large gap in the crystallographic community.

S. C. ABRAHAMS

*Southern Oregon State College
Ashland, Oregon
University of Tübingen
Tübingen, Germany*

J. I. LANGFORD

*University of Birmingham
Birmingham, England*

Benjamin Post

Benjamin Post, one of the leading figures in the post-World War II development of x-ray crystallography in the US, died of cancer at the age of 82 on 4 May 1994 at his home in Brookline, Massachusetts.

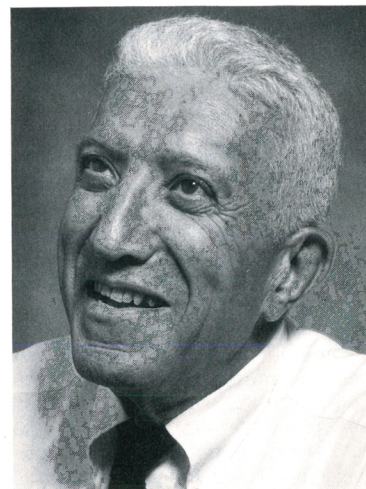
Born and raised in New York City, Post graduated in political science from City College of New York in 1930. He received his PhD in physical chemistry from the Polytechnic Institute of Brooklyn (now Polytechnic University) in 1949, studying with Clarence Hiskey and Isidor Fankuchen, who with others made Poly at that time one of the world's leading research institutions in x-ray crystallography.

After working at Poly as Fankuchen's research associate, Post became an assistant professor of physics in 1954, associate professor in 1957 and professor in 1960. He was the natural successor as director of the x-ray laboratory at Poly upon Fankuchen's death in 1964. In 1972 he was named Poly's first professor of physics and chemistry, a position from which he retired with emeritus status in 1982. His death closes an era for Poly.

Of all his research accomplishments, he was most proud of obtaining a solution in 1978 to one of crystallography's central problems, the "phase

problem." He developed the three-beam experimental technique for determining certain features ("phases") of the interactions between x-ray beams and atomic structure from the analysis of the intensity of the reflected x-ray beam.

During his long career Post served as a visiting professor at several universities around the world. In addi-



BENJAMIN POST

tion, he was treasurer of the American Crystallographic Association from 1963 until 1965, and he was then elected president of ACA. He also served as a member of several National Research Council committees and was vice-chairman of the National Academy of Sciences' National Committee for Crystallography. He made major service contributions to the profession for more than 30 years through his activity as the editor of the inorganic compounds database of the Joint Commission for Powder Diffraction and as an associate editor of *X-Ray Spectrometry*.

Those who knew him will long remember Post not only for his professional accomplishments but also for his irrepressible sense of humor. He often remarked that many of his former students seemed to have stronger recollections of the jokes and puns with which he spiced his classroom lectures than of any crystallographic material he may have covered. His 1968 past president's address to ACA and his 1972 tribute to Fankuchen have attained near-legendary status in the crystallographic community. He frequently made it clear that he was proudest of his legacy as a teacher.

Ben Post will be deeply missed by all of his former students as well as by his many friends and colleagues. His enthusiasm, *joie-de-vivre* and espe-