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ACA PRESENTS 1990 PATTERSON AWARD TO WOOLFSON

At the annual meeting of the American Crystallographic Association held in April in New Orleans, Louisiana, Michael M. Woolfson of the University of York, England, received the Patterson Award for his work on the multiple tangent approach to the solution of crystal structures.

Since the late 1960s Woolfson and his research group have been developing direct methods for solving structures. The multiple tangent approach was incorporated into the computer program MULTAN, now used in laboratories throughout the world. Woolfson and his co-workers originated the idea of permuted-phase starting sets, a technique used in MULTAN and other programs. A recent direct method developed by Woolfson and his group was included in the SAYTAN program and shows promise of being useful in solving macromolecular structures.

Woolfson received a PhD in physics in 1952 and a DSc in 1961, both from the University of Manchester. He was a lecturer in physics at Manchester from 1955 to 1961 and a reader there from 1961 to 1965. Since 1965 he has been a professor of theoretical physics at York University.

Also at the annual meeting, several students received Pauling Prizes, which are awarded each year to outstanding student posters presented at the ACA meeting. Susan Chack and Frank Whitby of Rice University were recognized for their poster on "Structure and Molecular Motions of Tropomyosin"; Jeffrey Kavanaugh of the University of Iowa for "The Crystal Structure of Deoxyhemoglobin Rothschild"; Cory Momany of the University of Texas, Austin, for "Structure of Ornithine Decarboxy-

Michael M. Woolfson



lase from *Lactobacillus* 30a"; Susan Reutzel of the University of Minnesota for "The Use of Hydrogen Bonds in the Preparation of Imide Co-crystals"; and Diana Tomchick of the University of Wisconsin, Madison, for "Structural Bonding Analysis of a 46-Electron Triangular Molybdenum Cluster with an Unprecedented Trimetal-Coordinated Isocyanate."

IN BRIEF

MIT physics professor **A. Nihat Berker** has received the Tubitak Science Award, the highest scientific honor given by the Turkish government. The Turkish Scientific and Technical Research Foundation, Turkey's equivalent of the NSF, cited Berker's "important scientific contributions, at an international level, in the fields of solid-state physics and statistical physics." The Tubitak Award covers all disciplines of science, engineering and medicine.

OBITUARIES

Max Swerdlow

Max Swerdlow died on 18 February 1989 in Washington, DC, after a six-year struggle against cancer. As a result of his illness, he had retired from his 27-year position as a program manager for the Air Force Office of Scientific Research at the end of 1984. Previously he had been employed by the National Bureau of Standards for 17 years.

Swerdlow received his BA in physics from Brooklyn College in 1938. In 1940 he entered government service with the National Bureau of Standards, as a ceramics engineer in the optical glass section. He soon was made the general night supervisor of a critical 500-person operation to produce optical components for gun-sights.

After World War II Swerdlow was able to devote himself fully to the electron microscope. He was a moving force in bringing one to NBS for the first time in 1946. He was placed in charge of the NBS laboratory for electron microscopy and electron diffraction, a position he held until leaving for the Air Force Office of Scientific Research in 1957. Swerdlow's invention of a new method for sectioning materials into extremely thin specimens suitable for examination by an electron microscope is considered a landmark in the study of tissue and bone. Using this method he probed the microstructure of wool

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ing there, and in the late 1960s he supported Theodore Geballe's new program at Stanford University. The students and postdocs from those two programs form the backbone of the current US effort in high-temperature superconductivity. When another agency decided to drop all superconductivity research in 1972, Swerdlow provided funding on a 1:1 matching basis to the program at the Westinghouse R&D Center that agency had been supporting. Five months later, John Gavaler, working at Westinghouse, discovered superconductivity at 23 K in Nb_3Sn , a record that stood for 13 years. Paul Chu, while a graduate student of Matthias's, received all his research funds from AFOSR, and Swerdlow's support of Philip Anderson's research at Cambridge University in the early 1960s influenced the graduate work of Brian Josephson. Swerdlow was also instrumental in the initiation in 1966 of a series of meetings that evolved into the biennial Applied Superconductivity Conferences.

Max Swerdlow had a strong sense of what made good science and good scientists, and an instinct for identifying projects that would produce meaningful results. He understood well the partnership between researchers and funders of research, and carried out his end of that partnership in a most exemplary way, earning a reputation as the dean of DOD program managers. In fact his career helped redefine the role of scientific program managers.

At Swerdlow's swearing-in, then-Secretary of Commerce Henry A. Wallace asked him if he was going to be another one of those "90-day wonders" who leave the government after a very brief period. In looking back, one can say that Swerdlow turned out to be a "44-year wonder," whose impact on science will be felt for many more years to come.

HAROLD WEINSTOCK

Air Force Office of Scientific Research
Washington, DC

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Thanks to Lee and Richard Swerdlow, Mildred Dresselhaus, Gerald Witt, Alex Braginski, Theodore Geballe and Edgar Edelsack for their help in the writing of this obituary.

Clarence F. Barnett

Clarence F. Barnett (known to his friends as Barney) died of cardiac arrest on 11 June 1989 at his home in Lenoir City, Tennessee. He was 65 years old. Barnett is perhaps best known for promoting communication

between the fields of atomic and plasma physics.

Barnett was born in Sweetwater, Tennessee, and throughout his career he was always associated with Oak Ridge National Laboratory, beginning in 1943 when, at the age of 20, he joined the Manhattan Project to help develop calutron ion sources to be used for electromagnetic isotope separation. While working at Oak Ridge he attended evening classes at the University of Tennessee, earning a BS in 1949 and an MS in experimental physics in 1953. He pursued further research in optical and plasma physics at MIT and at University College, London. In the mid-1950s he turned his attention to fusion energy, which remained the focus of his work for the remainder of his career.

Barnett's direct involvement in fusion research began at ORNL in 1956, with experiments on carbon-arc discharge plasmas. Beginning in 1958 and continuing through the mid-1960s, he was project leader for the DCX and DCX-1 magnetic fusion experiments. He and Samuel K. Allison of the University of Chicago were the first to recognize the significance of atomic collisions in magnetically confined plasmas, and Barnett played a key role in identifying these processes and interpreting them for the plasma physics community. His early papers on charge-changing collisions of energetic ions in gases and his later studies of angular scattering and molecular dissociation are still used frequently as standard data sources. In 1959 he founded the Controlled Fusion Atomic Data Center at ORNL, whose primary goal was to compile and evaluate atomic and molecular collision data for applications in fusion research. The resulting compilations, entitled *Atomic Data for Controlled Fusion Research*, have become standard references at research laboratories throughout the world. After retiring from ORNL in 1985, Barnett continued to serve the data center as a consultant.

Barnett contributed extensively to the development and calibration of neutral-particle energy spectrometers for fusion plasma diagnostics; to the creation of high-intensity beam sources for heating fusion plasmas; to the improvement of atomic particle detectors; and to the understanding of particle-surface interactions. In the 1970s, as a section head at ORNL, he established and led a group to study fusion-relevant collisions of multiply charged ions with electrons, atoms and molecules. Although his leadership was an essential catalyst, his name seldom appeared on the group's