nations and for international nuclear materials safeguards. In addition, he made significant contributions on national security matters as chairman (1970–73) and member (1970–74) of the Defense Science Board and as a consultant to the National Security Council (1974–77). Tape recently participated in a safety review of the DOE N-Reactor in Hanford, Washington (see PHYSICS TODAY, February 1987, page 63).

MRS HONORS CHARLES FRANK WITH ARTHUR VON HIPPEL AWARD

At its fall meeting in Boston in December, the Materials Research Society presented its highest award, the Arthur Von Hippel Award, to Charles Frank (University of Bristol, UK).

Frank was honored for "his wide-ranging impact on modern materials science through seminal contributions in areas of inorganic crystals, metals, polymers and liquid crystals." Frank discovered the screw dislocation mechanism of crystal growth in 1948; in 1951 he discovered the dislocation mill mechanism, by which dislocations multiply internally in a sample during plastic flow (a discovery also made independently by W. Thornton Read of Bull Laboratories, UK). In addition, Frank developed a theory for chain folding in linear polymers, and he has worked extensively on the theory of liquid crystal structure and of thin film formation on crystalline substrates. His work in the packing theory of distorted tetrahedra has found application in some models of the recently discovered icosahedral quasicrystals.

Frank received his DPhil from Oxford University in 1937. During World War II he served in the British Air Ministry in the assistant directorate of intelligence (science). After the war he became a research fellow in the Wills Physics Laboratory of the University of Bristol. In 1954 he was named Henry Overton Wills Professor in the Bristol physics department, which he also served as chairman from 1969 until 1976, when he became professor emeritus.

Charles Frank

HALBACH AND THORNDAHL HONORED FOR ACCELERATOR WORK

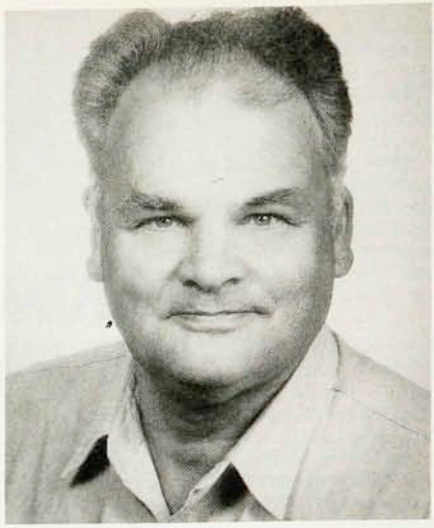
The US Particle Accelerator School presented its 1987 awards for achievement in accelerator physics and technology during its summer session last August.

Klaus Halbach (Lawrence Berkeley Laboratory and Stanford University) was honored for "making high-field permanent magnets practical tools for accelerator technology." In the late 1970s Halbach began using permanent magnets in wiggler, undulator and quadrupole systems to achieve higher fields than were possible with electromagnets. In 1985 he introduced permanent-magnet-assisted electromagnets, which used permanent magnets inside electromagnets to achieve both high fields and variability; this concept has been incorporated, for instance, into the free-electron laser program at Lawrence Livermore National Laboratory. In addition, Halbach has developed theoretical techniques for determining the error fields of magnets, and computer codes for magnet, rf-cavity and ion source design, such as the POISSON group of codes (POISSON, PANDIRA, SUPERFISH and ULTRAFISH) and WOLF.

Halbach received his PhD from the University of Basel, Switzerland, in 1954. He became a senior physicist at Lawrence Berkeley in 1960.

Lars Thorndahl (CERN) was cited for "essential theoretical and experimental contributions to the stochastic cooling of particle beams." Working on a suggestion made by Simon van der Meer in the late 1960s, Thorndahl began his studies of stochastic cooling in 1971 in the Intersecting Storage Ring at CERN. He first achieved cooling of the vertical beam size in 1975, and momentum cooling (first suggested by Robert Palmer of Brookhaven National Laboratory in the 1970s) in the following year. Thorndahl has since concentrated on developing high-intensity antiproton beams, which are used in proton–antiproton colliding beam experiments in the CERN Super Proton Synchrotron. He has done pioneering work on the Fokker–Planck formulation of longitudinal beam cooling and on open-loop analysis and adjustment of cooling systems. In addition, he introduced a filter method for cooling a beam's velocity distribution.

Thorndahl became a research engineer at CERN in 1963, after receiving his engineering degree from the Swiss Federal Institute of Technology in Zurich, Switzerland.



Klaus Halbach

Lars Thorndahl