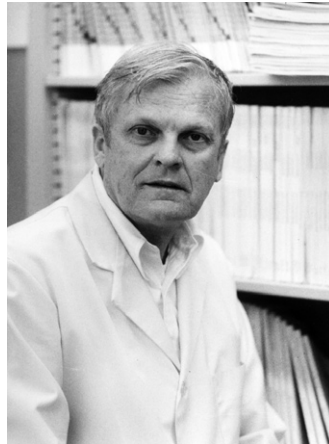


JAMES O. McCALDIN
1922 – 2001



Purcell, Pound, and Torrey remained there only to contribute reports to a twenty-eight-volume series on the advances made during the war. It was a hot summer day and their discussion turned to possible areas of postwar research. Purcell brought up the idea of using a magnetic field to split the energy levels of a hydrogen nucleus (i.e., a proton) and using the resonance frequency of a radio signal to measure the nuclear magnetic moment of a proton...

The first order of business was to assemble the apparatus necessary to carry out the experiment. In particular, they needed to get a magnet strong enough to split the energy levels. Purcell initially wanted to use the one in the MIT cyclotron, but the MIT authorities were not too enthusiastic about this. Their frugal attitude was quite a change from the generosity of the Rad-Lab administrators during the war. Purcell then managed to persuade J Curry Street to let him use the magnet with which Street had discovered the muon in 1937 at Harvard. □

James O. McCaldin, professor of applied physics and electrical engineering, emeritus, died November 23.

McCaldin earned his BA in mathematics from the University of Texas in 1944 and his PhD in engineering from Caltech in 1954. He spent the early decades of his career in industry. He worked in telemetry at Arabian American Oil Co. of New York in 1952, in physical metallurgy at General Motors Corp. from 1954 to 1956, at Hughes Aircraft Co. as head of the semiconductor materials department from 1956 to 1961, and at North American Aviation Science Center as semiconductor leader from 1961 to 1968.

He joined Caltech in 1968 as an associate professor of applied science, was named professor of applied science and electrical engineering in 1973, and professor of applied physics and electrical engineering in 1976. He had been professor, emeritus, since 1983. McCaldin was known for his carefully thought-through advice to both graduate and undergraduate students and for making the freshman Solid-State Electronics Laboratory course one of the more enjoyable academic possibilities of the freshman year.

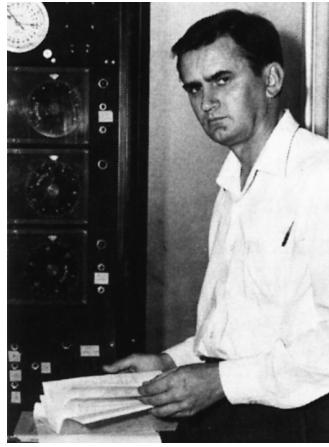
McCaldin was one of the pioneers in some of the technology that made the semiconductor revolution

possible. He did early work on semiconductor interfaces, on thin film growth, on planar construction for silicon devices, and on ion-implantation doping of silicon, which has been of great practical importance. In a 1973 issue of *Engineering and Science*, McCaldin and his coauthor, James W. Mayer, discussed the ways in which crystal growth was revolutionizing the electronics industry, noting that the structures giving rise to metal-semiconductor contacts were smaller than anticipated—in some cases a few hundred Angstroms in thickness. “With improvements in instrumentation and fabrication skills, it may soon be possible to reduce this thickness to, perhaps, atomic dimensions,” they wrote.

At the time of McCaldin’s retirement, Professor of Applied Physics Thomas McGill wrote: “His research has always been characterized by an adventuresome but scholarly development of a new concept that has frequently later become one of the keys to important technological developments.”

McCaldin was editor of the journal *Progress in Solid State Chemistry* from 1969 to 1976, and invented several patented technologies. He was a member of the American Physical Society, a former chairman of the Southern California section of the American Institute of Mining, Metallurgical, and Petroleum Engineers, and a former secretary of the Southern California and Nevada section of the Electrochemical Society.

He is survived by a brother, Roy McCaldin. □

**GORDON J. STANLEY
1921 – 2001**


Gordon J. Stanley, one of the founders of Caltech's radio astronomy program and former director of the Owens Valley Radio Observatory, died December 17 in Monterey, California.

A native New Zealander, Stanley earned his diploma in 1946 at the New South Wales University of Technology in Sydney, Australia, and then joined the Commonwealth Scientific and Industrial Research Organization (CSIRO) as senior technical officer in the radiophysics laboratory. The CSIRO at the time was one of the three most important radio astronomy laboratories in the world. In 1949, Stanley and his colleague John Bolton made the first three optical identifications of discrete radio sources: two galaxies, M 87 and NGC 5128, and a galactic supernova remnant in the Crab Nebula. Work was then just beginning on matching up the thousands of radio sources in the sky with stars or galaxies.

When Caltech president Lee DuBridge and Jesse Greenstein, professor of astrophysics and founder of Caltech's astronomy department, began lobbying in the early '50s to establish a radio astronomy group, their attention was quickly attracted to what was going on in Australia. By 1955 they had imported both Bolton and Stanley to Pasadena. It was

Stanley who selected the remote site 250 miles north of Pasadena near Big Pine that was to become the Owens Valley Radio Observatory (OVRO), and Stanley and Bolton began construction on the first two 90-foot dishes, which were dedicated in 1958. Stanley also published a number of papers on radio observations of Jupiter. When Bolton returned to Australia in 1960, Stanley became first acting director and then director of OVRO, a post he held until 1975.

Stanley played a major role in a proposal to build an interferometer array consisting of eight radio antennas, each 130 feet in diameter, at Owens Valley. The array would have been the largest radio observatory in the world, covering an area two miles by three miles. Funded by the National Science Foundation, the first antenna was dedicated in 1968, but has remained the only dish, after the Caltech project lost out to the national Very Large Array in New Mexico in a competition for funding.

During his tenure as director, he supervised the reconstruction of the original 90-foot dishes, improving their wavelength coverage by a factor of 10.

Later in his career, after leaving OVRO, Stanley focused on other applications of interferometers, including the development of an inno-

vative device to measure sea-ice temperature and another that measured the temperature of the upper atmosphere.

Stanley returned to OVRO for its 40th anniversary celebration in October 1998. He recalled the observatory's early days and concluded his talk with a stanza from one of his favorite Australian bush poets, Banjo Paterson:

"And the bush hath friends to meet him
and their kindly voices greet him
In the murmur of the breezes and the
river on its bars,
And he sees the vision splendid of the
sunlit plains extended,
And at night the wondrous glory of the
everlasting stars."

His family also included the stanza in their obituary. Stanley is survived by his wife, Helen; three children: Teresa Stanley, Luise Phelps, and Stephen Stanley; and three grandchildren. □

HONORS AND AWARDS

Tom Apostol, professor of mathematics, emeritus, is being honored for his distinguished career by the Friends of Hellenic Studies and the Basil P. Caloyeras Center for Modern Greek Studies. He was feted on November 3 on the campus of Loyola Marymount University.

Philip Hoffman, professor of history and social science, has been selected along with coauthors Gilles Postel-Vinay and Jean-Laurent Rosenthal to receive the Economic History Association's Gyorgy Ranki Prize, which recognizes "the outstanding book on the economic history of Europe, published in 1999 and 2000." The award is for their book *Priceless Markets: The Political Economy of Credit in Paris, 1660–1870*. Postel-Vinay has been a visiting professor of history at Caltech, and Rosenthal received his PhD in social science from the Institute in 1988.

Matthew Jackson, professor of economics, is the first winner of the Social Choice and Welfare Prize, to be awarded by the Society for Social Choice and Welfare at its sixth annual international meeting, to be held at Caltech in July 2002. The prize is given "to honor young scholars of excellent accomplishment in the area of social choice theory and welfare economics."

Wolfgang Knauss, the von