

# Retirements 1982



Robert P. Dilworth  
*Professor of Mathematics, Emeritus*

AS A NATIVE Californian and a double Caltech alumnus (BS '36, PhD '39), Robert Dilworth has felt right at home being a faculty member at his alma mater for 39 years. He entered the Institute in 1932 planning to major in chemistry, but he switched to mathematics at the end of his sophomore year. His graduate work on a new algebraic theory of lattices was done under Morgan Ward. During three postdoctoral years at Yale, he continued this research and formulated a theorem that has become one of the fundamental supports of lattice theory, combinatorics, and partially ordered sets. It is so basic, in fact, that it is known in the profession as the Dilworth Theorem.

Dilworth returned to the Institute as an assistant professor in 1943 and then spent 1944-45 in Great Britain as an operations research analyst with the 8th Air Force. In

1951, Dilworth became a full professor, and in addition to continuing his research in algebra, he contributed to probability theory and statistics. He was also a most successful teacher. Several of his more than a dozen graduate students have gone on to distinguished professional careers.

During his early years on the faculty at Caltech, Dilworth was active on the Freshman Admissions Committee and was involved in the studies that led to the Institute's switch to the standard national entrance examinations. This led to his serving a term as the national chairman of the College Board's Committee of Examiners in Mathematics. Later, he also served a term as national chairman of the mathematics committee for the Graduate Record Examinations. In this capacity he was instrumental in the establishment of the Graduate Record Examination Board,

which now sets policy for the Graduate Record program. He has supervised graduate students in mathematics at Caltech for many years and has served on the faculty committee for graduate study during that time.

These were by no means his only services to the Institute community. As an undergraduate, he was active in both music and athletics, playing the double bass in the orchestra and participating in the campus decathlon — and winning the Doc Haynes Trophy one year. As a faculty member, he continued his interest in athletics, and served for many years as chairman of the Athletic Facilities Committee. He was also chairman of the faculty for the two years 1973-75, initiating the steering committee system for handling the business to come before the Faculty Board. □

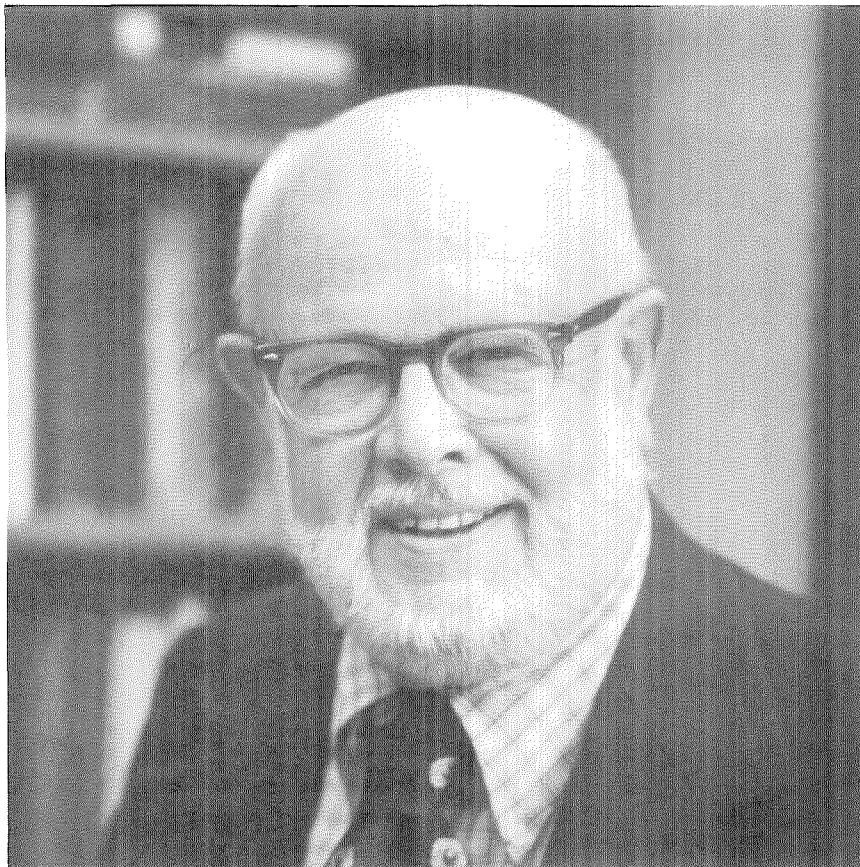
William A. Fowler  
*Institute Professor of Physics, Emeritus*

**W**ILLIAM FOWLER became Institute Professor of Physics, Emeritus, in July, capping a 49-year-long career at Caltech's Kellogg Laboratory. Fowler received his BS at Ohio State in 1933 and his Caltech PhD three years later. He stayed on at the Institute and by 1946 was a full professor. In 1970 he was appointed Institute Professor of Physics in recognition of his distinguished contributions to science and to Caltech.

During World War II, he worked on proximity fuses, rocket and torpedo ordnance, and atomic weapons. In 1951-52 he was scientific director of Project Vista, which is still classified because of its important implications for the defense of Europe. Among his awards in recognition of public service, Fowler received the Naval Ordnance Development Award in 1945, the President's Medal for Merit in 1948, NASA's Apollo Achievement Award in 1969, and the National Medal of Science in 1974.

Fowler's research has been in nuclear physics, astrophysics, and relativity. He has made studies of nuclear forces and reaction rates, nuclear spectroscopy, the structure of light nuclei, thermonuclear sources of stellar energy, element synthesis in stars and supernovae, nuclear cosmochronology, the origin of isotopic anomalies in meteorites, and general relativistic effects in quasar and pulsar models. He is a co-author of one of the fundamental papers in nuclear astrophysics, "The synthesis of elements in stars."

Among his awards for scientific achievements are the Ohio State Lammé Medal, the Liège Medal of the University of Liège, the California Scientist of the Year Award, the Vetlesen Prize from Columbia University, the Tom Bonner Prize of the American Physical Society, the Eddington Medal of the Royal Astrono-



mical Society of London, and the Bruce Gold Medal from the Astronomical Society of the Pacific. He holds several honorary degrees and has been an active citizen in the scientific community, serving on the council and a number of committees for the National Academy of Sciences, of which he has been a member since 1956. He was president of the American Physical Society in 1976, and a member of the National Science Board from 1968 to 1974.

It is not generally known that he is a steam engine buff and that among the personal honors he particularly treasures are his memberships in the Los Angeles Live Steamers, the Cambridge [England] and District Model Engineering Society, and the National Association of Railroad Passengers. One of the trips he most enjoyed was riding across Asia on the trans-Siberian railroad. He is also greatly pleased to be an honorary member of the Mark Twain Society. □

Norman H. Horowitz  
*Professor of Biology, Emeritus*

NORMAN HOROWITZ arrived at Caltech in 1936 as a graduate student, bringing with him a BS from the University of Pittsburgh and reprints of the first two of what were by 1981 more than 120 professional papers. Those two papers were about his undergraduate research in muscle transplantation, and division chairman Thomas Hunt Morgan decided he should work with embryologist Albert Tyler. Two years later Horowitz had collaborated with Tyler on seven more papers — about research on sea urchin eggs. He received his PhD in 1939 and used the National Research Council fellowship he was awarded for a year of study at Stanford. The next two years were spent back at Caltech as a research fellow in the laboratory of biochemist Henry Borsook, working in a field that led to publication of a paper in the *Journal of Dental Research*. Its title was “Histochemical study of phosphatase and glycogen in fetal heads.”

In 1943 Horowitz shuttled back to Stanford again, where as a research associate he worked with biologist George Beadle for four years. The research medium this time was the red bread mold *Neurospora crassa*, and a classic series of genetics



papers resulted. When Beadle came to Caltech in 1946 as chairman of the biology division, he brought Horowitz with him as associate professor. He became a full professor in 1953, and from 1970 to 1975 was executive officer for the division, was its acting chairman in 1973, and was chairman from 1977 to 1980.

His career-long interest in the biochemical aspects of evolution led Horowitz to an early and increasing interest in space biology, and in 1965 he went to JPL as chief of its bioscience section, a position he held for five years. He has been deeply involved with the scientific aspects of all

the missions to Mars, and he designed and tested some of the basic hardware for the life-seeking experiments of the Viking missions. Because of his interest in the evolution and abilities of organisms to survive in dry environments — on earth or off — in recent years he has done research on the water requirements of *Neurospora* and its relation to the transport of iron.

Horowitz is a member of the National Academy of Sciences and a fellow of the American Academy of Arts and Sciences. He is also a member of several professional societies and has been awarded the NASA Public Service Medal. □