



Richard M. Badger

1896-1974

Richard M. Badger, professor of chemistry emeritus, died on November 26 at the age of 78. He had been a member of the Caltech community—as a student, teacher, and researcher—for more than 50 years.

Badger was a native of Elgin, Illinois, but his family moved to Brisbane, Australia, when he was a child. He returned to Elgin for part of his secondary education and continued through the Junior College of the Elgin Academy. He then enrolled at Northwestern University, but his college career was interrupted by World War I, in which he served in France in the Army's 311th Field Signal Battalion. After the war he came to Caltech, where he received his BS in 1921 and his PhD in 1924. He was a research fellow at the Institute from 1924 to 1928 and then spent a year in Germany doing post-graduate study as an International Fellow in chemistry at the Universities of Göttingen and Bonn. He returned to Pasadena as assistant professor of chemistry in 1929, was appointed associate professor in 1938, and became full professor in 1945. He became professor emeritus in 1966.

Though he worked in several fields of physical chemistry, Badger's predominant scientific interest was the application of spectroscopy to the solution of chemical problems, including the structures of polyatomic molecules, the problem of hydrogen bonding, and the relation of potential constants to inter-

nuclear distances. Through the systematization of experimental data, he formulated Badger's rule, which expresses the relationship between the forces acting between two atoms and the distance separating them. The rule has been useful in chemical thermodynamics as well as in determining the structure of molecules.

During World War II Badger remained at Caltech working on fundamental physical problems for the Manhattan District and investigating the properties of smokeless powder for the Navy Bureau of Ordnance. He also was engaged on projects for the Office of Scientific Research and Development and the Army Air Corps. Important advances in technology and instrumentation during these years facilitated his distinguished work in infrared spectroscopy.

In 1952 Badger was elected to the National Academy of Sciences in recognition of his important spectroscopic studies of complex molecules. He was also a member of the American Physical Society and the American Academy of Arts and Sciences.

For almost 40 years Badger taught undergraduates at Caltech, and in 1961 his dedication was recognized by the Manufacturing Chemists' Association award for college chemistry teaching. This award, consisting of a medal, citation, and honorarium, is presented to teachers of undergraduates who have been "personally responsible over a

period of years for awakening in students a genuine interest in chemistry, for inspiring them to serious intellectual effort in studying that field, and for developing that interest into a continuing dedication."

Badger was the author or co-author of more than 85 research articles, and he was also a conscientious citizen of the Caltech community. From 1961 to 1963 he was chairman of the faculty, and he served on the faculty Committee on Academic Policies and on the chemistry division's graduate committee.

Badger's hobbies employed his talent for precision; he did instrument making and fine metal- and wood-working. He also made jewelry and painted in watercolor, particularly desert scenes, which reflected an appreciation of the beauties of the California desert that he acquired in the course of many camping trips.

These expeditions appealed to the adventurous side of Badger's nature as well as the artistic, and he was always eager to explore beyond the beaten track.

Services for Dr. Badger were private. He is survived by his wife, Virginia; a son, Anthony S. Badger; a daughter, Jennifer B. Sultan; and three granddaughters. □