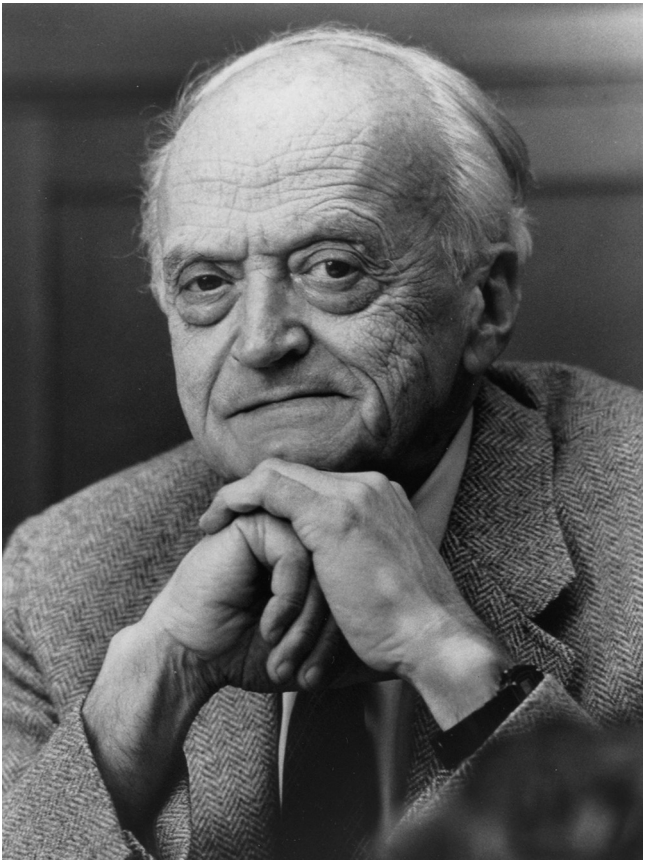

Charles N. Tolivar

CHARLES W. TOBIAS

1920–1996

Elected in 1983

"Outstanding pioneer and leader in the development of electrochemical engineering into a quantitative discipline based upon fundamental principles."

BY C. JUDSON KING

CHARLES W. TOBIAS, professor of chemical engineering at the University of California, Berkeley, and principal architect of the modern field of electrochemical engineering, died on March 6, 1996, at the age of 75.

Charles was born in Budapest, Hungary, on November 2, 1920. He received his diploma in 1942 and his doctorate in 1946 from the University of Technical Sciences in Budapest. In 1947, following his brother Cornelius who was a faculty member in medical physics at Berkeley, Charles left Hungary for the United States and Berkeley, California. Shortly thereafter, he was hired by Dean Wendell Latimer of the College of Chemistry at Berkeley to join the faculty of the nascent Chemical Engineering Group.

Tobias carried out a stellar program of research relating to electrochemical processes and phenomena for almost 40 years, for most of that time as a faculty senior scientist at the Lawrence Berkeley Laboratory. Among his many accomplishments were the development of methods for measuring mass- and heat-transfer rates in both forced and natural convection situations, the use of interferometry to elucidate mass-transfer phenomena in the vicinity of electrodes, interpretation of the nature of conductivity in two-phase systems, and enhanced understanding of the effects of electrode resistance on rates of

reaction. His work on deposition from nonaqueous solvents directly underlay the future development of the now pervasive long-life lithium and lithium-ion batteries.

Charles's graduate students produced 32 master's theses and 34 doctoral dissertations. His PhD graduates have literally populated the academic electrochemical engineering faculty of the succeeding generation. Thus in many ways he was the father of his field. He had more than 150 publications and patents.

As chair of the Berkeley Chemical Engineering Department from 1967 to 1972, Charles placed strong emphasis on broadening the department to cover the newer subfields of chemical engineering, in particular the processing steps involved in semiconductor manufacture. This interest meshed well with the development of Silicon Valley and led to close ties between Berkeley chemical engineering and that growing industry. He also was acting dean of the College of Chemistry in 1978.

Charles was elected to the National Academy of Engineering in 1983 and served shortly thereafter on NAE's Committee on Electrochemical Aspects of Energy Conservation and Production. He was president of the Electrochemical Society (1970–1971), a fellow and honorary member, and recipient of the society's Acheson Award (1972), the first Henry B. Linford Award for Distinguished Teaching (1982), and the Vittorio de Nora Diamond Shamrock Award for Electrochemical Engineering and Technology. He was president of the International Society for Electrochemistry (1977–1978). From the American Institute of Chemical Engineers he received both the Alpha Chi Sigma Award for distinguished research and the Founders Award.

Charles met his first wife, the former Marcia Rous, while living in Berkeley's International House after his arrival. They had three children, Carla, Eric, and Anthony. After Marcia's untimely death in 1981, Charles married Katalin Voros, who survives him.

A mentor to many, Charles was a warm and caring person who was deeply invested in the development of younger

faculty colleagues and the careers of his graduates. He took a special interest in helping refugees from Hungary, beginning with the 1956 Hungarian revolt, and brought many to the United States and Berkeley. One of these, Louis Hegedus, is now an NAE member.

Charles grew up with the classics and arts, and he made them important parts of his life. He studied violin at the Municipal Conservatory of Music in Budapest and graduated with a major in violin performance. He kept his love of the violin all his life, often playing with chamber groups. He was also closely involved with the Berkeley Art Museum, and served as its acting director in 1972 and chair of its board for two terms, 1972–1973 and 1974–1975.