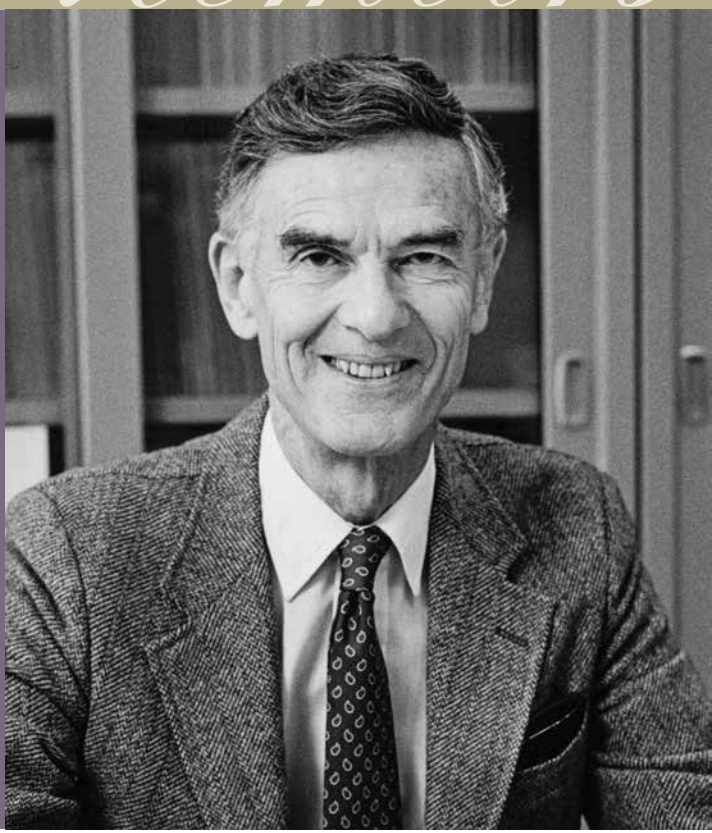
Robert E. Connick

1917–2014

BIOGRAPHICAL *Memoirs*



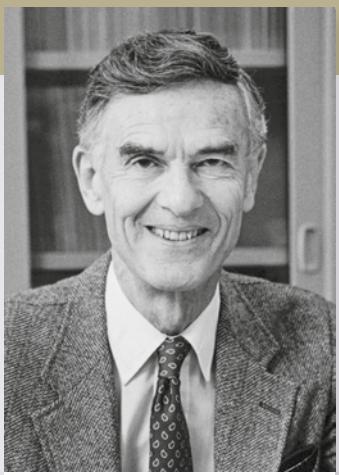
A Biographical Memoir by Gabor Somorjai

NATIONAL ACADEMY OF SCIENCES

ROBERT ELWELL **CONNICK**

July 29, 1917–August 21, 2014

Elected to the NAS, 1963



By Gabor Somorjai

Robert ("Bob") Connick was born in Eureka, CA, the second child of Florence and Arthur Connick, a banker. The family, including Bob and his three sisters, moved to Berkeley when Bob was 12. He attended Berkeley High School and went on to study chemistry at the University of California, Berkeley, obtaining his B.S. in 1939 and Ph.D. in 1942. Connick then become a chemistry professor at UC, Berkeley, and remained there for most of his career. He was well known for his contributions to inorganic-reaction kinetics and mechanisms.

Like many of his colleagues, Connick was drawn into the war effort, and from 1943 to 1946 he served as a research associate on the Manhattan Project, for which he researched the fundamental chemical properties of plutonium—shortly after the discovery of that element, when only minute amounts were available—and he devised separation techniques for the project. Connick's studies revealed plutonium's complicated oxidation-reduction properties and the existence of its many complex ions. These results provided a sound scientific basis for the various practical separation processes developed during and since World War II.

Subsequent to his plutonium work, Connick and his students turned their attention to several heavy elements whose properties were still largely unknown, given that conventional methods of investigation were inadequate. As a means to discover these elements' particular ionic species present in aqueous solution, Connick pioneered the use of distribution equilibria with nonaqueous solvents containing specific chelating agents. This method, which he applied first to zirconium and later to ruthenium and other elements, was adopted by other chemists throughout the world.

Connick also used novel instrumental techniques to investigate the detailed course of very fast chemical reactions, and he was an early applier of nuclear magnetic resonance

(NMR) to the study of inorganic complex ions. In fact, much of the work throughout his career was characterized by his originality in developing new methods of investigation.

The strongest words I ever knew him to utter were, 'I consider that inexcusable.'

At UC, Berkeley, Connick was highly regarded as an educator, researcher, and administrator. He began teaching there in 1943, generally focusing on inorganic chemistry, and retired in 1988. In 1974, he became a principal investigator at the Lawrence Berkeley National Laboratory. His areas of research included NMR, reaction kinetics, ligand exchange reactions, hydrolytic oligomerization, ruthenium chemistry, sulfur chemistry, and computer modeling of exchange reactions. Connick was perhaps best known for his research on NMR methods for determining water-exchange reactions.

As an administrator, Connick earned a reputation for integrity, fairness, and pragmatism. Over the course of his career, he served as chair of the Chemistry Department, dean of the College of Chemistry, vice chancellor, and chair of the Academic Senate both of UC, Berkeley, and of the entire University of California system. He was elected to the National Academy of Sciences in 1963, and in 1968 was a G. N. Lewis Lecturer and awardee. He was also a two-time Guggenheim Fellow, first in 1948 and then in 1958. In recognition of his distinguished service, in 1971 Connick received the Berkeley Citation, which is awarded to people who or organizations that advance the standards of excellence in their fields. Scoring a rare combination, in 1988 he was also awarded the Berkeley Medal, which is the campus's top honor.

Connick was devoted to his students, who remember him fondly. According to Dwight Fine, who entered UC Berkeley in 1956 planning to work for a master's degree in chemistry,

> *My first-semester courses revealed a preference for inorganic chemistry, and I chose to do the [required] research under Connick himself. I then undertook an investigation of chloro complexes of ruthenium in aqueous solution. At the end of my first year, encouraged by Bob, I switched to a PhD program and enjoyed three wonderful years of working under this amazing man. I never ceased to be astonished by his keen mind, his erudition, his thoroughness, and his pleasant and even temperament.*

The strongest words I ever knew him to utter were, 'I consider that inexcusable.'

Despite heavy loads in teaching, administrating, and advising, [Connick] found time on an almost daily basis to drop in on his graduate students and ask, 'What's new?' During my third year I was deprived of this frequent contact—when he went to Sweden on a Guggenheim fellowship—but we communicated results and advice by mail. He returned in time to supervise the writing of my thesis. I'm sure that his razor-sharp mind was instrumental in his living to such an advanced age. I shall always be indebted to this extraordinary man."

Another graduate student, Dr. Tom Rowland, provided the following testimonial:

Professor Connick had an immense impact on my life both in professional and personal ways, and I remember my graduate student days with great fondness. Known to us (grad students of the early-to-mid '70s) as "The Dean" because of his previous position as Dean of the College of Chemistry, Bob was an impressive figure, both intellectually and physically. He was both gentle and stern as the occasion might require, but always highly respected by his graduate students and postdoctoral fellows.

Bob never embarrassed you for what you didn't know, but he never let you say something that you didn't fully understand. Weekly group seminar presentations prepared me for the rigors of the classroom better than any teaching instruction could possibly have done! His own lectures were laid out with a logic and precision that belied the broadly inquisitive mind that drove his inquiry, regardless of the topic. The simple phrase 'It can be shown…' in a textbook or paper almost always elicited the response from Prof. Connick: 'Well, let's show it… .' And he was generous with his time, both with his graduate and undergraduate students. When ushered into his office, I would see him look up from a pile of work on his desk, a broad smile spreading across his face because it was time to talk CHEMISTRY!

James Tong, professor emeritus at Ohio University (1957–1997), endowed an undergraduate scholarship fund in Connick's name as well as an undergraduate chemistry research fund in the names of Connick and his wife. Tong remembers:

> *Dr. Connick was my advisor when I was pursuing my B.S. and M.S. degrees. The UC didn't allow a student to get all three degrees at one campus, so he asked me one day if I would like to go to the University of Wisconsin in Madison, where I would have a research assistantship for my PhD research. I went without having to apply for admission or assistantship, started my doctoral research immediately, and finished all the requirements for the degree in two calendar years.*

Jane Scheiber, who worked as assistant dean of the College of Chemistry for many years, remembers Connick as:

> *...the kind of man one looked up to: his exceptionally tall, straight frame was matched by his moral rectitude and unbending integrity, yet softened with a sharp wit, generosity of spirit, broad smile, and hearty laugh that warmed his apparent reserve.*
>
> *I met Bob my first week in the College of Chemistry, in late 1982, when he was chair of the system-wide Academic Senate and had an office just around the corner from mine. Although he had already served as chair of the Chemistry Department, as dean of the College of Chemistry, and as Berkeley's vice chancellor during the tumultuous time of 1969–1971, he told me that he was most pleased to have been asked [afterward] to head the Senate. For one thing, that was a unique recognition by his faculty colleagues from throughout the University of California. For another, he admitted, 'it was a bit less difficult' than trying, as vice chancellor, to preserve the academic values of the university and yet be fair to student protesters.*
>
> *A few years later, Bob reluctantly became acting dean of the College of Chemistry. It was his last year before retirement, and he told me how desperately he wanted to do some research after years of administrative service. But he never learned how to say 'no' when the university he loved so much called on him. Combining pragmatism with determination and diplomacy, he acted boldly and selflessly to advance the College's broad*

interests. At the same time, he himself was always interested in the well-being of the individual members of the staff as well as of the faculty.

A man of intense curiosity, he enjoyed his membership in the Bohemian Club as an opportunity to meet people from different backgrounds. An ardent environmentalist and active in the Save the Redwoods League, he was a champion of California native plants. He and his wife traveled the world, documenting and analyzing petroglyphs. He maintained that curiosity even when, late in life, he was largely confined to his home. When my husband and I visited him, he asked probing questions about our (nonscientific) research. Bob Connick was a product of, and important contributor to, UC Berkeley. He epitomized what is best about the university. He was truly a gentleman and a scholar.

In 1952, Connick married Frances Jane Speith, who had received her doctorate from Berkeley's College of Chemistry in 1947, having worked under Axel Olson. Frances taught chemistry at San Francisco City College from 1968 until her retirement. Connick and Frances had been married for nearly 60 years when Frances died in 2009. They had six children and nine grandchildren.

Connick's daughter Sarah described him as "intensely curious about everything around him." Over their many years together, Connick and Frances's shared interest in other cultures led them to travel extensively on all continents except Antarctica. After his retirement, Connick and Frances pursued their lifelong passion for petroglyphs, documenting and presenting their findings at symposia and publishing their analyses. They are credited with reporting one of the oldest petroglyph sites in North America, at Winnemucca Lake, NV. Former graduate student Warren Clifford, who knew both Robert and Francis before they were married, considered their marriage to be "ideal," as they shared many interests and seemed to genuinely enjoy each other's company.

A resident of the Berkeley area for most of his life, in his later years Connick was known for clearing brush, removing trash, and maintaining trails on his daily walks near Kensington Hilltop School and in Wildcat Canyon. He passed away in 2014 at his home in Kensington, CA, at the age of 97.

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