



Simpson Linke

August 10, 1917 – December 27, 2013

On December 27, 2013, Professor Emeritus Simpson (Sam) Linke of Cornell University's School of Electrical and Computer Engineering passed away in Ithaca at age 96.

Simpson (Sam) was born in Jellico, Tennessee on August 10, 1917. Intrigued by a chemistry set as a youngster, he chose chemical engineering as his career objective, when he entered the University of Tennessee in Knoxville. But after struggling through freshman chemistry in spite of great effort, and having worked as an electrician helper in the university's Engineering Cooperative Program, he transferred study to electrical engineering and received the B.S.E.E. degree in 1941. He then spent four years during World War II in the U.S. Army Signal Corps as a Radar and Communications Officer, stationed in California and in Korea. In 1946, upon completion of his military service with the rank of captain, Sam enrolled in the School of Electrical Engineering at Cornell in the M.E.E. program. While a graduate student, he also served as an Instructor for service courses such as machine theory and electrical circuits. After receiving his degree in June 1949, he spent the summer at Brookhaven National Laboratory, where he worked on advanced linear induction motors. That same year, Sam was appointed an Assistant Professor of Electrical Engineering. He was promoted to Associate Professor in 1953 and Full Professor in 1963. He earned the rank of Professor Emeritus in 1986 at his retirement after a long and distinguished Cornell career.

Sam devoted his career to the study and teaching of energy systems, but he also had a remarkably calm and thoughtful demeanor that, when combined with his jovial sense of humor, made him a trusted leader of programs. With the Office of Naval Research

in the 1950s, he studied dielectric breakdown phenomena in high vacuum. About this same time, Sam became the Supervisor of the Cornell AC Power Network Calculator Facility, from which many contributions to the power industry in terms of electricity network loss-reduction and stability improvements were made. Sam spent his 1971-72 sabbatical in Washington, D. C. at the NSF (RANN Directorate). As Program Manager for Electronic Power Transmission and Control projects, he was responsible for funding some of the first electric-energy research sponsored by the U.S. government. In August 1973, he organized and chaired the Cornell International Symposium on the Hydrogen Economy. In the mid- 1970s, Sam chaired the Cornell Workshop on the Major Issues of a National Energy Research and Development Program and published the summary report.

Sam was, in fact, a strong promoter of sustainable energy principles even before the field was given the now familiar name. Sam worked in many aspects of energy from high-energy relativistic electron beams at the Laboratory of Plasma Studies (for which he served as Assistant Director and Acting Director from 1968 until 1975) to enhancing efficiency, stability, and safety of electric power transmission and distribution systems with the goal to improving design and operation of the electric power grid. In the early to mid- 1970s, Sam pioneered in researching and promoting the ideas of Wind Power plus both Hydrogen and Superconducting Magnetic energy storage. From 1975 up to his retirement, he was principal investigator on an NSF research program on Fast Control of HVDC Transmission Links for Power System Stability Augmentation. He also consulted with Brookhaven National Laboratory on transmission-line issues relating to site selection of large power station facilities. Other consulting and sabbatical experiences included Philadelphia Electric Co., Oak Ridge National Laboratory, the New Mexico Public Service Commission, and Entek Research, Inc. His sponsored research included contracts from NSF, General Electric, ONR, AEC, and the Department of Energy.

Sam was a major contributor to the evolution of power systems research and educational programs at Cornell. In the 1940s, the program consisted mostly of studying ac and dc machinery, motors and generators. In the early 1950s, Sam began to introduce the study of ac power networks and energy systems into the curriculum. He offered some of the first courses in power transmission lines and networks, including the still vexing topic of transient stability. His work with the Cornell Power Network Calculator allowed him to introduce these modern concepts into the education of power system engineers from Cornell. The work of the Network Calculator research team, including several new and dynamic faculty members specializing in power networks, introduced concepts of load-flow and transient-stability control. The Network Calculator was upgraded to a full computer-supported simulation system within the Kettering Power Systems Laboratory that allowed students to perform the same calculations and observations as would be seen on the job in an actual power system. In fact, the power systems of many countries in the world continue to benefit from work of engineers who were trained at Cornell by Professor Linke and the other new energy faculty of the 1960s and beyond.

Sam also notably served the engineering profession through his professional service activities throughout his long career. These included membership in professional honorary societies, such as: Life Senior Member of IEEE since 1983; Eta Kappa Nu; Society of Sigma Xi (President of CU Chapter, 1979-80), member of CIGRE from 1964-1988, and in 1988, he was elected as Attwood Associate of the U.S. National Committee.

Sam was well known as a meticulous and precise writer and he utilized this skill in many ways over his career. He often served to produce the proceedings of symposia and various technical reports.

In his retirement, he served as the coordinator of a number of accreditation reviews for the School by the Accreditation Board for Engineering and Technology. His precision in data collection and his manner of condensing and summarizing information so that it could easily be understood by others were phenomenal. He served for years as the faculty advisor (and uncredited editor) of the *Cornell Engineer* magazine. Sam was also the founding editor of ECE's alumni publication *Connections*, overseeing its publication from 1992 to 2005.

Of special note was his involvement with the Centennial of the School of Electrical and Computer Engineering celebration and his histories of the School, updated and published several times over his career. The Centennial's Herculean effort involved coordinating six seminars around the nation and producing six volumes on the "Future Directions in Electrical Engineering," in which faculty researchers looked into their crystal balls and predicted the future in the various major areas of research of that era. Sam also took on the responsibility of having a 6-inch tall hologram made of an historic piece of communications equipment owned by the School of ECE and the College of Engineering: Samuel F. B. Morse's original telegraph receiver. This is the instrument that received and delivered Morse's famous message, "What hath God wrought!," sent on May 24, 1844 from Washington, D. C. to Baltimore, and that opened this pioneering transmission line. Sam had to come up with a way to create the hologram without shipping the actual key out to Boston for the holographic process. The actual receiver was far too valuable a piece of communications history to chance any damage, loss, or theft. He came up with a way to make a visibly (almost) exact copy of the original and hence the hologram was made safely yet accurately.

No discussion of Sam's life and career would be complete without a comment on his love of teaching and his selfless giving of his time and advice as a mentor and coach to many students over the years. Sam was the ultimate in generating well-prepared and delivered lectures. He was gifted in being able to foresee potential areas of difficulty with new material and provide means to assure mastery of concepts. Sam served for decades as a devoted and knowledgeable faculty advisor to generations of Cornell undergraduates and Master of Engineering students. He sponsored many research and design projects for students who took his courses and wanted to pursue

the material toward novel practical applications. For years after his retirement, Sam was one of the most sought-after professors during alumni reunion events. It seemed that many former students had a story about some way that Professor Linke had personally helped them over a tough period in their studies or gave them some excellent career advice that they believed helped them become successful beyond school in the real world.

One formal tribute that Sam received was from a former student, Mark Adamiak, who received the 2008 GE Edison Award for his work in developing GE products to ensure stable power grids around the world. That award included a component to support power systems education allocated at the winner's discretion. Mark chose to donate half of his grant to Cornell to create a collection of premier lectures, the Sam Linke Lectures on Power Energy, to honor his special mentor, Professor Sam Linke.

In 1999, Sam joined CRVIS, and volunteered together with fellow Emeritus Professor Charles Wharton, who had developed an idea that students in elementary school are capable of understanding and appreciating science if simple and illustrative experiments could be brought down to the proper level. For several years, they happily spent time in a local elementary schools-teaching about the basics of science, math, and engineering by demonstrating the principles of science and engineering. Talking about this experience, Sam related that it was actually more challenging than presenting a high-level lecture on an advanced technical notion. In college, students are expected to take the time to do extra readings and study to understand their lectures each day. However, with the youngsters in elementary school, you need to get the point across simply, and with a sense of excitement, or you will lose the class's attention. A wonderful experience for both students and teachers, it took two special faculty members working together to excel in communicating detailed ideas to younger students.

Sam is survived by his loving and devoted family, his wife of 67 years, Esther, and daughters Martha and Laura.

Sam Linke was the epitome of everything outstanding one would hope to find in a faculty member. He was a talented and creative researcher, an innovative and tireless teacher, and a supportive and encouraging mentor to students, staff, and fellow faculty members alike. His good humor, respectful manner with others, and his love for students and their love for him are deeply missed.

Clifford Pollock and John Belina