In Memoriam

Marvin Camras, AES fellow, honorary member, and recipient of its prestigious Gold Medal Award, died of kidney disease on June 23, 1995, in Evanston, Illinois. He was 79 years of age.

Technology historians have described Camras as the "father of modern American magnetic recording." His inventions form the foundation of magnetic audio and video recording, analog and digital. He received more than 500 patents for his inventions, covering high-frequency record bias, head technology, wire and tape media, magnetic sound for motion pictures, multitrack tape recorders, stereophonic sound reproduction, and videotape recording.

In the late 1930s, while Camras was an engineering student at the Armour Institute of Technology in Chicago (now Illinois Institute of Technology), he created the first wire recorder with reasonably high audio fidelity. He was the first in America to bring together all the elements necessary for high-quality magnetic recording in a practical commercial package: good electronics (AC record bias); magnetic recording material with consistently high coercivity (18-8 stainless steel wire); an efficient record/playback head, and a stable transport. Camras' AC bias and other magnetic recording patents in part dominated the American entertainment and information technology industries for decades.

Camras' work at Armour and S. J. Begun's work at Brush Development in Cleveland in the mid-to-late 30s came just in time to serve the Allied Forces during World War II. Unlike acetate or wax discs, wire recorders were unaffected by shock, vibration, and extreme temperatures. Wire recorder uses among the Allied Forces were almost unlimited. In order to confuse the enemy about the real Allied landing areas for the invasion of Europe, D-Day, Camras

Marvin Camras

helped develop a system using wire recorders to play back battle sounds amplified by powerful amplifiers.

The public first heard of Camras' work after the war, when a promising new consumer wire recorder industry emerged. Camras was responsible for many of the popular postwar wire recorders licensed by Armour to the robust American consumer electronics industry. But his work in magnetics didn't stop with wire. At the Society of Motion Picture Engineers (now SMPTE) Fall Conference in 1946, he introduced magnetic sound for motion pictures with full magnetic coatings on 35–mm film for multiple tracks, and magnetic stripes for 35–mm, 16–mm and 8–mm film. Within two years, the major motion picture studios were mastering their audio on magnetic film, largely replacing optical recording.

Camras' patents led directly to the timely development of the videotape recorder (VTR) in 1956. In 1950, Bing Crosby Electronics under John T. Mullin showed a prototype videotape recorder that sent a wake-up call to Ampex and to RCA. The Mullin-Crosby VTR used fixed heads and fast tape speeds.

In 1951, after talking to Camras in Chicago, Ampex engineers got new ideas about how to record the wide video bandwidths on magnetic media, including the basis of all analog and digital VTRs to this day, the spinning head. Camras had developed and patented a prototype rotating head disk that lay parallel to 2-inch wide tape and magnetically scribed an "arcuit sweep" across the face of the media. Ampex adapted the Camras spinning head concept, changing the head wheel to a transverse position, the heart of the "quad" VTR, introduced in 1956. Ampex VTR engineers, including Ray M. Dolby and team leader Charles P. Ginsburg, have often expressed their debt to Marvin Camras and his genius at adapting magnetic theory to practical audio, video, and data recording. As Dolby states: "The basic principles he explored and designed are still used in the tapes and recorder designs in our machines today."

But Camras was not only a brilliant inventor and prolific writer. He pursued his work with an intensity that won him the respect of his many colleagues, who considered him modest and unassuming. He possessed an intellectual curiosity, energy, and concentration to delve into his questions until he found the answers. Outside of his important engineering work, he enjoyed several hobbies. He was an enthusiastic, lifelong radio amateur as well as an avid photographer. His hobby of building violins and other stringed instruments from scratch came from his love of classical music and woodworking. One of his instruments is used by his son-in-law, Charles Prickler, leader of the Chicago Symphony Orchestra's viola section.

Dedicated to the work he loved, it is not surprising that Camras never retired. At the time of his death he was a research professor and senior scientific advisor at the Ilinois Institute of Technology. In addition to his membership in SMPTE, AES, IEEE and the Acoustical Society of America, he received numerous awards from professional societies, governments, colleges and institutes. A small sampling of his awards include Inventor

In Memoriam

of the Year, the National Medal of Technology and the Washington Award. He was inducted into the National Inventors Hall of Fame. The author of more than 40 publications, Camras also wrote two landmark reference books, *Magnetic Tape Recording* and *The Magnetic Recording Handbook* .

He is survived by his wife, Isabelle, four sons, a daughter, and six grandchildren.

Peter Hammar

Damon Wootten, founder and president of The Golder Group of Vancouver, Canada, passed away on June 26, 1995 after a third and final bout with cancer. A visionary with a love of live spectacle, a performer's sensibilities and creative technical insight, Damon worked for a decade to define and enlarge the emerging discipline of show control.

Damon was born on September 11, 1952 in Toronto, Canada. By his late teens he had resolved to be a performer, and for ten years toured Canada as a jobbing bass player.

In the early 80's Damon returned to Toronto as a sound systems contractor in the early themed restaurant industry. In 1982 he moved to Vancouver where he worked with Commercial Electronics Ltd. and later with TOA Electronics. In 1986, he became marketing manager of Richmond Sound Design, a theatrical sound equipment manufacturer. Later he was instrumental in founding the Vancouver Section of the AES.

At Richmond, Damon found the ideal vehicle for his boldness and imagination. He developed business relationships with major theme parks from which the company entered into other markets throughout North America and Asia. He devised ingenious solutions for convention centers and stadium sound system control. Most importantly, he collaborated on the development of tools and techniques for the new field of show control.

In 1992 Damon left Richmond to found The Golder Group, a company dedicated to show control systems design and installation. With a vision of blending theatrical expressiveness with integrated performance control, Damon propelled Golder into prestigious commissions, including Kapcheon Water Show at Expo '93 in Korea, Andrew Lloyd Webber's *Sunset Boulevard,* the George Lucas SuperLive Adventure, and most recently, EFX! at the MGM Grand Hotel in Las Vegas.

Damon brought drama into everything he did, but without guile or conceit. His ideas were often larger than life, and he countered skeptics by martialing the same courage, practical resolve, and humor with which he fueled the dreams of others. Tributes from his friends and colleagues remember his wit, enthusiasm, integrity, and focus and the profound positive effect he had on everyone around him.

He is deeply missed by his family, his wife, Galen Brandt, his business partners, friends, and many colleagues worldwide.

Jeff Berryman
Vancouver, BC

Harold Kaitchuck, AES fellow and longtime member, passed away in March 1995. Kaitchuck worked in the audio field for over 40 years and was president of Kayron Incorporated and Boulevard Recording Studios in Chicago. He was founder and chairman of the society's Midwest Section. He is survived by his wife, Eleanor, three sons and four grandchildren.