

# In Memoriam



Thomas G. Stockham Jr.  
1934 – 2004

**T**homas G. Stockham Jr., past president of the AES and renowned sound engineer, died on Jan. 6 in Salt Lake City, UT, at the age of 70. He had been ill with complications from Alzheimer's disease.

Born in Passaic, NJ, Stockham earned his bachelor's, master's and doctorate degrees in electrical engineering at M.I.T. where he became an assistant professor of electrical engineering in 1959.

Stockham's pioneering work in the development of digital recording and editing made him the father of digital magnetic sound recording and earned him Grammy, Emmy and Academy awards as well as professional recognition. Stockham and Robert B. Ingebretsen, who had been his graduate student, did pioneering work in converting analog sound into a digital format. Stockham took analog waves produced by a microphone or preexisting recording and digitized them into numbers with a computer. The numbers were stored in a computer and played by re-converting them into sound waves. Once the signals were converted to numbers, they became permanent. Both men received a Scientific/Engineering Academy Award from the SMPTE in 1999.

In 1968 he moved to Utah where

he became professor of electrical engineering at the University of Utah and helped create the Computer Science Department. In 1975 he founded Soundstream Inc., the world's first digital recording company. His work helped spur the advent of the compact disc and DVD.

His first live digital recording featured the Santa Fe Opera. In 1976 RCA released "Caruso: A Legendary Performer," the first in a series of Caruso's early 20th century recordings digitally remastered by Soundstream. Stockham also created the Soundstream recorder with financial aid from Malcolm Low.

Stockham was one of the investigators on the six-member panel that analyzed the White House (Nixon) tapes in 1973-74 during the Watergate investigation. Their conclusion was that someone had deliberately erased the 18½-minute gap on one tape.

In 1998 he was elected to the National Academy of Engineering for his contributions in the field of digital audio recording. He also won a technical Oscar.

The AES awarded him a fellowship in 1978, and the prestigious Gold Medal in 1987. He was president of the society from 1982-83 and served on the Board of Governors in 1988.

Stockham loved teaching and problem solving. Friends remember him as a modest gentleman. He is survived by his sons Tom, John, and David, his wife Martha, and daughter Carol, as well as eight grandchildren. All who knew him mourn his passing.

**P**eter James Walker, AES fellow, OBE, and DSc, died on December 10, 2003, in Cambridge, England. He was 87 years old.

Growing up at the time of the depression, PJ, as he was affectionately known, left school at the age of 16. An active hobbyist in radio construction, he was most interested in science. Because of an underlying



Peter J. Walker  
1916 – 2003

assumption that he would take over his father's wholesale hardware business, he did not go to full-time formal higher education—not necessarily a disadvantage to a free thinker like PJ.

Blessed with such a lively and warm personality and an ability to seek out knowledge, he engaged easily with those who had the relevant expertise. Key influential figures were McLachlan, whose lectures on loudspeaker design PJ attended, and the pioneer Paul Voigt, whom PJ regarded as a guru. Later, D.T.N. Williamson (of amplifier fame) who had access to then-rare computing facilities, collaborated on the early work on electrostatic loudspeakers.

An early love of music engendered Walker's interest in sound reproduction. He formed his own band where he played the saxophone. In the early days of his company, the proceeds of the band's gigs funded the purchase of components for the amplifiers to be manufactured during the coming week. His love of music-making was lifelong. At the age of 40, he taught himself to play the flute, and he played regularly in the Huntingdon Philharmonic Orchestra, which he enjoyed greatly.

The experience of playing in bands had made him aware of the needs for amplification of the singer/soloist.

After brief employment by an amplifier manufacturer as a test technician, he founded The Acoustical Manufacturing Company in 1936, to manufacture his own high-quality amplifiers and public address equipment. The loudspeaker designs treated the enclosure and driver as an entity and used ports or even coupled cavities.

Following the opening of the London 405-line television transmitter in 1936, there were weekly transmissions of concerts using the 41.5-MHz AM sound transmitter with its wider bandwidth and lower noise than hitherto experienced. These gave a tantalizing glimpse of what the future might hold in store. However, the transmitter was shut down in 1939 at the start of World War II. It was not until the 1950s that high-quality program sources reappeared in the form of BBC VHF FM transmissions and the first vinyl long-playing records: the high-quality sources that seeded the hi-fi industry.

Against this background, the company entered the arena of high-quality sound in the home, with the Quality Unit Amplifier Domestic. The QUAD II amplifier was a development of an earlier public address amplifier which PJ had designed. It employed a novel topology with the PJ hallmarks of simplicity and elegance. The crucial output transformer, which was his own design, was manufactured in-house. Even the construction was unusual: the tube bases were sunk below the level of the chassis to give a more compact unit.

The companion preamplifier had versatile EQ facilities. These were more important in the days before universal standards for recording characteristics existed. The die-cast panels and control layout gave an aesthetic appeal compatible with the home environment. Its successors, the 303 transistor power amplifier /33 preamplifier, sold in very large numbers and were selected for the Council of Industrial Design Award in 1969. The development of transistorized

amplifiers culminated in the 405 “current dumping” amplifier developed jointly by Walker and Michael Albinson. It earned the Queen’s Award for Technological Achievement in 1978: the first audio product ever to be so recognized.

The first domestic loudspeaker was the “Corner Ribbon,” launched in 1949. The bass unit used a moving coil driver in a coupled-cavity enclosure. The HF response from PJ’s horn-loaded ribbon tweeter was very good, and the low end fairly good, but Peter was not satisfied with the crossover region: he never liked the idea of multiple drivers and crossover filters. He himself characterized the sound of many moving coil loudspeakers as that of “a piece of cardboard flapping about in a wooden box.” He already had his sights set on a full-range electrostatic loudspeaker with no box and no cardboard.

The appeal of the electrostatic principle lay in the possibility of using a thin plastic diaphragm (weighing some 200 times less than a conventional loudspeaker cone), which could be driven over its whole area and give highly predictable sound radiation. A practical realization—starting from nothing—required a lot of research. Because loyal and able staff, who responded so well to his hands-off style of management surrounded PJ, he was able to do this without affecting the business.

He undertook fundamental research into the properties of plastic-film materials and into high-resistivity coatings. Building upon the foundation of this research, the development of a product that would be relatively easy and economical to make proved more time consuming than achieving the target acoustical performance. Special machines had to be designed to form and age the plastic diaphragms. The design of an audio transformer to step up from the 20 Volts peak from the power amplifier to around 6 KV at the electrodes is no trivial matter. PJ succeeded in solving all these major problems by his skill

and sheer determination. His design of the world’s first full range 40-Hz to 18-kHz electrostatic loudspeaker was launched in 1957, which was truly a milestone in audio development. This loudspeaker remained in production for 25 years.

In 1963, Walker sought to implement the theoretical ideal of a point source: something never before achieved. His brilliant mind conceived the idea of making a very low-mass flat membrane vibrate in exactly the way that it would if it had been excited by sound waves from a true point source. That being so, one has in effect a virtual point source set a short distance behind the diaphragm. His method used a series of concentric fixed electrodes, the outer series of which are fed with an audio signal progressively attenuated and electrically delayed relative to the inner electrodes.

PJ dedicated 18 years to developing the ESL-63 loudspeaker, which remained in production until its reworked version, the contemporary ESL-988 and its larger sibling, the ESL-989 were launched in 1999. It gave Walker some pleasure to know that several famous international artists would insist on monitoring their recorded performances on ESL-63s before they would allow the recordings to be released. Other electrostatic designs were made, including one employing a spherical enclosure, which could be placed near a room corner. To date this has not gone into production.

The full range electrostatic loudspeakers and the current-dumping amplifier are perhaps the key innovations for which Walker will be remembered. He received an OBE award from Her Majesty Queen Elizabeth II for his services to the audio industry and an honorary doctorate from Keele University in recognition of his pioneering research. His company received Queen’s Awards for innovation and for export achievement.

The Audio Engineering Society awarded him with a Silver Medal in ➤

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1989. He was central to the establishment of the British Section, of which he was chair. He regularly attended section meetings and events until the approach of his 80th birthday, when failing health made it impossible.

As the audio community mourns the loss of a great man of vision, a mentor to many, a very kind man, and a meticulous engineer, we extend our condolences to his surviving family.

David Birt

**J**ack Hartley, life charter member, and one of the original members forming the New York Section, died on November 24, 2003, at the age of 80. Born in Hawthorne, New Jersey in 1923, Hartley lived in Waldwick for most of his life, before retiring in 1987 when he moved to

Manchester, New Jersey.

Hartley's interest in radio prompted him to obtain an amateur radio license while in high school. Soon after he diverted to audio via construction of an amplifier and folded-horn loudspeaker to enhance playing home disc recordings of "off-the-air" remotes of big bands. He attended New York University in the radio production program prior to entering service during World War II.

His duties in the U.S. Army Signal Corps took him to the South Pacific with GHQ Mobile Communications where he participated in 26 assault landings from New Guinea to the surrender ceremonies in Tokyo aboard the U.S.S. Missouri. That unit also operated MacArthur's "Voice of Freedom." Upon his discharge, he joined the Voice of America recording stu-

dios from 1946 through the early 1950s, operating their first batch of Magnecord tape recorders. He then joined the Fisher Radio Corporation as national sales manager until the mid-1970s. After that he worked for a small manufacturer in New Jersey that specialized in audio equipment. He remained there until his retirement.

Interested in big band jazz, Hartley became historian/discographer for both the Stan Kenton and Johnny Richards Orchestras, choosing items and preparing LP/CD liner notes for their Capitol Records releases. After retirement he became audio engineer and station manager for KLVW, a closed-circuit TV outlet in Manchester, NJ, working until his illness.

He is survived by his wife, Norma, and a daughter, Denise Baden of Texas, who practices medicine.