David S. Archer

DAVID H. ARCHER

1928–2010

Elected in 1989

"For leadership in developing coal-based energy systems."

BY NADINE AUBRY

DAVID H. ARCHER, an influential engineer, talented musician, family man, and devout religious believer, passed away on June 24, 2010, at the age of 82.

David was born in 1928 in Pittsburgh, Pennsylvania, and grew up in the West View neighborhood. His father, who was of English descent and had earned a law degree from Duquesne Law School, was a distribution manager at the Pittsburgh *Post Gazette.* His mother, of German descent, received a degree in education and taught high school before their marriage. David attended West View High School where he distinguished himself as a top student who occasionally served as the substitute teacher when the teacher could not come to class. David won a Westinghouse fellowship to Carnegie Institute of Technology (Carnegie Tech, the precursor of Carnegie Mellon University) along with fellow Westinghouse scholar John Nash. At Carnegie Tech, David studied chemical engineering and mathematics and earned his bachelor's degree in 1948. He then attended graduate school at the University of Delaware, from which he received a doctorate degree in chemical engineering in 1953.

David met his wife, Justine Garnic Archer, at Carnegie Tech. It was customary in those days to post students' grades on a public board. When David saw Justine's name at the top of

the female student list, he was determined to meet her and, as soon as he saw her, decided to marry her. They continued their relationship while earning their graduate degrees at different colleges and married when David was studying for his doctorate at the University of Delaware. Throughout David's career, Justine was a strong support to him, both personally and professionally.

After receiving his PhD, David returned to Carnegie Mellon University (CMU) in 1953 as an assistant, and then associate, professor in chemical, mechanical, and nuclear engineering. He taught numerous courses in metallurgy, thermodynamics, fluid flow, heat transfer, process control, engineering analysis, thermal systems analysis, energy conversion, and nuclear engineering. Justine also taught at Carnegie Tech for a short time before the birth of their first daughter.

In 1960 David left academia to join Westinghouse Electric Company, where he worked for more than 30 years. He became world-renowned for his leadership and contributions to the production of innovative equipment, systems, and services for practical applications in the areas of fuel (both fossil and nuclear) and energy production. From 1960 to 1970, he initiated and directed the fuel cell power plant development project, including the design of cells and production processes. He was awarded a 10-year, $6 million project from the US Office of Coal Research to support this program and raised additional funding from the US Department of Defense and National Aeronautics and Space Administration. Over the next 14 years (1970–1984), he initiated and directed novel work on fluidized bed combustion for which he received a 13-year, $10 million contract from the Environmental Protection Agency. He also initiated a project in coal gasification and directed the design, installation, staffing, and operation of a coal gasification pilot plant, a project for which he obtained a $45 million grant from the US Department of Energy (DOE). During that time, David also managed projects on uranium production, nuclear fuel manufacture, and nuclear waste disposal. Later (1984–1990), he made important contributions to alternative energy systems, such as the design and production of plants based on biomass gasification and

solar power. In 1983 Westinghouse awarded him the Order of Merit, its highest corporate achievement award, in recognition of his work on fuel cell and coal gasification development. He retired from Westinghouse in 1990.

David had an extraordinary passion for research and teaching and returned to CMU in 1991 to enrich young minds and conduct research. He worked there full-time until his death. His CMU association involved both mechanical engineering and architecture, with his fundamental interest lying in the efficient and environmentally friendly use of energy. Until the time of his passing he worked very hard for many hours every day, teaching a fuel cell course in mechanical engineering and performing research at the Advanced Building System Integration Consortium in the School of Architecture to develop advanced energy supply systems for buildings. The Combined Heat and Power Laboratory supporting the Intelligent Workplace has since been designated the David Archer Laboratory in his honor. Throughout his career at both Westinghouse and CMU, David was a prolific scholar, producing more than 85 publications and 21 patents.

David was elected to the National Academy of Engineering in 1989 and participated in several of its advisory committees. One of these led to the establishment of the ENERGY STAR program, which strongly influences the efficiency of major household appliances; other committees addressed the disposal of chemical weapons. He served on the American Society of Mechanical Engineers (ASME) committee in preparation for the PTC 47 Integrated Gasification Combined Cycle Performance Test Code and PTC 50 Fuel Cell Power Systems, as well as the National Research Council committee that reviewed the US DOE/NETL (National Energy Technology Laboratory) Vision 21 Program, which was overseeing the destruction of the US Army's stockpile of chemical weapons. David was also a member of the American Institute of Chemical Engineers, American Chemical Society, American Association for the Advancement of Science, American Society for Engineering Education, Combustion Institute, and New York Academy of Sciences.

Throughout his life David's other vocation was music. He was as passionate about his music as he was about his scientific work. As a boy he studied piano at the Pittsburgh Musical Institute. When his interest shifted to the organ and sacred music, he milked cows on his grandfather's farm to raise money for organ lessons. While studying at the University of Delaware, he played the organ both at Newark Methodist Church and First Presbyterian Church in Newark. He recruited and worked with groups of guest brass and string musicians regularly during his 25 years as organist/choirmaster at Berkeley Hills Lutheran Church in Pittsburgh (1954–1979), a tradition he continued at Mt. Zion Evangelical Lutheran Church in Pittsburgh and Emanuel's Lutheran Church in Bellevue. During the summers of 1971–1978, he was honored to be the guest organist at Trinity Episcopal Cathedral in downtown Pittsburgh. At the time of his death, he was the organist/choirmaster at Emanuel's Lutheran Church. He had been a member of the American Guild of Organists for 60 years. His extensive collection of sacred music is housed in a library at the Lutheran Synod Office in Pittsburgh.

David's continued search for excellence in all areas was apparent throughout his life. As his pastor said at his funeral, "If David were alive, we would be singing all twelve verses of the hymn."

David Archer was a giant in the area of novel systems and equipment for fuel processing and energy production, and his passionate character and large impact on the field will be forever remembered. He is greatly missed.

David's wife Justine predeceased him in 1973. He is survived by his longtime friend and companion Myrna Rombach; sister Miriam (Mimi) Archer Jeske; his four daughters, Catherine Archer, Miriam (Mac) McCann, Amy Archer, and Marsi (Lance) Thrash; his grandchildren Charles, Andy, Justine, and Vivian McCann, and Jordan David, Tim, and Bailey Thrash; and six great-grandchildren.