



Edward A. Mason

EDWARD A. MASON

1924–2010

Elected in 1975

“For contributions to research on fluidized solids, organic-cooled reactors and power system optimization and leadership in complex nuclear projects.”

BY NEIL TODREAS

EDWARD A. MASON, a leader in chemical engineering and nuclear power technology and practice, died on June 23, 2010. Ed was both versatile and accomplished in his career. He sequentially served as the director of research for a startup chemical company, Ionics, Inc.; professor and head of the Department of Nuclear Engineering at the Massachusetts Institute of Technology (MIT); member of the five-man commission directing the US Nuclear Regulatory Commission; corporate vice president for research of the Amoco Corporation; and director of several small high-technology companies as well as Commonwealth Edison, a large electric utility.

He was born on August 9, 1924, in Rochester, New York. After graduation from high school he enlisted in the US Navy and served for three years. A superior and hardworking student who had to finance his own education, he received the Rochester Prize and New York State Regents fellowships, enabling him to complete his undergraduate degree in chemical engineering at the University of Rochester in June 1945. With teaching and research assistantships he went on to complete an SM in chemical engineering practice in 1948 and an ScD in chemical engineering in 1950, both at MIT.

In June 1950 he started his academic career as an assistant professor of chemical engineering at MIT, with his first assignment as director for two years of the MIT Chemical Engineering Practice Station in Bangor, Maine. This was one of four such experimental stations operated by the Chemical Engineering Department to provide an opportunity for graduate students to obtain field experience in an industrial atmosphere. In June 1952 he returned to serve in MIT's Chemical Engineering Department until in 1953 he joined Ionics, Inc., where he soon became the director of research. At Ionics he directed research in a variety of chemical engineering processes—ion exchange, electro dialysis, electrochemistry, high-temperature chemistry and engineering, gas-solids fluidization, heat and mass transfer, chemical kinetics, analytical and radiochemistry, and water treatment. His clients were firms and agencies working in the sucrose, dextrose, gelatin, photographic, pulp and paper, caustic chlorine, power, titanium, thorium, uranium milling and refining, and nuclear reactor industries.

Mason was recruited back to MIT in 1957 to join the newly formed Nuclear Engineering Department as an associate professor. He played an influential role in the early years of the department in the development of the nuclear engineering discipline. Together with Manson Benedict and their students, he shaped the field of nuclear chemical engineering through their seminal text with Thomas Pigford, *Nuclear Chemical Engineering*. Even after leaving the department, Ed continued over many years to provide valuable advice and counsel to its evolution.

While active at MIT, his research and teaching interests were in the fields of nuclear chemical engineering, effects of radiation and heat on organic coolants for nuclear reactors, nuclear reactor design and safety, nuclear system optimization, and economics. He supervised 80 theses during his 24 years as an MIT faculty member. In 1965 he was awarded a National Science Foundation senior postdoctoral fellowship and, while on a year's sabbatical leave from MIT, carried out research at the Euratom Laboratory in Ispra, Italy. In 1967 he became director of a large international study at Oak Ridge National Laboratory

on the beneficial uses of nuclear power for the production of energy-intensive materials and water desalting for large-scale agriculture in developing regions of the world. This study produced a multivolume report covering economic, technical, and sociological issues connected with the establishment of large nuclear power and desalting stations; the production of metals, fertilizers, plastics, and agricultural products; and the establishment of communities to support the entire operation.

Ed was appointed head of the MIT Nuclear Engineering Department in 1971, succeeding Manson Benedict. It was at that time that I joined the department as an assistant professor and came under Ed's guidance in teaching and research directions. He was of immense help in mentoring my development as a faculty member with his very broad background and willingness to be always available for discussions and advice.

During this period he served for four years as a member of the US Atomic Energy Commission's Advisory Committee on Reactor Safeguards. When the AEC's mandate for both development and regulation of atomic energy was split, he took leave from MIT to accept an appointment from President Gerald Ford as one of the first commissioners of the new Nuclear Regulatory Commission, beginning his government service in January 1975.

In January 1977, he accepted the position of corporate vice president of research at the Amoco Corporation and resigned from MIT and the NRC. At Amoco he was responsible for oversight of all company research and development (R&D), for senior management of all alternative energy development, and for the startup, growth, and direct management of a corporate research department. In addition to his responsibilities for coordination of research throughout Amoco, he served as the senior technical advisor to corporate management. Furthermore, under his direction at Amoco, R&D programs in genetic engineering and optoelectronics were planned, staffed, and carried out. As a result Amoco established four commercial high-technology ventures, which reported to Ed for the first four years until Amoco set up a business unit encompassing these activities. He was also responsible for the operation of Amoco's Research Center at Naperville, Illinois.

He retired from Amoco in June 1989.

Mason's honors and professional and community service activities were extensive. In addition to membership in the National Academy of Engineering and the American Academy of Arts and Sciences, he was a fellow of the American Nuclear Society, American Institute of Chemical Engineers (AIChE), and American Association for the Advancement of Science, and a member of Phi Beta Kappa, Tau Beta Pi, and Sigma Xi. In 1978 he received AIChE's Robert E. Wilson Award. Over the years he served on several National Research Council committees, including the Committee on Science, Engineering, and Public Policy, the Energy Engineering Board, the Steering Committee of the NAS/NAE China Initiative on Technology and Industrial Development, and the Board on Chemical Sciences and Technology (BCST). He cochaired the BCST's four-year study that in 1988 produced *Frontiers in Chemical Engineering Research: Research Needs and Opportunities*, which addressed the role of chemical engineering in new technologies, principally biotechnology and chemical processing for the information industry, as well as processing of energy in natural resources and environmental protection, process safety, and hazardous waste management.

Mason's service on the boards of several universities included multiple departmental visiting committees of MIT; the University of California–Berkeley Advisory Board, Department of Chemical Engineering; University of Chicago Visiting Committee, Division of Physical Sciences; National Advisory Board, Georgia Institute of Technology; and the University of Texas Engineering Foundation Advisory Committee. His service on boards and advisory committees of industrial organizations included Commonwealth Edison Company (now Exelon), where he chaired the board's Nuclear Operations Committee; XMR Inc.; GENE-TRAK Systems; Cetus Corporation; the Electric Power Research Institute Advisory Council; and the ASME Industrial Advisory Board. In addition, he gave of himself to civic service through the Council of the Crerar Library Associates, the board of directors of the Family Services Association, and the Robert Crown Center for Health Education.

Throughout his life Mason strongly influenced those whose careers he touched. His student Richard Alami, upon hearing of Mason's passing, wrote:

Coming from Paris with a European cultural background, I soon found myself immersed in that wonderful American culture of 1958 and drawn to that temple of science—MIT. We were young, thirsty for knowledge, enthusiastic, excited by that new science—nuclear engineering—and by riveting, dynamic, friendly and brilliant professors: Manson Benedict, Kaplan, Evans, Brownell...and Edward Mason.

Edward Mason—young, warm, with a legendary friendliness and always approachable—was never too busy to help, advise, and offer clear, simple and practical explanations. I was very fortunate to have had Edward Mason as my thesis supervisor, and, throughout our many exchanges, to appreciate his knowledge and technical and scientific advice. To this day, I have kept the first few pages of technical advice he gave me with his explanations on the well-known “Bucklings.”

Another student, Phillip Choong, wrote:

When I was at MIT in the late sixties (1965–1969), Prof. Ed Mason had been a rising star in the department. In my memory, Prof. Mason was always very bright, very energetic, very modest and very sensitive to students' self-respect. He gave me NASA-provided funding and turned me loose to explore the potentials of nuclear energy for space applications. In his very busy workload, he somehow managed to set aside a half-hour time slot during his lunch time weekly for me to update him on research progress. His hands-off approach really helped me gain the self-confidence that has been very beneficial throughout my career in both industry and academia. Prof. Edward Mason was a great engineer like his mentor, Prof. Manson Benedict. But more importantly, he was a very good down-to-earth gentleman just like his mentor. It is people like them that make MIT a great place for training engineers. In retrospect, I feel very fortunate to have had these two great men as my professors and thesis advisors at MIT. To this day, almost half a century later, I am still trying to emulate and replicate many of the good things I learned from them on the other side of the globe in Peking University.

Ed was a great golfer—at one point his handicap was 7—and a very good sailor, a skill he learned on Lake Ontario as a teenager. He was also a great competitor, whether it be tennis, bridge, or his favorite sport, golf, as your partner or your opponent. He loved competition. This was instilled in him during his early years when he learned that to advance or be successful he had to commit all his effort. As his children noted, he didn't always win but he gave his best every day. He was always ready to lend a helping hand, whether to serve on a committee, give some advice, help solve a problem, or be a handyman to repair something.

Mason's children recall that through these and his other interests, they as a family learned to ski, sail, golf, go camping, travel, and have adventures. His children may not have always wanted to do all these things when they were young, but he knew they needed to be exposed to new things and to push themselves. When one spent time with Ed, it was time well spent. One could expect a good tennis match or golf game from him, or he might tell a good story or joke, or maybe one would learn something about nuclear energy. You knew you were going to have a good time. Either way, by doing these things together, as a family, the relationships in the Mason family grew strong.

Edward Mason is survived by his wife of more than sixty years, Barbara, three sons, three daughters, and fifteen grandchildren. His "rules of life," which he taught his children and followed himself, and which they shared at his funeral, were:

1. Do your work before you play.
2. Always say your prayers at bedtime.
3. A gentleman always carries a handkerchief.
4. Treat other people the way you want to be treated.
5. Always read the owner's manual first.

