GUEST EDITORIAL

Professor Howard Emmons 1912-1998

The fire protection community is saddened at the death of Professor Howard Emmons, the father of modern fire science, who provided the vision that has given rise to the body of scientific knowledge on which the fire community has come to rely.

During his 43-year career at Harvard University (1940-1983), Professor Emmons mentored 50 Ph.D. students in the areas of combustion and fire, and influenced countless others as an inspiring teacher and innovative researcher. I had the honor of being his last Ph.D. student, and I look back fondly at those years. I’ve never worked harder or enjoyed working more.

Professor Emmons was encouraging, challenging, demanding, and intellectually stimulating, a man of remarkable intellectual curiosity and capability. He was an engineer and a scientist, a theoretician and an experimentalist, a doer and a thinker. He was as comfortable in the National Fire Protection Association as he was in the Combustion Institute, and he was always ready to ensure that the developing science would be applied. Looking back on Professor Emmons’ career, I think about his own technical accomplishments, the things he inspired his students and colleagues to accomplish, and his contributions to institutions that foster the growth of fire science and its application to fire safety.

As a fire researcher, Professor Emmons’ contributions are notable for their quality, vision, and innovation. He did not publish a large number of papers, but those he produced are all worth gold. His early work included a landmark paper on the burning of liquid fuels, as well as important work in plumes and fire whirls. From 1972, his research was centered around the Home Fire Project, a joint project between Harvard University and Factory Mutual Research Corporation, funded by the National Science Foundation, which resulted in two major accomplishments. Experimentally, it created the modern standard for the scientific study of room fires. The level of instrumentation and of analysis of the data from these full-scale bedroom fire tests qualitatively changed the way experimental fire research was performed. And theoretically, the project gave rise to zone fire modeling as we know it today. While elements of the zone model were clearly envisioned in the earlier work of people like Phillip Thomas and Kunio Kawagoe, today’s zone fire modeling emerged in the Harvard Computer Fire Code. Unfortunately, model development was discontinued when Professor
Emmons retired in 1983, but today’s zone models grew out of this groundbreak-ing work.

The fire science community has lost a great leader. Professor Emmons had the intellectual ability and insight to see and understand, as well as the heart to dream. Together, these qualities made him a unique visionary figure. Those interested in looking forward should read the paper he prepared for a conference at the National Institute of Standards in honor of his retirement. The paper, entitled “The Further History of Fire Science” (Combustion Science and Technology, 40, 1984; also reprinted in Fire Technology, 21(3), 1985), provides his vision of how fire science would develop over the next three centuries. Remarkably, his first prediction was that performance-based fire codes would not be enacted until the year 2000, a prediction that seems eminently reasonable today. Not all of his predictions will be entirely correct, but the breadth of his vision is impressive. Of course, if he were around to see an incorrect prediction, I imagine him simply smiling, shrugging, and saying, “Oh, well.” As remarkable an engineer and scientist as he was, he never took himself too seriously.

Professor Emmons became involved in the fire science community in the 1950s and was a founding member of the Committee on Fire Research of the National Academy of Science from 1956 to 1972, serving as chair from 1967 to 1970. He was instrumental in forming and funding the Center for Fire Research (CFR) at the National Bureau of Standards and supported the CFR’s vigorous extramural research program, remaining a strong supporter of, and advisor to, the CFR for the rest of his life. He was also instrumental in forming the Basic Research Department at Factory Mutual.

During his retirement, Professor Emmons continued to be active professionally, giving me the opportunity to work with him on such things as the Fire Technology Editorial Review Board, on which he served since its inception in 1983. He also had a very supportive relationship with Worcester Polytechnic Institute’s Center for Firesafety Studies, to the benefit of the faculty and students alike.

Internationally, Professor Emmons was influential in the development of fire science, garnering institutional support for the field and promoting the recognition of its value. During his worldwide survey of fire laboratories in 1966-67, he collected data that illustrated the lack of agreement among flammability tests worldwide (Fire Technology, 3(3), 1967) a graphic representation of the chaos resulting from our lack of basic fire science. He was also active in the U.S.-Japan Cooperative Program on Natural Resources Fire Research and Safety Panel. In many ways, the formation of the International Association for Fire Safety Science (IAFSS) represents the maturation of Professor Emmons’ vision for international fire science. The IAFSS has honored him by creating the Emmons Lecture, given at the beginning each IAFSS international symposium by an individual who has made significant contributions to fire science.