

FOREWORD

The following tribute for the late Howard W. Emmons was presented at a memorial service for Howard on December 20, 1998 at the Sudbury Unitarian Church in Sudbury, Massachusetts, Howard's home town.

A Tribute to Howard Emmons from FMRC December 20, 1998

Everyone who has known Howard Emmons knows he was a man of many diverse accomplishments. One of those accomplishments, and the reason why I and my colleagues from Factory Mutual are here today, is that Howard was primarily responsible for making Factory Mutual Research Corporation what it is today, a world leader in fire and loss prevention research.

Paul Fitzgerald, the President of FMRC who could not be here today, recalls the story of Howard's first association with Factory Mutual more than 35 years ago. Howard walked into a meeting of the FM Joint Affairs Committee, an executive board consisting of seven insurance company CEOs and the General Manager of FM, and told them that they should invest in fundamental fire research—something none of their competitors were spending a dime on at that time. Not many people, let alone an engineering professor, were likely to have swayed that group. But Howard persuaded them to think “out of the box” and convinced them of its value. And fortunately, they accepted his recommendation. Howard went on to become the Scientific Advisor to our basic research program.

Jim Smith, FMRC vice president at the time, is the person who championed bringing Howard and FM together. When I spoke to Jim a couple of weeks ago, he said that Howard's vision was responsible for what FMRC is today, that Howard “gave power and prestige to FM” and that FMRC is part of Howard's proud legacy to the scientific world.

That Howard was a visionary is well known. That Howard was a man possessing an enormous range of outstanding skills is also well known. But we at FM also remember Howard through personal experiences.

Ray Friedman, former FMRC vice president, said that Howard probably came closest to anyone he knew to being a modern day renaissance man. Besides his many abilities, he remembers Howard as a man “who was liked, respected and admired by everyone he came in contact with.” And he couldn't think of anyone else about whom he could say that.

That Howard was a wonderful teacher is well known to the many Harvard students he taught and mentored through the years. But it is also well known to the scientists at FM with whom he dared to solve unsolvable fire problems in a manner that would stand up to rigorous scientific scrutiny.

In a very real sense, most of the research scientists at FMRC were either directly or indirectly students of Howard Emmons.

Cheng Yao, manager of the Research Division from 1987 to 1996, says he will never forget one of his first meetings with Howard. Cheng was new to FM, and he and Howard talked for three hours about Cheng's vision on how to make sprinklers that not only controlled a fire, but aggressively

suppressed the fire as well. It was a concept not fully accepted at the time. By the end of the conversation, through Howard's understanding of what was involved in the concept and his encouragement, Cheng had a much clearer image of how to achieve his vision, and shortly thereafter, he, along with Howard and Jim Smith, filed a patent on a dual-nozzle sprinkler. That same concept eventually led to the development of the large-drop and ESFR sprinklers by FMRC.

"Howard was a wonderful teacher," Cheng remembers. "He had the ability to listen to your ideas and guide your thought process to the solutions you had been seeking."

That was Howard Emmons.

This sentiment has been repeated by many of the researchers at FM who associated with Howard and who still remember the impact he had on their lives.

John DeRis, who along with **Larry Orloff**, was one of the original group working under the direction of Howard on a research program sponsored by what is now the National Institute of Science Technology, recalls that Howard was a great interviewer—that he had a marvelous way of strengthening your thinking in every conversation. He would try to understand what you, the human being behind the words, were all about, what you felt your own competencies were, and how well you could apply critical analysis to your own thought process.

John, who worked with Howard on many projects, will tell you that he was a student of Howard's beginning in 1964 and continuing throughout his lifetime.

Franco Tamanini, who graduated from Harvard as a Ph.D. student under Howard, and later joined FMRC, also knows Howard as an inspiring teacher. Franco remembers a very simple experiment involving a cup of coffee and how Howard got his students to think about solving the problem he posed in untraditional ways. "That to me," Franco said, "is the mark of a great teacher who not only makes you think, but makes you analyze how you're thinking."

You didn't need to put together a complicated plan if a simple method of solution might work better. Franco heard Howard say more than once that a lot of good work can be done with little more than pencils and paper clips.

That was Howard Emmons.

FM researchers knew that Howard was an extraordinary man in many ways. **Gunnar Heskestad** stated that Howard could inspire a person just by his very nature. "He had an amazingly keen mind," recalls Gunnar. "He would remember everyone he met, particularly what that person had contributed to the scientific world. When you first met him, you wanted to impress him. He had that effect on you."

Ron Alpert, one of the research scientists involved in the Home Fire Project, remembers Howard's presence at the monthly coordination meetings. Ron said they were truly inspirational experiences due to Howard's way of being constructive and motivating without being the slightest bit discouraging or domineering to the researchers. "Our meetings were always congenial and relaxed, with an atmosphere of good humor that will be missed by those who participated over the life of the project."

That was Howard Emmons.

As for myself, I met Howard early in my career, also as a scientist working on the Home Fire Project. The Home Fire Project was a major research program done jointly at Harvard and FMRC that led to many breakthroughs in both the science of fire research and the practice of fire safety. It was also pivotal in bringing badly needed national attention to the nation's worsening fire problem at that

time. Howard was the driving force behind that program and continued to lead the evolution of fire science. He is truly the Father of Fire Science.

When I later became manager of the Research Division in 1996, Howard and I re-established contact. He was 84 then and I was amazed to find him still active in local, national and international activities. He was still sharp, full of spunk and interested in solving the unsolvable. Both he and I were very happy to re-establish Howard formally as a consultant to and ambassador for FMRC.

Personally, I like to compare Howard to a top athlete and to a great artist. When working with a team, Howard made better scientists out of those working around him, just like a top athlete can make his teammates perform at a higher level. On the other hand, an artist working alone produces a major work by initially visualizing the desired effect and then creating seemingly unrelated parts individually. In the end, when all the individual pieces of work are connected, a masterpiece has been created. Howard had the ability to see the total desired effect, define the individual pieces and, most importantly, make them happen in a way that produced a solution, not just a result. He was able to do this because he approached each problem with a keen desire to understand and a unique creativity that many have seen and recognized.

He looked at the world as a place where he could solve problems and make it a better place, whether through science, education, government service or everyday life, never stopping, always looking onward to the next challenge, the next problem he could solve and always reaching beyond what others thought to be the limit.

That was Howard Emmons.

Throughout my career I have worked with many scientists from prestigious university, government and industrial organizations. But the opportunity to work early in my career with Howard, who had already gained eminence in several areas of research, remains a highlight in my career.

We all know his credentials; they have been captured in print, publicized and lauded. I'm sure at any point in his career Howard could have stopped, reflected on his life and been a very satisfied man.

All of us at Factory Mutual are grateful that Howard lived long enough to contribute as much as he did, and to see the many fruits of his vision—including FMRC as very much the organization he helped to build. We who worked directly with Howard hope to continue as purveyors of his genius. More notably, everyone who benefited from the genius of Howard Emmons, remains a legacy to this scientific giant.

That was Howard Emmons.

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