



*M. G. Fontana*

## Mars G. Fontana

1910–1988

By Robert A. Rapp

Mars G. Fontana, a world-renowned educator and corrosion engineer, died February 29, 1988, at age seventy-seven. He was one of the world's pioneers in research establishing basic scientific knowledge of the phenomenon of corrosion and its applications in engineering. In addition to his noteworthy technical achievements, Fontana was an outstanding administrator and stimulating teacher.

Born in Iron Mountain, Michigan, on April 6, 1910, Fontana received a B.S. in chemical engineering (1931) and an M.S. (1932) and Ph.D. (1935) in metallurgical engineering from the University of Michigan. From 1929 to 1934 he served as a research assistant in the university's Department of Engineering, where his work included investigations of scaling of steel at forging temperatures, development and use of apparatus for vacuum fusion analysis for gases in steels, high-temperature creep of metals and alloys, and also basic work on the thermodynamics of steelmaking. He published four articles based on this work.

From 1934 to 1945 Fontana worked for E. I. du Pont de Nemours and Company, Inc. in Wilmington, Delaware, as a metallurgical engineer and group supervisor in the Technical Division of the Engineering Department. There he devoted limited time to research while concentrating largely on plant and design engineering. This included organizing work on

materials of construction in various Du Pont production departments and developing materials and designs for acid service. He also pioneered industrial uses of nylon and Teflon. Four patents were assigned to Du Pont in connection with his corrosion work.

This early practical experience set the stage for his research, writing, and teaching that followed during the succeeding thirty years of professional activity as professor and chairman in the Department of Metallurgical Engineering at The Ohio State University (OSU). In 1945 he was named a professor of metallurgical engineering at OSU, and in 1948 department chairman and director of the Corrosion Center, the largest university effort in corrosion research in the United States. He was named a regents professor in 1967 and chairman emeritus in 1975.

He was known as an excellent teacher, lecturer, and researcher, but also a considerate and efficient leader. At OSU he was particularly effective in bringing about the building of new laboratories, recruiting and developing outstanding young faculty members, and participating in the administration of the college and university. During his tenure, \$3 million worth of new facilities for metallurgical engineering were constructed, and research under contract grew to \$1 million a year. At OSU he was called upon to serve on various faculty committees, including the Faculty Advisory Committee to the president and Board of Trustees, Faculty Council, Advisory Council of the Engineering Experiment Station, and Executive Committee of the College of Engineering.

Throughout his career, Fontana merged science and engineering to clarify the mechanisms of corrosive attack of engineering materials by aggressive environments, and to develop and recommend inhibitors, coatings, and electrolytic and other means to protect engineering structures. These efforts led to his famous textbook *Corrosion Engineering*, published by McGraw-Hill in 1967. The author of two hundred technical papers in recognized journals, he also authored *Corrosion: A Compilation*, published by Hollenback Press in 1957. He was exceptionally well qualified and recognized as a consultant to industry on corrosion problems and materials selection, and he did consulting work for Duriron Company, Mallinckrodt Chemical, Com

bustion Engineering, Dow Chemical, General Electric, U.S. Steel, Republic Steel, Humble Oil, Standard Oil of New Jersey and of Ohio, Kaiser Aluminum, American Potash and Chemical Co., the U.S. Air Force, Argonne National Laboratory, Oak Ridge National Laboratory, and other firms and agencies of the federal government.

Fontana was elected a member of the National Academy of Engineering in 1967 and later served on the National Research Council's Committee on Ocean Engineering. He served as an honorary member of the American Society for Metals (ASM) in 1969 and was a fellow of the ASM in 1970, of the Metallurgical Society of the American Institute of Mining, Metallurgical, and Petroleum Engineering (AIME) in 1971, and of the American Institute of Chemical Engineers in 1972. He served as president of the National Association of Corrosion Engineers in 1952, chairman of the Corrosion Division of the Electrochemical Society in 1948–1949, and chairman of the Columbus Chapter of the ASM in 1948. He was a member of Sigma Xi, Phi Lambda Upsilon, Phi Eta Sigma, Iota Alpha, Alpha Sigma Mu, and faculty adviser to Texnikoi.

The University of Michigan named him Distinguished Engineering Alumnus in 1953, gave him its Sesquicentennial Award in 1967, and awarded him an honorary doctor of engineering degree in 1975. He received the Frank Newman Speller Award in 1956 from the National Association of Corrosion Engineers (NACE). In 1973 the Ohio Society of Professional Engineers gave him its Neil Armstrong Award; in 1969 the American Society for Engineering Education presented him its award for excellence in instruction of engineering students; in 1973 the students in the College of Engineering at OSU awarded him the C. E. MacQuigg Award in teaching; The Metallurgical Society of AIME awarded him its first Outstanding Educator Award; and in 1979 ASM presented him its Gold Medal. He was editor of the NACE journal *Corrosion* from 1962 to 1974.

In 1962–1963 Fontana was named to a six-man corrosion exchange between the United States and the U.S.S.R., and from 1972 to 1975 served as a public member of the Technical Pipeline Safety Standards Committee of the U.S. Department of

Transportation. He presented the Plenary Lecture at the Second International Congress on Corrosion in 1963 and was the Edward DeMille Campbell Lecturer of ASM in 1970.

He held eight patents including that for Alloy FA-20, a standard alloy for many corrosive services. His Alloy DC4MCu was patented by OSU, and he invented Duriron anodes for cathodic protection that are used to protect buildings at the Kennedy Space Center.

Fontana and his wife Elizabeth had four children, Martha, Mary Beth, David, and Tommy. He enjoyed a good game of golf and bowled in the Faculty League (highest score, 279). Active in his community, Fontana participated in Cub Scouts, Cub Scout baseball (he had played semiprofessional baseball), Boy Scout fund raising, the United Appeal, and the First Congregational Church, where he was an usher and member of the building committee.

To his many students, colleagues, and friends, Mars G. Fontana was known to be particularly kind, friendly, generous, and tolerant. He provided a very positive contribution to the lives of hundreds of people and to the engineering world in general. He will be missed, but remembered, by those who loved, respected, and admired Mars G. Fontana.

