



Antoine Marc Gaudin

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1900-1974

By Reinhardt Schuhmann, Jr.

Antoine Marc Gaudin, eminent mineral engineer, died in Boston, Massachusetts, on August 23, 1974, after a long illness. He was Richards Professor of Mineral Engineering Emeritus at the Massachusetts Institute of Technology, where he had taught since 1939.

Professor Gaudin was a vigorously creative man and, throughout his productive career, an internationally respected leader of the profession of mineral engineering. Beyond his many significant technical and scientific contributions to such fields as froth flotation, comminution of ores, and uranium extraction, he manifested a strong sense of responsibility that engineering and engineers serve society. Thus, in 1964 he fittingly became one of the active founding members of the National Academy of Engineering. For his many students, as well as close colleagues, he was engineering teacher, wise and friendly counselor, and professional leader.

Antoine Gaudin was born August 8, 1900, in Smyrna, Turkey, where his father was general manager of a French-owned railroad. He grew up literally in the shadow of classic marbles from his father's archeological diggings. After early schooling in Haifa, Versailles, and Toulon, he received the degree of Bachelier-es-Sciences from Paris (1916) and Aix-en-Provence (1917). After his father came to the United States with the French War Mission, Antoine followed in 1917 and entered the Columbia School of

Mines. He completed the six-year program in four years and was awarded the Engineer of Mines degree in 1921.

After a few years of beginning engineering and industrial experience, Gaudin in 1924 returned to Columbia University as Lecturer in the School of Mines. From that time on, he was engaged continuously in teaching and research in mineral engineering and allied fields. During 1926, he became a U.S. citizen. From 1926 to 1929 he was Associate Professor of Metallurgical Research at the University of Utah and from 1929 to 1939 he was Research Professor of Mineral Dressing at the Montana School of Mines. His and his students' researches in Utah and Montana focussed on the then young science of froth flotation of minerals, and the flow of significant contributions and ensuing commercial applications brought national and international recognition. Professor Gaudin moved to the Massachusetts Institute of Technology (MIT) in 1939 as Richards Professor of Mineral Engineering and in this position, until reaching emeritus status in 1966, continued and broadened his pursuit of new mineral engineering knowledge and of solutions of important problems.

Although the campus was always Professor Gaudin's home base, he found great stimulation and challenge in putting his brain and hands to work on problems of the real world of the mineral industry—especially those others couldn't solve. His consulting practice was large, but he mastered the art of combining consulting, research, and teaching to the mutual benefit of each.

One of Dr. Gaudin's greatest accomplishments was his leadership of a team of engineers at MIT during World War II in developing processes for recovering uranium from low-grade raw materials. In the words of Lt. Gen. Leslie R. Groves, Manhattan District, U.S. Army Corps of Engineers, written in 1955:

In March of 1946, he started work on the extremely low grade tailings from the South African gold mines. Many of our technical people and all those outside the project with whom we discussed the various problems were quite firm in the view that we were doomed to failure. Professor Gaudin justified our faith in his ability and judgment. A successful treatment process was developed and without undue delay. The proof of this has been given in the size of today's shipments of uranium from the Union of South Africa.

The uranium recovery project, with its urgency, major scientific and engineering challenges, and ultimate success, was a memorable educational and professional experience for all the young engineers and scientists whom Professor Gaudin brought together for the task.

As one of the twenty-five founding members of the National Academy of Engineering (NAE), Dr. Gaudin gave distinguished service to the Academy and to the U.S. Government. He was a Member of the NAE Council from 1964 to 1969 and active in several NAE operating committees. He brought his broad knowledge and perspective of mineral and metallurgical industries to the important work of NAE and NRC (National Research Council) panels and committees relating to materials resources and resource development.

Always active at the leading edge of mineral engineering research for a period of more than forty years, Professor Gaudin authored more than 150 journal publications. Many of these became part of the foundation of the science of froth flotation. Others constituted pioneering work in comminution, surface chemistry, applications of radiotracers, microscopy of minerals, and new process development. Dr. Gaudin also found time to organize and write important textbooks: two editions of *Flotation* (1932 and 1957) and *Principles of Mineral Dressing* (1939).

The American Institute of Mining, Metallurgical, and Petroleum Engineers (AIME) recognized the outstanding work of Antoine Gaudin by several of its highest awards: the Robert H. Richards Award (1957), the Mineral Industry Education Award (1969), and Honorary Member (1972). His honorary lectures were always stimulating events and included the Henry Krumb Lecture (AIME, 1967), the Extractive Metallurgy Lecture (AIME, 1961), and the Sir Julius Wernher Memorial Lecture (Institute of Mining and Metallurgy, London, 1952). The Montana School of Mines awarded him the degree of Doctor of Science *Honoris Causa* in 1941.

Many of Tony Gaudin's former students and colleagues came to know his charming and gracious wife, Nancy, and to enjoy the hospitality of the Gaudin home. He was himself justifiably proud of his sons, Paul and Robert, daughter, Elinor, and twelve grandchil

dren. To his family, his daily living, and his many hobbies, Tony brought the same zest for living, curiosity about nature, and taste that characterized his professional activities. Thus, he was an avid fisherman, on occasion a gourmet cook, an artist, and a collector of paintings, as well as a patron of the Boston Symphony Orchestra and of the Boston Museum of Fine Arts.

The life and works of Antoine Marc Gaudin leave a clearly documented record of distinguished contributions to engineering knowledge and to the service of society. His influence will continue to grow into the future through the students and associates who benefited from his strong tutelage and example.

