John M. Googin

1922-1994

By George R. Jasny

Successful, large-scale technical endeavors frequently trace their success to an individual who, because of an all-encompassing understanding of the key issues, is the vital force driving the project. John Googin, who died January 16, 1994, was such an individual.

John was born in Lewiston, Maine, on May 2, 1922, and earned his B.S. degree in chemistry in 1944 from Bates College in his hometown. His career, which spanned almost half a century, started that year when he was employed by the Tennessee Eastman Company, which, as part of the Manhattan Project, operated the Y-12 Plant in Oak Ridge, Tennessee. There, uranium isotopes were separated by the electromagnetic separation process to produce uranium 235 fuel for the first atomic bomb. John's first assignment was the daunting task of recovering and recycling the large fraction of precious uranium 235 that was deposited everywhere except in the product stream. That proved to be a useful apprenticeship. It gave him a solid grounding in separation technologies, the chemistry of uranium, and the realities of plant-scale chemical operations. It also established him as a brash, young talent who was willing to take on risky challenges, and who could get things done.

With the end of World War II and the start of the Cold War, the mission of the Y-12 Plant changed, and its operation was taken over by Union Carbide. The electromagnetic separation

process was shut down, replaced by the gaseous diffusion process. Y-12 was assigned responsibility for converting the increasing quantities of uranium 235 produced by the gaseous diffusion plants into nuclear weapon components and for recycling large amounts of valuable chemical and metallic uranium scrap. A new task in the early 1950s was the preparation of hafnium-free zirconium for the first nuclear submarine core. Another assignment of major importance during the 1950s was a crash effort to produce large quantities of lithium 6 as fuel for the hydrogen bomb program. Starting in the late 1960s, and continuing through the early 1990s, the advent of nuclear-tipped missiles and the growing sophistication of nuclear weapons technology created a need for increasingly complex weapon components encompassing a wide range of ceramic and metallic materials produced to demanding chemical and physical specifications. In each of these efforts, characteristically conducted under stringent schedule demands and involving thousands of participants representing many different scientific, engineering, and production skills, John Googin played a pivotal role.

John had supplemented his not-insignificant scientific knowledge by obtaining a Ph.D. in physical chemistry from the University of Tennessee in 1953. He did this while working full-time on several critical programs and helping his wife, Janet, whom he had married in 1949, raise the first of their four daughters. Thus armed, he proceeded to make his mark.

There was a central element common to all of his accomplishments: the ability to combine a profound understanding of materials and their behavior with an unerring sense of what might work in the factory. Many people in various laboratories, engineering organizations, and production teams have contributed to the success of the American nuclear weapons program. None was a better bridge between the thinkers and the doers; none had a better feel for the elegant, practical solution. Firmly ensconced in the feedback loop that connected the physicists' dreams with the realities of production, he was frequently the final arbiter of what was doable and his batting average was very high. This effectiveness was enhanced

to a significant degree by his ability to communicate with and inspire the hundreds of average people on whom success ultimately depended. This ability to put complex challenges in everyday terms, to generate trust, to co-opt people into reaching for yet another level of achievement was every bit as important as the depth of his technical insights.

One amazing aspect of John's accomplishments is that they came about without benefit of the authority of an administrative title. His enormous influence stemmed solely from the strength of his arguments and from his unquestioned success, but that influence, where it mattered, was greater than that of any of the executives who eagerly sought his advice. His was a technical man's dream assignment and he made the most of it.

John was a man of boundless energy and optimism. If he was ever discouraged, like most real leaders, he managed to hide it. The trademark of his persona was laughter: laughter to celebrate victory in an argument, defuse a tense confrontation, or cheer up the fearful. He was also a man of many contrasts: a chemist who was one of the finest engineers in the nuclear weapons program; a man who was always ready to question or challenge any renowned scientist or powerful administrator with whom he disagreed, but who always had time to listen to the ideas or problems of anyone who brought them to him; a patriot, who was proud of spending his life making sure that our nation had a credible, reliable nuclear deterrent and who, at the same time, was very active in the American Civil Liberties Union and in the Unitarian-Universalist Church; a man always willing to voice his opinion on almost any subject but never indiscreet when dealing with the many national secrets to which he was privy; a man cursed with bad feet who was always making rounds, taking the temperature of his beloved processes; and, last but not least, a man who could argue loudly for hours but who was unfailingly courteous and cheerful toward his protagonists.

Not surprisingly, many awards came his way. At the end of his working life he was a senior corporate fellow of the Martin Marietta Corporation, which had replaced Union Carbide in

1984 as manager of the Oak Ridge complex. Along the way he received the Ernest Orlando Lawrence Memorial Award of the U.S. Atomic Energy Commission (1967); was awarded an honorary doctor of science degree from Bates College (1968); was named a fellow of the American Society for Metals (ASM) (1974); received the McGraw Hill Chemical Engineering Magazine Award for outstanding personal achievement in chemical engineering (1982); was awarded the W. J. Kroll Zirconium Medal (1988); and received the ASM International Gold Medal (1989). He was elected to the National Academy of Engineering in 1988 and served on three committees of the National Research Council. John was not a retiring person and he enjoyed this recognition, but the award he doubtless cherished the most was the affection and respect that most of his associates, high and low, lavished on their beloved "Dr. John."