W. DALE COMPTON

1929–2017

Elected in 1981

"For exceptional leadership in developing advanced automotive technologies, individual achievements in engineering physics, and innovative contributions in promoting university-industry relations."

BY LEAH H. JAMIESON AND ABHIJIT DESHMUKH

WALTER DALE COMPTON, former vice president of research at Ford Motor Company, Lillian M. Gilbreth Distinguished Professor Emeritus of Industrial Engineering at Purdue University, and former home secretary of the National Academy of Engineering, died February 7, 2017, at his home in West Lafayette, Indiana, at the age of 88.

Dale was born January 7, 1929, in Chrisman, Illinois, to Roy and Marcia Compton. He earned his bachelor's degree in physics from Wabash College in 1949 and his master's in physics from the University of Oklahoma in 1951. While at Oklahoma he met his future bride, Jeanne Parker; they married in 1951. In 1952 Dale entered the University of Illinois at Urbana-Champaign (UIUC), where he received a PhD in experimental condensed matter physics in 1955.

Dr. Compton began his professional career as a research physicist at the US Naval Ordnance Test Station at China Lake, California, and continued his research at the Naval Research Laboratory in Washington, DC.

In 1961 he returned to UIUC as an associate professor of physics. He was promoted to full professor in 1964 and the following year appointed director of the Coordinated Sciences Laboratory (CSL), which he built into a world-class organization working on control, computer, and communication

systems. Under his leadership, CSL developed theories and created landmark inventions that were years ahead of their time.

In 1970 Dr. Compton became director of the Chemical and Physical Sciences Laboratory at Ford Motor Company in Dearborn, Michigan. He was named executive director for research in 1972, and from 1973 to 1986 was Ford's vice president of research. During his tenure at the company, he promoted innovations in modeling and simulation of the design and manufacture of automotive components and systems, and established a balance between near- and long-term research that led to a succession of technological breakthroughs that enabled Ford to develop superior products and produce them successfully worldwide.

In 1988 he came to Purdue University as the inaugural Lillian M. Gilbreth Distinguished Professor of Industrial Engineering and immediately became involved in the NSF Center for Intelligent Manufacturing Systems and the newly formed Center for the Management of Manufacturing Enterprises. He spent the rest of his career at Purdue, including serving as interim head of the School of Industrial Engineering (1998–2000). He retired in 2004 as professor emeritus.

Dale's research interests spanned materials science and engineering; automotive, combustion, and manufacturing engineering; and management of technology. His work focused on how the introduction of new technology in the semiconductor and telecommunication industries changed over time and, later, structural materials with nanocrystalline microstructures.

He was the author, contributor, or editor of more than 85 publications and, with his team in Industrial Engineering at Purdue, registered 13 patents. He authored a textbook on *Engineering Management: Creating and Managing World-Class Operations* (Prentice-Hall, 1997); coedited, with Joseph A. Heim, *Manufacturing Systems: Foundations of World Class Practice* (National Academy Press, 1991); coauthored, with James H. Schulman, *Color Centers in Solids* (Macmillan, 1962);

and edited *Interaction of Science and Technology* (University of Illinois Press, 1969).

Dale was active in many NAE and National Research Council (NRC) activities. He chaired the NRC Commission on Engineering and Technical Systems (1997–2000), joint Committee on the Future of Personal Transport in China (2000–02), and NAE Committee on Foundations of Manufacturing (1989–92); served on the NRC Board on Manufacturing and Engineering Design (1995–96) and NAE Committee for Engineering as an International Enterprise (1988–90); and edited the 1988 NAE report *Design and Analysis of Integrated Manufacturing Systems*. In addition, he served as an NAE councillor (1990–96), home secretary (2000–08), and member of the NRC Governing Board (2000–06), NAE Membership Policy Committee (chair, 1988–91), NAE Program Committee (1992–98), and NRC Report Review Committee (1988–90).

As the first NAE Senior Fellow (1986–88), Dale continued his focus on issues related to industry and engineering education and led the development of programs related to international competitiveness. With experience in both academia and industry, he cochaired the 1987 NAE Committee on Technology Issues that Impact International Competitiveness that led to the creation of the National Science Foundation's flagship Engineering Research Centers program. He served as senior advisor to the ERCs and the NAE ERC Assessment Committee (1988–89). The ERC model set NSF's course in the establishment of national research centers built on connecting university research with industry practice. These on-campus centers have produced a steady stream of technologies that have led to fundamental changes in manufacturing in the United States.

At both the National Academies and Purdue, Dale promoted collaboration between engineers and health professionals toward the goal of delivering safe, effective, timely, efficient, equitable, and patient-centered health care. Starting in the 2000s he championed program activities aimed at bringing engineering applications and research to bear on

cost, quality, and safety challenges facing the US healthcare system. He cochaired the joint NAE/Institute of Medicine (IOM) study committee on Engineering and the Delivery of Health Care (2002–05), which produced the influential report, *Building a Better Delivery System: A New Engineering/Health Care Partnership*. This seminal report recommended public- and private-sector actions to advance the development, adaptation, and use of systems engineering tools in health care and led, among other outcomes, to the landmark creation by the US Department of Veterans Affairs of centers that combine a VA healthcare facility with academic engineering partners.

In addition to his service to the National Academies, Dale served on the board of governors for Argonne National Laboratory, the advisory board for Sandia National Laboratories Combustion Research Facility, the industrial committees for the University of Michigan and the Ohio State University, the Technical Advisory Committee for Cummins Engine Co. (1999), and the St. Vincent Hospital (Indianapolis) Quality Committee of the Board of Directors.

He was a member of the Research Society of America, Phi Beta Kappa, and Delta Tau Delta and a fellow of the American Physical Society, American Association for the Advancement of Science, Engineering Society of Detroit, Society of Automotive Engineers, Washington Academy of Sciences, and IC^2 Institute of the University of Texas at Austin.

Among his many honors and awards are the US Naval Research Laboratory Commendation (1961), an honorary doctorate of engineering from Michigan Technological University (1976), the Science Trailblazers Award from the Detroit Science Center and Michigan Sesquicentennial Commission (1986), and the M. Eugene Merchant Manufacturing Medal from the American Society of Mechanical Engineers and Society of Manufacturing Engineers in recognition of his lifelong commitment to manufacturing excellence (1999). In 2003 he received a UIUC Alumni Award for Distinguished Service for "substantive research achievements in unraveling the behavior of defects and color centers in solids, exceptional leadership in engineering practice and management, and enduring

contributions to engineering education." He received the 2014 George E. Pake Prize "for exemplary leadership of corporate automotive R&D at a critical time for the industry and for important individual achievements in experimental solid state physics."

Dale Compton's work had profound impacts on fields of enormous import: manufacturing, healthcare systems engineering, and the very core of how large-scale engineering research in the United States is framed, supported, and connected to industry.

Yet, for all his accomplishments, Dale, and Jeanne, will be remembered by many for the impact they had both individually and together on their communities and their friends. They opened their home to extend a warm welcome to newcomers and supported the arts with unstinting generosity. They welcomed and mentored friends, colleagues, students, faculty, department heads, and deans. They were gracious in everything they did. And they were dedicated to each other.

Dale and Jeanne, who died September 19, 2016, are survived by their three children, Gayle (James) Prete of Chicago, Donald (Mary Gail) of Tallahassee, and Duane (Janie Dvorak) of Lyme, New Hampshire; and grandchildren Mary Rose and Harrison Compton.