Edward W. Price
EDWARD W. PRICE
1920–2012

Elected in 2000

“For critical contributions to the understanding of solid propellants combustion and solid rockets developments.”

BY BEN T. ZINN, MICHAEL MASSICOTT, AND CAROLYN MASSICOTT

EDWARD WARREN PRICE, a world-renowned expert in the fields of solid propellants combustion and solid propellants rockets, passed away on June 11, 2012, in Atlanta, Georgia, at the age of 91. His wife, Mary-Kate, passed away in 1992. He is survived by his children, Douglas Price of Ridgecrest, California, Carolyn Massicott of Atlanta, and Allison Tamara Parks of Alpharetta, Georgia.

Ed, as he was known to friends and colleagues, was born December 6, 1920, in Pontiac, Michigan. He was raised in the Arizona desert in an impoverished homestead located in the “Apache Country,” in a single-room home now known as the Landmark Stafford Cabin near Faraway Ranch. The home and the ranch have since been placed on the National Register of Historic Places in what is now part of the Chiricahua National Park and Wilderness Area. Ed and his family were allowed to live on this property by its kind owners in exchange for light work. This act of generosity strongly impacted Ed’s outlook on life, prompting him to be kind to those around him for the remainder of his life.
Upon graduating from a twelve-grade single-room school in 1938 at age 17, Ed joined the Civilian Conservation Corps (CCC), which provided young men with room and board during the Depression in exchange for work. Although his high school was among the most impoverished in the nation, Ed attributed his successful career to the town’s only teacher, a young lady who was good at teaching math, an experience that made Ed a lifelong supporter of public school education. His modest upbringing, educational experience, and involvement with the CCC galvanized Ed’s personality, providing him with a great appreciation for the importance of a strong work ethic and economic and intellectual independence.

Upon completion of a year of service with the CCC in 1939, Ed enrolled in Pasadena Junior College, where he studied mathematics and competed in track and field. He left school in 1941 for financial reasons and started working at Caltech on static firing of rocket motors. In 1944 he left his job at Caltech to enlist in the Navy when the Selective Service ordered him to report. The Navy assigned him to work on solid propellants charge design and combustion at the Naval Ordnance Test Station (NOTS) in China Lake, California. He received an honorable discharge in January 1946 and continued working in China Lake until October, when he enrolled at UCLA and went on to earn a double bachelor’s degree in mathematics and physics in 1948.

Upon graduation, Ed returned to China Lake to work as a physicist at NOTS, which eventually became the Naval Weapons Center (NWC). In 1955, he became the head of NWC’s Research Department Gas Dynamics Branch and was assigned to work on the design and testing of propellants charges and internal ballistics. During his years at NWC, Ed became an internationally respected expert in the fields of solid propellants combustion and solid propellants rockets. He made seminal contributions to the understanding of internal ballistics of solid propellants rocket motors, combustion instabilities in solid propellants rockets, ignition and combustion of solid propellants, aluminum and other metals, and the development of the “T-burner” testing method.
that has been further investigated by researchers and adapted by companies throughout the world. Ed also developed novel approaches and devices for controlling combustion instabilities and regulating thrust in solid propellants rockets and improving the combustion of solid propellants.

In 1974, after 30 years of service, Ed left the NWC to become a full professor at the Daniel Guggenheim School of Aerospace Engineering at the Georgia Institute of Technology (Georgia Tech). Notably, although he never earned any advanced degrees or studied engineering, he was hired as a full professor of aerospace engineering! In fact, Ed was a “self-made” PhD in engineering whose outstanding contributions to the understanding of solid propellants combustion and solid propellants rockets, along with his widely quoted publications, provided Georgia Tech with the justification needed to hire him as a full professor. Ed proceeded to develop an outstanding research program on solid propellants combustion at Georgia Tech while educating many undergraduate and graduate students. For his contributions to research and education, he was promoted in 1986 to the rank of Regents’ Professor, an honorary professorship. He retired from Georgia Tech in 1991, but continued to do research until nearly the end of his life.

Ed contributed to the advancement of solid propellants rockets technology in the United States by serving on important government and professional society committees. He was nominated as a member of the AIAA Solid Rockets Technical Committee in 1961 and became its chairman in 1963. He was also selected in 1963 to chair the Solid Rocket Combustion Instability Subcommittee that was established in the Department of Defense Interagency Chemical Rocket Propulsion Group. In 1964, he was invited to serve on the AIAA Publications Committee, and in 1965 he was appointed to the AIAA Technical Activities Committee. He was elected in 1966 as one of the directors-technical of the AIAA Board, and as AIAA vice president in 1967. Ed also served on the National Research Council’s Panel on the Technical Evaluation of NASA’s Proposed Redesign of the Space Shuttle Solid Rocket Booster, following the 1986 explosion of the Challenger.
Ed’s contributions to science, engineering, and the literature were recognized with the following awards: the L.T.E. Thompson Award (1960), NWC’s highest individual achievement award, for “his outstanding research in internal ballistics, for his contributions to the understanding of the fundamental design parameters of rocket motors, and for his timely research in combustion stability”; the AIAA Dryden Lectureship in Research Award (1967) for “initiation and sustained leadership of research efforts designed to elucidate the mechanisms of ignition and the burning characteristics of solid propellants”; the AIAA’s Pendray Aerospace Literature Award (1972) for “continued outstanding contributions to the literature of solid rocket internal ballistics and combustion, particularly for his contributions on combustion instability and ignition”; the Navy Superior Civilian Service Award (1974), the Navy’s highest honorary award; the coveted AIAA Goddard Award (1975), which is presented to a person “who has made a brilliant discovery or series of outstanding contributions over a period of time in the engineering science of propulsion or energy conservation”; the Joint Army-Navy-NASA-Air Force (JANNAF) Interagency Propulsion Committee Certificate of Recognition (1985) for “outstanding contributions to chemical propulsion technology and service to JANNAF”; and the Space Flight Awareness Silver Snoopy Award (1989). He was elected to the NAE in 2000 in recognition of his “critical contributions to the understanding of solid propellants combustion and solid rockets developments.”

Ed’s long and productive life serves as an example that with intelligence and hard work, any person can succeed in life. Through his hard work and dedication, Ed rose to become one of the world’s foremost solid propellants combustion and rockets experts.

It is appropriate to close this tribute to Ed with the following quotes from his colleagues and students.

From Fred Culick, professor emeritus at Caltech:

I am forever indebted to him for giving me my first break in 1964 in the research area of solid propellants rockets. And that was only the beginning! Ed continued to help me in so many ways for more than
forty years. I could always count on him for insightful advice and encouragement. Above all, Ed was totally forthright and honest. Ed will always remain a superb example of how to be with other people. One especially good attribute of Ed is that he totally biased my view of really dedicated civil servants! I don’t see how anybody can ever surpass his dedication and belief in principles. He was remarkably alert and productive to the end...an example for all of us.

From Professor Satyanarayanan R. Chakravarthy in the Department of Aerospace Engineering at the Indian Institute of Technology, Madras (IITM):

Professor Price means a lot to me. It wouldn’t be an exaggeration to say that he has shaped me. His approach to science and life has left deep impressions and has influenced my behavior since my association with him for several years in the 1990s as his graduate student and a post-doctoral fellow. His general knowledge and sense of history was overwhelming. I consider myself fortunate to have not only learned science at his feet but also a first-person account of how America grew during the tumultuous period through the Depression, war, and growth, stuff we can only think about and gasp! He was a fine human being; he took it upon himself to stop especially for me at a second place to get my lunch for our research group meetings because I am vegetarian. Even now I unhesitatingly share my hotel room with my grad students when attending conferences primarily because he did it for me when I was his grad student.

And from Thomas L. Boggs, retired Chief Scientist for Energetics and head of the Research Department Engineering Sciences Division (the old Aerothermochemistry Division) at China Lake:

I always felt deeply honored to be asked to lead the Engineering Sciences Division in the Research Department because it was the merger of Ed’s old Aerothermochemistry Division and John Pearson’s old Detonation Sciences Division. There were many diverse research studies going on, with Ed involved in all of them. He led the efforts in some, while playing a supporting role in others through his keen insight and probing questions. Ed was always encouraging people
to seek out the basic physics and chemistry of combustion and to not be afraid to make a mistake. Ed made sure that we understood that when you are doing research, you will make mistakes and that is just part of the process.... Ed was a great leader, wonderful mentor, and a good friend.