



*Jackson H. Duerksen*

# JACKSON LELAND DURKEE

1922–2007

Elected in 1995

*“For origination and development of innovations in fabrication  
and erection engineering of long-span bridges.”*

BY IVAN M. VIEST

**A**N ENGINEER’S ENGINEER, Jackson Leland Durkee provided guidance in the design, construction, evaluation, and rehabilitation of about two dozen major bridges and other steel structures located in eleven countries on four continents. An independent consulting structural engineer in a field that is almost without exception handled by employees of a variety of companies, his unique services were sought after by numerous clients.

Son of the late civil engineer E. Leland Durkee, Jackson was born on September 20, 1922, in Tatanager, India, where his father was erecting bridges for Bethlehem Steel Company. He received bachelor’s and master’s degrees in civil engineering from Worcester Polytechnic Institute (1941) and Cornell University (1947), respectively. Worcester Polytechnic awarded Jackson a CE degree in 1951. He began his professional life as a designer and structures test engineer for Douglas Aircraft Company in California. From 1944 to 1946, Jackson served his country in World War II as a naval deck officer in the Pacific Fleet. In 1947, Jackson joined Bethlehem Steel where he worked for 29 years. He was employed in various divisions of the company, attaining the position of Chief Bridge Engineer in 1965. His significant bridgework accomplishments while

with Bethlehem Steel included, among others, the Second Tacoma Narrows Bridge in the state of Washington, the first Chesapeake Bay Bridge in Maryland, and the Narragansett Bay Bridge in Rhode Island.

Jackson originated and directed Bethlehem Steel's research and development of the prefabricated parallel-wire strand system for main supporting cables of suspension bridges. On Durkee's recommendation, such cables were first used in 1968 on the suspension bridge over Narragansett Bay near Newport, Rhode Island, and on the suspension spans of the second Chesapeake Bay bridge near Annapolis, Maryland, completed in 1973. Their most extensive application was on suspension bridges in Japan, including the vast Honshu-Shikoku crossings and the Akashi Kaikyo Bridge with the world's longest main span. The prefabricated parallel-wire strand system replaced the aerial spinning method of parallel-wire cable construction developed by bridge builder John A. Roebling in the 1840s. Jackson was listed as a co-inventor on seven U.S. suspension bridge patents and on more than 40 derivative foreign patents. The original patents were issued to Bethlehem Steel Corporation in connection with the shop-fabricated parallel-wire bridge strand, pipe-type cable anchorages, cable-supporting saddles, and plastic bridge cable covering.

Upon retirement from Bethlehem Steel, Jackson served as a Visiting Professor of Structural Engineering at Cornell University during the spring term of 1976 and, for a brief period, became a partner in the consulting firm Modjeski and Masters of Mechanicsburg, Pennsylvania. He then opened his private international consulting practice in Bethlehem. His professional career included projects in the United States, Canada, Great Britain, Portugal, Germany, Denmark, Italy, Japan, China, Hong Kong, and South Africa. He was the only American on the International Board of Consulting Engineers that planned the construction of the Messina Strait suspension bridge to connect the mainland of Italy with the island of Sicily. He served as an expert engineering witness for over 22 years, including his trial participation with the

Kansas City Hyatt walkway collapse. Jackson was a registered professional engineer in Pennsylvania, California, New York, and Connecticut; and was a Chartered Engineer in the United Kingdom and the European Community. Among his numerous papers on bridge engineering, the *Erection Strength Adequacy of Long Truss Cantilevers*, co-authored with Spiro S. Thomaidis and published in 1977, exemplifies the significant content and clear writing that were characteristic of Jackson's papers.

The following were some of the many projects in the United States completed with Jackson's involvement:

- Wheeling Suspension Bridge, Wheeling, West Virginia, 1979–1981
- Hale Boggs Cable-Stayed Bridge, Luling, Louisiana, 1980–1983
- Brooklyn, Williamsburg and Manhattan Bridge Evaluation and Rehabilitation, 1982–1988
- Tennessee River Girder Bridge Failure During Erection, 1999
- East Bay Suspension Bridge, San Francisco, 1999–2007
- Patton Island Girder Bridge, Muscle Shoals, Alabama, 2002–2004
- Golden Gate Bridge, San Francisco, 2004–2007.

Jackson was elected to the National Academy of Engineering in 1995 and was a regular participant in its annual meetings. He was an Honorary Member of the American Society of Civil Engineers; a fellow of two British engineering societies, the Institution of Civil Engineers and the Institution of Structural Engineers; and a member of the International Association for Bridge and Structural Engineering. He served on several committees of the above organizations as well as of the Transportation Research Board of the National Research Council. Among the many recognitions of his contributions are the Ernest E. Howard Award of the American Society of Civil Engineers, the Robert H. Goddard Award of the Worcester Polytechnic Institute, and the John A. Roebling Medal of the International Bridge Engineering Conference—the Engineers' Society of Western Pennsylvania.

Outside his engineering activities, Jackson was concerned with competitive enterprise and economic research. For example, he participated in the Fifth Institute on Freedom and Competitive Enterprise at Claremont Men's College in 1958, and in 2006 became a voting member of the Corporation, the American Institute for Economic Research. He was an avid outdoors-man, golfer, and traveler. A true believer in the benefits of physical fitness, Jackson continued regular exercises for many years and gave preference to a bicycle over an automobile whenever practical. He was a member of a couple of golf clubs at St. Andrews in Scotland, doing his best never to miss an opportunity to play their links. His list of memberships included Cosmos Club in Washington, D.C., and Central Moravian Church in Bethlehem.

Jackson died on June 14, 2007. His wife Marian died in March 2010. He is survived by three daughters: Janice and her husband Blake Tarry of New Hope, Pennsylvania; Judith and her husband Clay Burton of Chadds Ford, Pennsylvania; Christine and her husband, Robert Simpson of Nazareth, Pennsylvania; seven grandchildren and a great-grandson.

Jackson Leland Durkee was a unique person who stood out among his peers as a colorful individual.

His daughter wrote:

The Durkee family would like to express its great appreciation to Mr. Ivan Viest for the thoughtful memorial that he wrote for our father, Jackson Leland Durkee. Mr. Viest worked closely with Jackson for many decades and was intimately acquainted with Jackson's engineering achievements. His tribute stands alone as a statement of the great professional and personal relationship they both shared. The following are some affectionate family memories to add to Mr. Viest's invaluable contribution.

Jackson was both a sophisticated and a simple man. He was a highly disciplined intellectual with an old-fashioned sentimental streak. Every Valentine's Day, a fragrant gardenia never failed to arrive at the front door. He avoided large social gatherings but loved to dance

and privately entertain. He and his wife Marian would frequently rumba in the living room with the Magnavox on high volume in their little 1954 house. Always well dressed and well tailored, Jackson saved his pennies with a simple do-it-yourself home haircut. He had a great love of music and drove his family to the elegant New York Opera House every year. Afterwards, the corner steakhouse was the inexpensive (and required) restaurant of choice for this meat and potatoes man.

Jackson and his oldest daughter (Janice) enjoyed listening to classical music—especially at dinnertime. He conducted his “air baton” with great flair at the dining room table, and nodded approvingly as she correctly identified the great symphony movements. He bought her a piano when she was a teenager that she still practices on today. They also shared a love of literature and she has acquired his beloved Harvard Classics from his extensive library.

Jackson outfitted his middle daughter (Judith) with her very own engineering hard hat and special shoes. Starting when Judith was 8, he took his little pupil out on weekend trips to inspect bridges and steel mills. In the evenings she sat on his work stool, while he taught her the “proper method” of positioning the slide on his drafting board. He worked tirelessly with her on a science fair project displaying miniature bridges made of balsa wood. They were the two talkers in the family who enjoyed many hours of economic and political debate together.

With his youngest daughter (Christine), Jackson shared his love of travel. He took her on the family camping trip, starting at age two, and of course, he insisted she learn to fill her own water cup. He encouraged her to spend her junior year abroad to study in Scotland—well before it was commonplace in the college curriculum. He visited her at Edinburgh University. It was there that Jackson fell in love with St. Andrews Golf Course and the rest is history. The family subsequently surprised him with a

hand-carved chess set from the Isle of Lewis—one of his lasting treasures.

Jackson's family remembers with fondness (and a little groan) his frequent Sunday morning greeting: "FB on the P with WC" (family breakfast on the porch with witty conversation). As Pancake King, he reigned over breakfasts that were both lively and contentious. He passed "WC" on to his seven grandchildren who endured his exacting historical and literary quizzes. Their reward was a ride on his motorcycle and more "WC". In his later years, when his great-grandson would run in to visit, "GrandDad" would stretch out on the floor to eagerly engage his newest protégé.

Jackson's gifts to his family were his love of learning, his unlimited enthusiasm for adventure, and his photo albums that carefully recorded every detail of a full and accomplished life. He was a towering figure in his children's lives—he demanded much of them and much of himself. Jackson's engineering expertise and achievements were highly regarded by his peers. The family is appreciative for the honors and professional recognition he received from the engineering community during his lifetime.

