

## Daniel Guggenheim Medal

---

### MEDALIST FOR 2008

*For pioneering contributions to nonlinear aeroelasticity, structural dynamics and unsteady aerodynamics which had a significant influence on aeronautics and for contributions to education and public service in aerospace engineering.*



EARL H. DOWELL

For Earl Dowell, aerodynamics and structural dynamics expert and dean emeritus of Duke's Pratt School of Engineering, a fascination with flight began years before he ever got close to an airplane as a child growing up in Illinois. Despite climbing into a cockpit or two, the opportunity for first flight arrived during his college years when a pilot friend took him up in a small plane.

Countless flights later, Professor Dowell is now a long-established engineer-researcher in the field of aerospace whose research endeavors have led to major contributions to the flight safety of fighter aircraft and had a major impact on the design of both military and civilian aircraft.

Dowell's early talent for math and science led him to pursue his interest through engineering at the University of Illinois. When it came time for graduate school, he chose MIT and it was there that Dowell began his work on the mathematical modeling of "things that fly."

After graduate school and some time spent as an engineer at Boeing, Dowell became a faculty member at Princeton University, where he turned his first 10 years of research into a now-classic book, *Aeroelasticity of Plates and Shells*, referring to the light-weight skins that cover aircraft, launch vehicles and missiles.

After 18 years at Princeton, Dowell joined the faculty of Duke University, where Dowell kept up his research efforts, tracing the field from the "dawn of computer simulation and modeling" to its current level of sophistication. For 16 years he was the Dean of Engineering at Duke University, and during that period he had a major impact on the development of the school. Despite this heavy administrative burden he maintained a vibrant research activity, attracting substantial amounts of research funding and providing excellent guidance to numerous PhD students.

He continues to serve at Duke as the William Holland Hall Professor of Mechanical Engineering, and is an inspiring speaker and mentor to many graduate and undergraduate

## Daniel Guggenheim Medal

---

students. Together they work on modeling and experimental efforts aimed at future generations of flight. With all that incredible possibility ahead, Dowell still finds the same magic in airplanes that he appreciated as a child. "Airplanes are a miracle," he says, "if you think about it."

In addition to being author or co-author on over 250 technical papers, Dowell is principal author of the leading textbook in aeroelasticity, *A Modern Course in Aeroelasticity*, now in its fourth edition. He is also a co-author of *The Dynamics of Very High Dimensional Systems*.

Through his leadership in professional organizations, his influence extends to engineers throughout the world. He has also served as an advisor to industry and to the federal government, including the U.S. Congress, U.S. Air Force, and the Office of Naval Research. At NASA, his service included the Shuttle Advisory Committee on Structural Dynamics.

Professor Dowell's remarkable career has been recognized with numerous honors and Awards by many prestigious organizations, including AIAA Honorary Fellow, Fellow of the American Society of Mechanical Engineers, Fellow of the American Academy of Mechanics, elected member of the National Academy of Engineering, past president of the American Academy of Mechanics, service on the National Research Council, and others. His accomplishments have been recognized with the AIAA Theodore von Kármán Lectureship in Astronautics, AIAA Structures, Structural Dynamics and Materials Award, the American Academy of Mechanics Distinguished Service Award and the AIAA Walter J. and Angeline H. Crichlow Trust Prize.

All of these prizes are a testament to the impact of his research as well as to the very high regard in which he is held by his engineering peers around the world.