IN MEMORIAM

Charles W. "Chuck" Radcliffe
Professor of Mechanical Engineering, Emeritus
UC Berkeley
1922 – 2013

A world- renowned expert on mechanism design and lower extremity prosthetic biomechanics, Charles William Radcliffe passed away at the age of 91 on December 6, 2013. Born February 14, 1922, in Calexico, CA, "Chuck" went north to attend UC Berkeley in 1942. In 1943, he joined the US Navy's V12 program, serving on the USS New Mexico from 1944 to 1946, and becoming a Lt. Junior Grade USNR Engineer in the main propulsion division. He was awarded three battle stars for action in the Philippines and off Okinawa. While his ship was in Boston in 1945, Chuck met Martha Clark. They married on February 18, 1946. Martha remained his love and life partner for over six decades, leaving his side in 2010.

After the war, Chuck resumed his studies at UC Berkeley where he received a doctorate in engineering and became a Professor of Mechanical Engineering in 1956. He was a principal investigator in the Prosthetics Research Group of the Biomechanics Laboratory at UC Berkeley for 35 years. His major projects were the study of human locomotion and improved prosthetic limb design. He made pioneering contributions to the quadrilateral socket, patellar- tendon- bearing (PTB) prosthesis, solid ankle cushion heel (SACH) foot, and the four- bar prosthetic knee. He was credited with providing the fundamental principles of the biomechanics of prosthetic alignment and socket force transfer throughout the amputee gait cycle. He published numerous papers on mechanism design, especially as applied to prosthetic devices, and is often lauded as the Father of Prosthetic Biomechanics. The principles he developed still are taught to prosthetists and therapists to this day.

As a member of the International Society for Prosthetics and Orthotics, Chuck traveled the world to give lectures. In the 60s, as a Fulbright Scholar, he studied at the University of Strathclyde in Glasgow, Scotland, and at the Orthopedic Hospital in Copenhagen, Denmark, and lectured in several European countries on the proper fitting of lower- extremity prostheses. In the US, he worked for decades with the Veterans Administration where he invented the four- bar Radcliffe knee and SACH foot and worked with medical colleagues to improve artificial leg fitting techniques. He was a recipient the American Society of Mechanical Engineering Design Division's Machine Design Award for his eminent achievement and distinguished service in the field of machine design. In 1997, Chuck received the Honorary Membership Award from the American Academy of Orthotists and Prosthetists (the Academy). In February 2006, he received a Lifetime Achievement Award at the Hanger Educational Fair in Austin, Texas.

A pioneer in the use of numerical methods for mechanism design, Chuck developed many of the early subroutines for computer kinematic and kinetic analysis in the FORTRAN language which were widely used in academia and industry. A computing enthusiast, his favorite tools progressed from mainframe computers to UNIX workstations, and eventually to personal computers.

Chuck was a dedicated and popular teacher, known especially for the development of ME130, Design of Planar Machinery, which is still one of the most popular courses in the Department of Mechanical Engineering today. He also taught ME231, Advanced Mechanism Design, which focused on spatial mechanisms. In 1978, he authored with C.H. Suh, Kinematics and Mechanisms Design. This textbook was one of the first to teach planar and spatial mechanism design and analysis using numerical methods, as opposed to analytical and graphical methods that had been the engineering standard of that day.

In 1988, Chuck formally retired from the University to his home in Lafayette, CA. Even in retirement, he continued to mentor students and junior faculty, support and develop numerical tools for mechanism design and promote the understanding of four- bar prosthetic knee design. Chuck inspired his friends, students, children, grandchildren, and great grandchildren. He was always an enthusiastic engineer and problem solver, providing authoritative advice on any subject at a moment's notice. He urged those around him to be the best they could be. Surviving to cherish his memory are his five children: Clark Radcliffe (wife Arlene), Kimberly Medlin (husband Jerry), William Radcliffe (wife Lori), Lisa Radcliffe, Kevin Radcliffe (wife Linda), his fourteen grandchildren and nine great- grandchildren.

Clark Radcliffe
Dennis Lieu