



Anton Koppensching

ANTONI K. OPPENHEIM

1915–2008

Elected in 1978

“For contributions to the elucidation of the gas dynamics of explosions and to the analysis of surface radiant-heat exchange.”

BY ROBERT F. SAWYER

ANTONI KAZIMIERZ OPPENHEIM, an expert on combustion, explosions, and radiation-heat transfer died in his home in Kensington, California, on January 12, 2008. Known for his life-long passion for research, he opted for hospice care in his home over spending his final days in a hospital, no doubt so he could continue to work, in his bed with a laptop, on the second edition of his monograph *Dynamics of Combustion Systems* (Springer, 2006). A Professor Emeritus of mechanical engineering at the University of California, Berkeley, at the time of his death, Tony had a life and career that were formed by the turbulent history of his time.

Born in Warsaw, Poland, on August 11, 1915, Tony was home-schooled in French until the age of nine, when he began attending local schools and learning Polish. This, and his later unusual introduction to English, no doubt contributed to his charming, difficult-to-identify accent. After graduating as valedictorian of his high school in 1933, he began the study of aeronautical engineering at the Warsaw Institute of Technology. The Nazi invasion of Poland in 1939 interrupted his studies, and he fled across Europe through Romania, Greece, France, Spain, and Portugal. In June 1940, he arrived in England and joined the Polish Army in exile in Scotland, where he taught himself English.

In 1942, he took leave of the Polish Army to study at the City and Guilds College in London, where in 1945 he completed the requirements for a degree from the Warsaw Institute of Technology and earned a Ph.D. in mechanical engineering from the University of London and a Diploma from the Imperial College. During this time, he worked, under the supervision of Sir Owen Saunders, successfully researching ways to improve the performance of piston engines for RAF fighter planes, thus giving them a performance edge over German fighters.

Other work included gas-turbine combustion and the study of the combustion dynamics of the German V-1 pulse-jet engine. As a recognized authority on the V-1, he went to Germany after the war as a British intelligence officer to interview the engineers who had developed the V-1 engine. His interest in and subsequent study of detonation and combustion phenomena resulted from these early studies and experiences.

After three years as a lecturer in mechanical engineering at City and Guilds College, in 1948 Tony joined Stanford University as an assistant professor of mechanical engineering. Two years later, he moved to the University of California, Berkeley, Mechanical Engineering Department as an assistant professor; he became associate professor in 1954 and full professor in 1958.

Among his many contributions was the development and application of network analysis to the quantification of radiation-heat transfer. This analog of electrical-network analysis is still widely taught. His studies of the mechanisms of detonations included both experiments and theory. Because detonations occur so rapidly, the mechanism of their development and propagation was largely conjecture. Tony recorded the transit of detonations, first using wall tracings in detonation tubes and then photographic recordings with picosecond, laser-pulse illumination. His interest in the dynamics of explosions and reactive systems led to collaboration in the 1960s with Rem Soloukhin of the Soviet Union and Numa Manson of France to establish the International Colloquium on the Dynamics of Explosions and Reactive Systems, which will hold its 22nd biennial meeting in Minsk in 2009—a testament to Tony's vision.

His active study of combustion phenomena, over six decades, included vector-polar methods to describe gas dynamic-front interactions, blast-wave theory, turbulent combustion, plasma-jet ignition, turbulent jet plumes, laser ignition, and distributed combustion in engines (the foundation for homogeneous-charge compression-ignition engines). Following his official retirement from the University of California, Berkeley, he focused his considerable energy and enthusiasm on developing his ideas for improving the performance of internal combustion engines.

Tony received honorary degrees from the University of Poitiers, University of London, and Warsaw University of Technology. The University of California awarded him the Berkeley Citation, its highest honor, which is bestowed on individuals who have exceeded the standards in their field. He received the Dionizy Smolenski Medal of the Polish Academy of Sciences for outstanding contributions toward advances in the knowledge of combustion and the Alfred C. Egerton Medal of the Combustion Institute for distinguished, continuing, and encouraging contributions to the field of combustion. He was a fellow of the American Society of Mechanical Engineers, a foreign member of the Polish Academy of Sciences, a fellow of the Society of Mechanical Engineers, and a member of the National Academy of Engineering.

Tony's sensitivity to the insecurity of his graduate students is captured by his words of encouragement to a self-doubting student, "You were born to a Ph.D.," he said. His ebullient spirit, still strong at the age of 92, extended to his colleagues, his students, and even to his cat, which he described as "a truly magnificent animal."

His wife remembers that "we were married for over 62 years. When he proposed to me in London in 1944 he commented that he could not promise where we would live nor what our circumstances would be, but whatever happened our life would not be boring! How true that was and how rewarding."

Tony is survived by his wife, Lavinia (Min), of Kensington, California; their daughter, Terry Ann Cort, of El Cerrito, California; and two grandchildren, Jessica DiBiase and Zachary Cort.