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Jakob Ackeret, whose fundamental, comprehensive, and path breaking contributions to fluid mechanics and the understanding of high-speed and supersonic flows led to significant improvements in the science of flight, died April 1, 1981, in Kusnacht, Switzerland, at age eighty-three after a long illness.

Professor Ackeret was born March 17, 1898, in Switzerland. He received his diploma in mechanical engineering in 1920 and his Ph.D. in engineering science in 1930, both from the Federal Institute of Technology (ETH), Zurich. He served in 1920 and 1921 as a research assistant of Professor Stodola at ETH. From 1921 to 1927 he was a research associate of Professor Ludwig Prandtl at the University of Göttingen, Germany. He took part in the planning and preparations for the establishment there of the Kaiser Wilhelm Institute for Fluid Mechanics Research (today the Max Planck Institute for Fluid Mechanics Research) becoming its first director when it went into full operation in 1925. In 1928 he became chief engineer at Escher Wyss Ltd., Zurich, where he served until 1932, when he became a professor at ETH. There he founded and became director of the Institute for Aerodynamics, which became fully operational in 1934. He made that institute famous as a center for research on high-speed gas dynamics and thermodynamics and served as its director until his retirement from ETH in 1967. However, he maintained continuing, life

long connections with Escher Wyss and contributed to the solution of many design problems and to inventions such as gas turbines and variable-pitch propellers.

Professor Ackeret was one of the pioneers in the theoretical and experimental investigation of supersonic flows about airfoils and in channels. He published in 1925 a definitive paper describing the small perturbation theory of supersonic flow of a perfect gas over a thin airfoil. The methods and results he obtained are to this day often identified as "the Ackeret theory," "the Ackeret pressure," and "the Ackeret lift." He was personally responsible for innumerable important contributions to theoretical and applied aerodynamics and fluid dynamics. He designed, built, and operated several high-quality subsonic and supersonic wind tunnels at both the University of Göttingen and at the ETH. His closed-circuit supersonic wind tunnel at ETH driven by a multistage compressor permitted independent variation of Mach number and Reynolds number and served for many pioneering experimental investigations. (The term "Mach number" was introduced by Ackeret in his inaugural lecture at ETH in 1929.) Professor Ackeret was one of the first to give clear, theoretically based, and experimentally validated explanations of the effects of compressibility in flow over aircraft components and thereby contributed uniquely to the successful design of high-speed flying machines.

Professor Ackeret's aerodynamic research included the problems of gas flow at very high speeds through cascades and grids, and the basic problems of boundary layers and heat transfer at high subsonic and supersonic speeds. He was one of the early workers in the study of the effects of roughness on airfoil form drag and the boundary layer, and with his students he pioneered in fundamental investigation of shock-boundary layer interactions in supersonic flows. He did early significant work on the application of boundary layer suction on airfoils, which work was later carried on by his students, especially in investigations of the complex problems of practical applications.

His work in the 1930s and 1940s established much of the fluid mechanics and basic technology of the present-day gas turbine, as evidenced by his many technical papers at that time. He worked with Escher Wyss in the application of the gas turbine with a closed-circuit and a multistage axial compressor (the Ackeret-Keller turbine) as a stationary power source. He also investigated hydraulic turbine problems, especially cavitation. On Professor Ackeret's sixtieth birthday, Professor Theodore von Karman complimented him as the outstanding mechanical engineer among the pioneers of aerodynamics. Professor Ackeret's leadership in aeronautical engineering and fluid mechanics at ETH produced a great center of learning and many students who influenced practical aeronautics and aeronautical education around the world.

He was a respected student of the history of science, applied mechanics, and aerodynamic and hydraulic technology. His most significant contribution in this field was the editing of a volume of Euler's works on hydrodynamics.

Elected a foreign associate of the National Academy of Engineering in 1976, he was an honorary fellow of the American Institute of Aeronautics and Astronautics, the Royal Aeronautical Society of London, and the Institute of Aeronautical Sciences of New York. He was an honorary member of the American Society of Mechanical Engineers, a member of the Max Planck Institute for Aerodynamic Research in Göttingen, and a recipient of the Guggenheim Medal and the Prandtl Ring. He gave the second Daniel and Florence Guggenheim Memorial Lecture to the International Astronautical Federation in 1960.

Professor Ackeret's original publications numbered more than one hundred. In addition he contributed to twenty-four papers for the Institute of Aerodynamics and to forty-eight other publications with various collaborators. A bibliography of his work (and most of the work that was completed under his direction) was published in the *Journal of Applied Mechanics and Physics* (*ZAMP*), Vol. IXB, 1958.