MEDALIST FOR 1931

For contributions to the fundamental theory of aerodynamics.

FREDERICK WILLIAM LANCHESTER

Probably the most eminent British mechanical engineer of his generation, Frederick William Lanchester's life work was the motor car: its engine, transmission, suspension and stability. Despite this, he was able to make at least two contributions to the science and engineering of aircraft which established him as a major architect of the age of flight as well.

Born at Lewisham, England, on October 23, 1868, Lanchester's education was somewhat irregular. He first studied at the Royal College of Science, South Kensington, England, and later read for engineering in the South Kensington Li-brary, attending engineering lectures at the Finsbury Technical College in the evenings.

From 1889 to 1892 he was designer and Assistant Works Manager of the Forward Gas Engine Company, specializing in internal combustion engines. From 1892 to 1895 he was engaged in developmental work on high speed motors and experi-mental work in aerodynamics. The development of petrol motors, motor launches and the Lanchester car occupied his energies from 1894 until 1899.

In the latter year the Lanchester Motor Company, Ltd. was formed, and he served as General Manager and Chief Engineer until 1904. He thereafter con-tinued as consulting engineer until 1914, meantime also serving as consulting engineer and technical advisor to other engine and automobile companies.

Among his numerous successful inventions relating to the internal combustion engine were the gas engine starter, developed in 1890; the balanced reciprocating engine and the surface carburetor in 1895; an improved process for manufacturing piston rings in 1909; the torsional crankshaft damper in 1910; and the harmonic balancer in 1911.

Aeronautical science to Lanchester was always a spare-time recreation. One of his earliest contributions was an analysis of the dynamical stability of airplane flight, made in 1897, some years

before there were any airplanes. So penetrating was the insight shown that this analysis served as the inspiration and foundation for the later work of Bryan, Bairstow, Hunsaker and many others, who were able to apply Lanchester's precepts while using modern wind tunnels.

He was also the first to propound the vortex theory of flight and its engineering application to the design of airplanes, which was followed up later by Prandtl and others. The vortex theory was the basis of a paper read by Lanchester before the Birmingham National History and Philosophical Society in 1894, and a further paper submitted to the Physical Society of London in 1897.

Lanchester was one of the original members of the Aeronautical Research Com-mittee under the chairmanship of Lord Rayleigh. In 1926 he gave the Wilbur Wright Memorial Lecture on the subject: "Sustentation in Flight." He died March 8, 1946, at the age of 77.