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THE FIFTH VOLTA CONGRESS, ROME 1935: THE BIRTH OF SUPERSONIC AERODYNAMICS

Abstract

The Fifth Volta Congress, the first International Congress on “Le alte velocità in aviazione” (High Speeds in Aviation), organized by the Royal Academy of Italy with the support of the AIDA, Italian Association of Aerotechnics, was held in Rome in 1935. The topic was chosen in response to the specific needs of a time when the main interest of the various countries was to have high-speed aircraft at their disposal to increase the prestige of each nation. The research carried out in the 1930s had not as yet reached a sufficient scientific level to clear up the many issues regarding high-speed flight. The nature of the physical transformations brought about by fluid compressibility at high speeds and their effects within the well-known laws of aerodynamics were still not clear, nor at what point they are no longer negligible. Italy was keen to enhance its aeronautical development, and the Fascist regime under Benito Mussolini was well aware of the fact. Mussolini’s intention was to consolidate his power yet further and in agreement with Adolph Hitler, he created the Rome-Berlin Axis in the field of aeronautical technology. Under this agreement, two eminent Italian scientists, Gaetano Arturo Crocco, President of AIDA and Guglielmo Marconi, winner of the Nobel Prize in Physics in 1909, President of the Royal Academy of Italy and of the CNR, National Research Council of Italy, decided to organize a special event: “The Fifth Volta Congress”, dedicated exclusively to the study of high-speed aerodynamics. Attendance was by invitation alone and the greatest international experts on subsonic and supersonic aerodynamics took part, Theodore von Kàrmàn, Ludwig Prandtl, Adolf Busemann, Eastman N. Jacobs, Jakob Ackeret and others. The Congress saw the presence of many Italian scientists from universities and research centres, among which the DSSE, the Air Force Ministry’s High Directorate for Studies and Tests located in Guidonia near Rome and equipped with subsonic and transonic wind tunnels. The Fifth Volta Congress was the event that laid the foundations for supersonic aerodynamics, thus opening up once and for all the Age of Astronautics. As well as describing the scientific and political aspects of the Congress, the aim of the present work is to analyse its influence on the development of supersonic and hypersonic aerodynamics which was then further accentuated with the studies and research of Antonio Ferri and Luigi Broglio, the father of Italian Space.