

FOREWORD

Two years ago I wrote a Foreword to the two volumes entitled "Advances in Aeronautical Sciences" which contained the papers given in the First International Congress for the Aeronautical Sciences held in Madrid from 8 to 13 September 1958. Now, it is my pleasant duty to write a Foreword to the Proceedings of the Second International Congress held 12 to 16 September 1960 in Zürich.

Due to the careful preparation of local arrangements and the high scientific level of the papers presented, the Second Congress was as successful as the first one. As I pointed out in my Foreword last time, our International Congresses are different from the many meetings dealing with aeronautical subjects in the point that the International Council, which organizes the Congresses, followed the principle of inviting all national organizations in the world which are devoted to the aeronautical sciences. The proposal to form a world-wide forum for the discussion of common problems in aero and space technology came originally from Harry F. Guggenheim. The Daniel and Florence Guggenheim Memorial Fund provided the necessary financial assistance.

The Daniel and Florence Guggenheim Memorial Lecture was given in 1958 by me. This time, our famous colleague Professor Jakob Ackeret gave the lecture which dealt with "the role of entropy in the aero-space sciences." He pointed out that the concept of entropy, which plays such a fundamental role in all processes involving heat, was first introduced under its proper name a hundred years ago by Rudolf Julius Emmanuel Clausius, who at that time was Professor at the Eidgenössische Technische Hochschule, the same institute which acted as host to our Congress. Ackeret accomplished what I consider as the highest art in giving general lectures. A great portion of his lecture was understandable also to the non-specialists; nevertheless, he presented, too, ideas which were quite new for the specialists.

Other general lectures dealt with the physics of the jet streams and with the aerodynamics of jet flaps. The first mentioned subject has great importance for flight at high altitudes. The second subject is perhaps the most important problem in the development of aircraft taking off vertically or at a short distance.

The papers given in the technical sessions covered a wide range of problems both of theoretical and practical importance. In the field of

aerodynamics we had novel contributions to such classical problems as the flow around a circular cylinder and new contributions to the theory of boundary layer, to the physics of transition from laminar to turbulent flow, to the theory and experimental knowledge of transonic, supersonic and hypersonic flows. Many excellent lectures dealt with problems of aerothermochemistry and magnetofluidynamics. These new chapters of the aerospace sciences became very important in view of problems of propulsion by jet and problems of propulsion in space. Due attention was given to the re-entry of missiles and space vehicles into the atmosphere, to problems of trajectories, guidance of space vehicles, and power generation in space.

On the other side, attention was given to the economic and technical aspects of present and future air transportation. Furthermore, to the problems involving structures and materials. Especially, high temperature materials, aeroelastic and fatigue phenomena were treated by competent authors.

The International Council is indebted to the Executive Committee, under the guidance of Professor Maurice Roy, for the organization of the program, to the Arrangement Committee, under the Chairmanship of Professor Manfred Rauscher, for the excellent local arrangements, and I want to express my personal thanks to the members of the Editorial Committee.

The Institute of the Aerospace Sciences in New York did an excellent job as permanent secretariat of the Congress, both during the period of preparation and during the actual Congress. We are also indebted to the Pergamon Press for the excellent work done in the production of the Proceedings.

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