Hermann Schlichting is one of the internationally leading scientists in the field of fluid mechanics during the 20th century. He contributed largely to modern theories of viscous flows and aircraft aerodynamics. His famous monographies *Boundary Layer Theory* and *Aerodynamics of Aircraft* are known worldwide and they appeared in six languages. He held Chairs of Aerodynamics and Fluid Mechanics at Technische Universität Braunschweig during 37 years and directed the Institute of Aerodynamics of the Deutsche Forschungsgesellschaft für Luft und Raumfahrt in Braunschweig. He also directed the Aerodynamische Versuchsanstalt Göttingen and served in the Executive Board of the German Aerospace Center (DFVLR). Hermann Schlichting played a leading role in the rebuilding of aerospace research in Germany after the Second World War.

The occasion of his 100th birthday in the year 2007 was an excellent opportunity to acknowledge important ideas and accomplishments that Hermann Schlichting contributed to science. The editors of this volume are the present successors of Hermann Schlichting in his role as director of the two research institutes in Braunschweig. We were glad to host a scientific colloquium in his honor on 28 September 2007. Invited former scholars of Hermann Schlichting reviewed his work in boundary layer theory and in aircraft aerodynamics followed by presentations of important research results of his institutes today.

This volume contains the manuscripts of the presentations given during the colloquium. The order of contributions in this book corresponds to that of the sessions of the colloquium. The reviews of Hermann Schlichting’s original research are followed by presentations of selected current research works. These contributions cover the areas of numerical and experimental flow analysis methods and flow research in wings, turbomachinery and high-lift systems. We hope that these contributions provide valuable insight how the work of Hermann Schlichting is carried on today.

We express our thanks to the colleagues providing the manuscripts and to B.W. Brinkmann for his careful revision of the book. We are grateful to Prof. Dr. W. Schröder as the General Editor of the “Notes on Numerical Fluid Mechanics and Multidisciplinary Design” and to the Springer-Verlag for the opportunity to publish this volume.

We wish that the reader of this book enjoys inspiring views of our predecessor Hermann Schlichting and takes advantage of the presentations of current research in aerodynamics.

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October 2008 C.-C. Rossow
Hermann Schlichting - 100 Years
Scientific Colloquium Celebrating the Anniversary of His
Birthday, Braunschweig, Germany 2007
Radespiel, R.; Rossow, C.-C.; Brinkmann, B.W. (Eds.)
2009, X, 189 p., Hardcover
ISBN: 978-3-540-95997-7