

Helmuth Trischler, Kai-Uwe Schrogl, eds.. *Ein Jahrhundert im Flug: Luft- und Raumfahrtforschung in Deutschland 1907-2007*. Frankfurt am Main: Campus Verlag, 2007. 552 pp. EUR 39.90, cloth, ISBN 978-3-593-38330-9.



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A conference at the Deutsches Museum to celebrate the centennial of the founding of the first German aeronautical research institute in 1907 stands at the origin of this collection. It is a cliché of reviews of edited volumes to call them repetitious and uneven, especially when they include a multitude of contributors—in this case, twenty-seven. For a conference, however, this volume is reasonably consistent in quality and not too repetitive, as the editors and conference organizers carefully chose a series of topics and authors to give comprehensive coverage to the topic of a century of German aerospace research and development. Most of the repetition comes in the coverage of the Federal Republic, which is viewed from many different angles by both historians and contemporary researchers—perhaps too much so. Overall, the result is a usable reference work, something those interested in German and European history of science and technology, aerospace history, or industrial and science policy will find useful. I suspect very few, however, will wish to read this often dry book cover to cover.

The book is divided into two main sections: "Einblicke und Durchblicke aus historischer Perspektive" and "Durchblicke und Ausblicke aus gegenwartsbezogener Perspektive." As these titles imply, the first part is dominated by historians, whereas the authors of the second part are mostly policy scholars or research administrators. A rough chronological division occurs between the two halves—the first focuses mostly on origins through the 1950s, while the second almost exclusively concerns the period after the FRG's recovery of sovereignty and the right to have an aeronautical industry in 1955. One lonely article in this section treats East German collaboration with the Soviet space program, and the earlier and abortive venture of East Germany to rebuild an aviation industry in the 1950s is, surprisingly, not discussed at all. Certainly aerospace research in the East was dwarfed by that in the West, but this *Wessi* bias seems rather typical of the German academic and research establishment.

Most readers of this list will find the first half of the book of greater interest, because of its slant

toward the imperial, Weimar, National Socialist, and early Cold War periods, and its methodological and topical variety. Many of the articles are useful summaries or derivatives of the authors' books and may serve as substitutes for those who lack the time to read the full works. Thus, Michael Eckert's piece on the path-breaking aerodynamicist Ludwig Prandtl and the evolution of his Göttingen institute from 1907 to 1933 is derived from his valuable book on the origins of fluid dynamics. Evelyn Zegenhagen's piece on women in German aerospace comes out of her prize-winning study of German female pilots up to 1945 (the article expands it to the FRG and adds a little data about women researchers--of which there are still too few). Peter Fritzsche's article on "air-mindedness" (in German) summarizes his book on aviation and nationalism in Weimar and Nazi Germany. Lutz Budraß boils down his massive work on the German aviation industry in the Third Reich to a valuable synthesis of the industry's roller-coaster expansion, contraction, and re-expansion during the early twentieth century, which were always closely connected to the state's military aims. And editor Helmuth Trischler extracts from his earlier study of the German aerospace research establishment in the twentieth century the story of the long and winding post-1945 road to the formation of a single German agency, now called the Deutsche Zentrum für Luft- und Raumfahrt (DLR). Other articles summarize work done in non-book form or by others: Helmut Maier writes on aviation research in Nazi Germany, Alexander Neumann on aviation medicine from the 1920s to the 1950s (including concentration camp experiments), Burghard Ciesla on the central role of German aeronautical and missile researchers in the postwar Allied expropriation of Third Reich research and development, and Thomas Lange on space enthusiasm and rocket development from 1925 to 1945 (the weakest piece in this section, but still a useful overview). The most original articles are by Sabine Höhler on the prehistory of aeronautical research in the

nineteenth century through balloons and meteorology (although she neglects pioneer glider pilot Otto Lilienthal), Christoph Asendorf on the impact of flight on culture and art (somewhat inconsistently with the book's theme, not just in Germany), and Anja Casser on the popularization of aviation and spaceflight through visionary images in the Weimar Republic (although she only focuses on the von Römer brothers, who were pioneer illustrators and propagandists).

The second section is, as indicated, dominated by policy narratives of the aerospace research establishment and industry of the *Bundesrepublik* in its two guises--West Germany and reunified Germany. As the editors note at the outset, these institutions have become increasingly integrated into (western) European multinational projects and institutions over time. Indeed aerospace R & D has played a major role in European unification through joint military aircraft projects, Airbus, and the European Space Agency, to the point where national aerospace corporations are disappearing into continental enterprises (Airbus and EADS, notably). Still the focus of the articles is essentially national (again usually defined as West Germany). The section opens with Armin Grunwald's overview of the social impacts of air and space technology, which mostly discusses the economic and ecological impacts of commercial aviation while completely ignoring strategic bombing and the nuclear arms race because of the blinders imposed by his postwar German focus. Ernst Hirschel, Jürgen Bandel, and Adrian de Graaff discuss aeronautical research and policy in West Germany, while Niklas Reinke, Jan-Baldem Menicken, Karl-Eugen Reuter, and John Logsdon cover space policy and organizational forms. It is in these sections that overlapping narratives and repetition are most obvious, especially given Trischler's earlier piece on the emergence of the DLR. The de Graaff, Reuter, and Logsdon articles, however, look at those policies from a European or transatlantic perspective, providing some relief from the (West) German focus. Disappointingly,

Marietta Benkö's article on German aviation and space law turns out to be a history of the only university institute in that specialty, now in Cologne. Earlier, Hans-Joachim Gante provides an overview of the FRG's aerospace industry that nicely complements that by Budraß and demonstrates once again boom-and-bust cycles driven largely by government funding and demand. The book ends with Achim Zickler's welcome piece on East German space research and with the one real oddity, Carl Gethmann and Stephan Langer's "Rationale Technikfolgenbeurteilung bemannter Raumfahrt: Die deutsche Diskussion." I assumed it would discuss the German public debate about the country's involvement in human spaceflight through the U.S. shuttle and station programs. Instead, it is a piece on the philosophy of technology that really does not belong in this volume.

In sum, *Ein Jahrhundert im Flug* is a useful reference on a century of German aerospace research and industrial development, one that shows the country's prominence as a world power in aviation and spaceflight, however much the United States and the Soviet Union overshadowed Germany after World War II.

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