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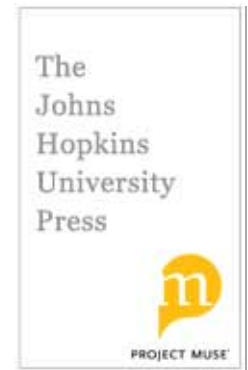
From Engineering Science to Big Science: The NACA and NASA  
Collier Trophy Research Project Winners (review)

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## **From Engineering Science to Big Science: The NACA and NASA Collier Trophy Research Project Winners.**

Edited by Pamela E. Mack. Washington, D.C.: National Aeronautics and Space Administration, 1998. Pp. xxiii+427; illustrations, notes/references, index. \$35.

This collection of sixteen essays, plus an editor's introduction of sufficient value to constitute a seventeenth, is both an easy and a difficult assignment for a reviewer. It is easy because it is a model of what a scholarly collection of essays should be: it makes a coherent and cohesive statement with a clear theme, in contrast to the disjoint collections that all too often result from the need to publish conference proceedings. The difficulty is that almost all the essays in this book, none of which is less than good, deserve reviews of their own. Because that is not possible, a reviewer's individual interests and, forbid, biases cannot help but influence what is emphasized in a review.

Pamela Mack seems to have been more than the editor of this volume; rather, her role appears to have been more like that of a composer who has written an overture to a large orchestral piece and then had talented students write the individual movements. In her introduction she deftly sets forth the themes of big technology and big science, which are then picked

up in various ways by each essayist. Mack notes that “the National Advisory Committee for Aeronautics (NACA) and the National Aeronautics and Space Administration (NASA) provide an opportunity to study changes in the pattern of major research and development projects over a significant span of time in a government context quite different from the Department of Defense” (p. xi).

Each of the essays deals with a project that won one or more Collier Trophies of the National Aeronautic Association (Project Apollo won five), a prize for “the greatest achievement in aviation in America, the value of which has been demonstrated by use during the previous year” (p. xiv). Because the terms allow little time for retrospection, it seems possible that in eighty-eight years some achievements that won the Collier Trophy might not stand up to close scrutiny. This would not be the case, however, with most of those won by NACA and NASA projects and staff members. The first NACA project awarded a Collier Trophy was in 1929, for the development of the NACA low-drag engine cowling. This was truly an important contribution to aeronautical technology, and Jim Hansen tells the story in his usual careful style while bringing to life the people involved and the organizational dynamics at the Langley Aeronautical Laboratory. NASA received its most recent Collier Trophy for the 1993 Hubble Space Telescope servicing mission. That this, too, was justly deserved is amply demonstrated in a well-written essay by Joseph N. Tatarewicz. The differing natures of the 1929 and 1993 projects provide a useful measure of how the contemporary NASA differs from its pre-Sputnik predecessor.

My favorite essay in this book is by Mark D. Bowles and Virginia Dawson, “The Advanced Turboprop Project: Radical Innovation in a Conservative Environment.” With the work spanning more than a decade, from just after the energy crisis of 1973 to just after the oil glut of 1986, this was perhaps the only nonspace project carried out as a typically large NASA project. It represented a successful attempt to develop a propulsion system that would reduce fuel consumption of large airliners by 20 or 30 percent while otherwise matching the performance of the conventional turbojet. Though a technical success, the project succumbed to an unforeseen contingency, the large decline in petroleum prices after 1986. It did not even get as far as the energy-efficient automobile, which at least had its decade of dominance on the nation’s roads before facing a crushing onslaught by SUVs. Perhaps when another energy crisis comes upon us the advanced turboprop project will rise from NASA’s archives as the phoenix did from the ashes.

Without wishing to demean the many other fine essays in the book, I will mention only one other that took my fancy, Steven T. Corneliussen’s “The Transonic Wind Tunnel and the NACA Technical Culture.” Recipient of the 1951 Collier Trophy, this was the first research tool to gain that honor, and in his essay Corneliussen does a very nice job of layering and texturing the narrative. Finally, while I understand the politics and poetics

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of the book's title, in the back of my own mind I think of it as *From Systematic Engineering Research to Big Technology in the Service of Politics and Big Science*.

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Dr. Levinson, now retired, spent most of his career teaching and doing research in the mechanics of solids. A charter member of SHOT, he was the founding director of the Technology and Society Project at the University of Maine.