NASA HISTORY:
NEWS AND NOTES

Vol. 11, No. 1 Winter 1994

NASA HISTORY: NEWS AND NOTES GOES QUARTERLY

This is the first of what we intend to be a quarterly issue of the NASA history newsletter. In moving from a semiannual to a quarterly we hope to be able to provide more timely information about the conduct and possibilities of aerospace history, and to provide some additional opportunities to share ideas and projects. Anyone who has items to be included that others interested in air and space history might like to know about please inform Roger D. Launius, NASA History, Code ICH, NASA Headquarters, Washington, DC 20546. We would like to expand our coverage of what is going on in the aerospace history arena, noting meetings, providing information about individual research projects, and highlighting potential sources of information and avenues of research. Your comments are also solicited on the types of information you might like to see in this newsletter.

1993 NASA HISTORY PROGRAM SUMMARY

The year just past was one of the busiest and most productive ever for the NASA History Office. Now more than thirty years old, the office's efforts to preserve and disseminate a record of agency activities for the public interest are moving into increasingly diverse areas of service. The office's efforts continued during 1993 toward building a significant collection of reference documents for use by both NASA personnel and the public, providing historical perspective and documentary support for agency executives, and researching and writing NASA history for publication in books, monographs, articles, and reports.

During the year the NASA Historical Reference Collection served 1,639 researchers from federal, educational, and private organizations with all manner of research interests, requiring 1,479 work hours by the office staff (nearly .75 percent of one staff member's time). This represents more than a doubling of the workload for the History Office in this arena since 1990 in both the number of requests and amount of time spent providing support to NASA personnel. The major reasons for this increase appear to be fourfold. First, we have made it a high priority both to advertize our services and to be proactive in providing background information and documentary records to aid NASA executives in their work. Second, there seems to be a little higher visibility for the History Program inside the agency because of articles and activities designed to heighten awareness of history's utilitarian value. Third, the office staff has made a greater effort than in the past to ensure that as many information requests as possible are reported, so some of the increase is probably due to better recording procedures. Fourth, the location of the History Office in the NASA Headquarters proper, rather than in an off-site building, has made it much easier for NASA personnel to use the Historical Reference Collection.

Here are three examples of the information requests handled by this office during the past year.

(1) The staff worked at length with both the NASA and New Administration transition teams to provide them with background data, documentary materials, and analysis of the agency's direction as the Bush Administration was replaced by the Clinton Administration at the end of the year.

(2) The staff worked with NASA's Space Station Redesign Team to prepare background studies, point papers, chronologies, historical analysis, and documents on both the evolution of the present Space Station and on earlier projects that were either cancelled or fundamentally reshaped in NASA's history.

(3) NASA historians worked with those involved in the negotiations between the United States and Russia for greater cooperation in space and prepared several chronologies, background papers, and document packages relative to US/USSR cooperation in the past.

In addition, the program supported the activities of a broad base of researchers from senior scholars working in aerospace history to individuals seeking

information for research papers and media reports of all types. Indeed, the NASA history clientele was global and diverse. Forty percent of all users were NASA personnel, 14 percent were from other government agencies, and another 14 percent were historians working under contract to NASA. Fully 68 percent of our support to researchers, therefore, directly assisted primary government activities. The remainder of the Historical Reference Collection usage was oriented toward assisting scholars working on personal projects, journalist, and the general public. Some of the exciting projects supported by of the Historical Reference Collection in 1993 have involved study of presidential leadership in the evolution of the U.S. space program, the origin and development of project management of large-scale science and technology programs, and the intriguing question recently put by a political scientist, "Can democracies fly in space?" The answer, of course, is that they can and will, but there is a complex political process involved in democratic support for space exploration.

One ongoing effort in the office has been the creation of a computer-based inventory and finding aid for NASA's historical reference collection. Beforehand, the only one who knew the contents of the collection in any detail was our archivist, Lee D. Saegesser. This computer database work is being done under contract in this office. With more than 700 linear feet of material now catalogued--still less than half of the total holdings in the collection--the data base is starting to fulfill its promise as an important reference tool to historians working in the NASA collections. The office is planning to expand this effort in the near term by imaging some documents for electronic storage and retrieval. This will enable us to meet the needs of researchers more effectively and also reduce the amount of paper documentation that will have to be stored at NASA.

The hallmark of the NASA history program continued in 1993, as previously, to be the preparation of solid, well-researched works on the history of the U.S. civil space program. During the year the NASA History Series published three major new books and several other less ambitious publications. In January 1993 Howard E. McCurdy's *Inside NASA: High Technology and Organizational Change in the U.S. Space Program* appeared in the "New Series in NASA History" published by Johns Hopkins University Press. Using extensive interviews and detailed management analyses, *Inside NASA* identifies and traces the evolution of the organizational culture of NASA from its founding and expansion during the Apollo era through the changes in the 1970s and 1980s.

Near the end of 1993 the NASA History Office released *The Birth of NASA: The Diary of T. Keith Glennan*, published as NASA SP-4105 in the NASA History Series. Also at year's end *"Suddenly Tomorrow Came . . .": A History of the Johnson Space Center, 1957-1990*, by Henry C. Dethloff, was published as NASA SP-4307 in the NASA History Series. Both books have been described other segments in this newsletter.

In addition, the History Office published several smaller works of interest to historians during 1993. These include:

Carlton, Juanita. Compiler. *NASA Pocket Statistics, January 1993*. (NASA Annual Report).

Hunley, J.D. Editor. *Aeronautics and Space Report of the President, Fiscal Year 1992 Activities* (NASA Annual Report).

Noordung, Hermann. *The Problem of Traveling in Outer Space: The Rocket Motor* (Berlin, 1929) (NASA TT-10002), the first translation sponsored by this office since 1972.

These are available for research at the NASA History Office, NASA Headquarters, Washington, D.C.

Also during the year, NASA historians worked toward the publication of several other histories on a wide diversity of subjects. Those nearing publication are mentioned elsewhere in this newsletter.

The NASA History Office also co-sponsored two symposia in 1993. The first, "Presidential Leadership, Congress, and the U.S. Space Program," took place on March 26-27, 1993, at the American University. The second was called, "Transcending National Boundaries in the History of Spaceflight," and has been described elsewhere in this newsletter.

Members of the NASA History Office staff were involved at several levels in professional activities germane to the aerospace history specialty. The first area was as a participant in various professional conferences. Roger D. Launius, J.D. Hunley, and Aaron K. Gillette each participated in several conferences and symposia during the year, giving papers and participating in panels. Several staff members also published, outside of their official duties with NASA, a total of sixteen historical articles, one monograph, and several book reviews.

DIARY OF T. KEITH GLENNAN PUBLISHED

Near the end of 1993 the NASA History Office released *The Birth of NASA: The Diary of T. Keith Glennan*, published as NASA SP-4105 in the NASA History Series available from the Government Printing Office. Edited by J.D. Hunley, this book makes widely available for the first time the diary of Eisenhower's NASA administrator. The book describes how the U.S. government responded to the successful Soviet launch of Sputnik on October 4, 1957, creating and nurturing the National Aeronautics and Space Administration as the nation's civil space agency.

In this book, part diary and part recollection, Administrator Glennan relates the story of how he and others both inside and outside of the agency

worked within the circumstances created by the Sputnik crisis to plan and organize a viable space program. In the process, Glennan also reveals a great deal about Eisenhower as a human being and a president, about the nation's capital in the 1950s and 1960s, and about individuals like Wernher von Braun, the charismatic leader whose rocket team designed the Saturn launch vehicles that propelled the astronauts to lunar orbit.

The narrative that Glennan wrote is supplemented by an introduction tracing his Yale education and subsequent career as an engineer, AEC commissioner, and president of Case Institute of Technology. It shows how this background prepared him for his role in creating a NASA "that could carry out a broad-based scientific and technological program" suitable for the post-Sputnik era. Also included in the book is a biographical appendix sketching the careers of the key participants in the story Glennan relates.

The book can be ordered from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402-9325 or by telephone from the GPO order desk at 202-783-3238. The ISBN number is 0-16-041936-0; the cost from GPO is $24.00.

SYMPOSIUM ON TRANSCENDING NATIONAL BOUNDARIES IN THE HISTORY OF SPACEFLIGHT

The NASA History Office, the National Air and Space Museum, and the European Space Agency co-sponsored a historiographically-focused symposium on October 14, 1993, in Washington, DC, as a means of opening the field of space history in an international context to a larger audience. Internationally recognized scholars such as John M. Logsdon of George Washington University, Tom D. Crouch of the National Air and Space Museum, John Krige of the European Space Agency, and William Sims Bainbridge of the National Science Foundation were among the speakers. There was good audience participation, and attendees seem to have felt the sessions were useful, informative, and a stimulus to a useful exchange of scholarly information. There were more than 130 people in attendance at the meeting.

There were three sessions in this symposium: (1) an overview session on institutions and individuals active in space history, (2) a session on the historiography of space flight to 1993, and (3) a session on current trends and future needs in the history of space flight. The intent of the symposium was not to present finished scholarly papers on the subject of the session but to facilitate roundtable discussions involving everyone. In each presentation the panelists sketched broadly the general trends in space historiography and noted strengths and weakness with possible research agendas.

One of the important insights that emerged from the symposium was a greater understanding of the complex history of the military in space, the efforts underway to document that history, and the necessity of redoubling efforts to declassify records now that the Cold War has ended. In that regard it should be noted that on April 26, 1993 President Clinton directed the creation of a task force to revise the executive order governing the government classification system. The intent was to respond to the new situation in the post-Cold War era. An executive order is forthcoming which, it is anticipated, will provide for more orderly and timely declassification of records. The National Coordinating Committee for the Promotion of History is actively tracking this important issue and more detailed information about the subject can be obtained from its director, Page Putnam Miller.

SOCIETY FOR THE HISTORY OF TECHNOLOGY MEETING

The Society for the History of Technology held its annual meeting at the Key Bridge Marriott in Washington, D.C., on October 14-17, 1993. At the meeting there were two sessions specifically about space on the program. One dealt with "Project Apollo and Society." It featured papers by NASA contractor Howard McCurdy ("The Possibility of Space Flight"), independent scholar Lawrence Suid ("JFK, the Decision to Go to the Moon, and the Columbus Factor"), and ESA scholar Lorenza Sebesta ("The Post-Apollo Space Program as a Political and Technological Challenge for Europe"). NASA History Office Director Roger Launius chaired the session, while Gordon Patterson from the Florida Institute of Technology provided commentary.

The second session concerned "German and American Rocket Engineers." Papers were given by National Air and Space Museum (NASM) curator Michael J. Neufeld ("The German Rocket Engineers and the Legacy of Peenemünde at Huntsville"), NASA contractor Andrew Dunar from the University of Alabama at Huntsville ("The Post-Apollo Transition at Marshall Space Flight Center"), and NASA contractor Stephen Waring, also from UAB-Huntsville ("-Engineers, Scientists, and New MIssions at NASA's Marshall Space Flight Center"). David DeVorkin from NASM chaired the session and read the commentary by Pam Mack from Clemson University in her absence.

Both sessions were well attended and provoked lively discussions after the completion of the formal papers and the commentary.

Also at the SHOT conference, the Albatrosses (Aerospace) interest group met for a lively and well-attended afternoon session. Chaired by W. David Lewis, Auburn University and presently Lindbergh

Professor at the National Air and Space Museum, members of the interest group reported especially on forthcoming publications, recent events such as symposia, and issues of concern to the aerospace history community. One of the issues that arose was the concern over the classification of government records.

HISTORY SESSIONS HELD AT IAF MEETING

During the International Astronautical Federation annual meeting in Gratz, Austria, in October 1993, two sessions were held on the history of spaceflight. The presentations in the first session included:

E. Stuhlinger and K. Dannenberg, "Rocket Centre Peeneünde--Personal Memories."

H. Tresp, P. Profe, and K. Rohwild, "Klaus Riedel (III) at Peenmunde."

E.J. Becklake, "German Engineers: Their Contribution to British Rocket Technology after World War 2."

K.H. Rohrwild, "The UFA Rocket."

Y. Matogawa, "Historical Survey of Rocketry for Space Science in Japan."

L. Laidet, M. Gill, and C. Carlier, "A Short History of CNES: 1962-1992."

V.I. Vjacheslav and V.V. Ivashkin, "On the History of Space Navigation Development."

The second session included these papers.

G.S. James and G.C. Piper, "The Rocket Research Institute, 1943-1993--50 Years of Rocket Safety, Engineering, and Space Education Programs."

P. Jung, "The SE4200: First Ramjet Missile?"

B. Burkhalter and M.R. Sharpe, "Lunar Rover: Historical Origins, Development, and Deployment."

V.P. Mishin, "The Results and Perspectives of Development of Cosmonautics."

C. Rothmund, "This History of the Viking Engine."

J. Harlow, "ALPHA, BETA and RTV-1, The Development of Early British Liquid Propellant Rocket Engines."

B.V. Rauschenbach, "The History of the First State of Spacecraft Control Systems Development in Russia."

D.W. Robinson, "The Development of Space Station Objectives."

F.H. Winter and G.S. James, "Highlights of Fifty Years of Aeroject: Pioneering U.S. Company in Rocketry."

Anyone wishing to obtain copies of any of these papers can purchase them from the American Institute of Aeronautics and Astronautics, Attn: Kristin Burck, 555 West 57th St., Suite 1200, New York, NY 10019. The cost is $11.00 per copy.

HISTORY SESSION AT THE AMERICAN ASTRONAUTICAL SOCIETY MEETING

The History Office organized a session at the American Astronautical Society annual meeting entitled, "Organizing to Use Space: Historical Perspectives," which brought together five historians who reviewed various aspects of the space effort during the 1945-1975 period as it is presently understood. It analyzed how the space program developed in that early period, when it was in a state of flux, and asked specific questions about policy formulation strategies used in that era that might also be applicable to the present. The session featured presentations by Howard E. McCurdy, The American University, "Popular Culture and Public Policy in Space Flight during the 1950s," R. Cargill Hall, Center for Air Force History, "The Eisenhower Administration and the Cold War: Framing American Astronautics to Serve National Security," Roger D. Launius, NASA Chief Historian, "NASA, Space Policy, and the Evolution of Space Exploration," Richard Sturdevant, U.S. Space Command History Office, "The Early History of the Military in Space;" and Donald R. Baucom, Ballistic Missile Defense Organization Historian, "The Origins of SDI." These papers are presently being edited for publication in the AAS History Series.

AMERICAN ASTRONOMICAL SOCIETY HISTORY SESSION

On 11 January 1994, the Historical Astronomy Division of the American Astronomical Society held a fine symposium entitled, "Astronomy and the State: U.S. and C.I.S. Perspectives". The papers and speakers were:

"Political Repression Against Soviet Astronomers in the 1930s," A.I. Eremeeva, Shternberg State Astronomical Institute, Moscow.

"Political Activity at Harvard College Observatory in the Shapley Era, 1921-1952: Controversy and Consequences," B.L. Welther, Harvard/Smithsonian Observatories.

"Up the Down Staircase," A.A. Gurshtein, Institute for History of Science and Technology, Russian Academy of Sciences.

"Post WWII Astronomy and Rebuilding U.S. Astronomical Institutions: The U.S. Perspective," W.E. Howard, McLean, VA.

"On the Post-War Development of Radio Astronomy in the Former Soviet Union," V.S. Strelnitski, Smithsonian, National Air and Space Museum/Institute for Astronomy, Russian Academy of Sciences.

"Postwar Radio Astronomy and the U.S. Military," W.T. Sullivan, University of Washington.

"The Politics of U.S.-Soviet Astronomy, 1950-1961," Ronald E. Doel, Smithsonian/University of Maryland.

There were also several panel discussions on aspects of the history of astronomy in the twentieth century.

NEW NASA HISTORIES TO APPEAR

NASA Historical Data Book, Vol. IV: NASA Resources, 1969-1978 (NASA SP-4012), will appear in May 1994. Compiled by Ihor Y. Gawdiak of the Federal Research Division of the Library of Congress, this book will continue the series of three volumes already published, serving as a reference tool of largely statistical information that documents the resources allocated to NASA in the 1969-1978 era.

During the summer of 1994 *Airborne Trailbblazer: Two Decades with NASA Langley's Boeing 737 Flying Laboratory*, by Lane E. Wallace, will appear as NASA SP-4216 in the NASA History Series. This illustrated history of a single research aircraft looks at larger questions about the expansion of technological knowledge concerning aviation and its transfer to those who can use it in the broader government scientific establishment, the aerospace industry, and the public. Once published, both books may be purchased from the Government Printing Office.

JOHNSON SPACE CENTER HISTORY APPEARS

Henry C. Dethloff's *"Suddenly, Tomorrow Came . . .": A History of the Johnson Space Center, 1957-1990* has just appeared as NASA SP-4307 in the NASA History Series sold by the Government Printing Office. This is a comprehensive history of the center that managed Project Apollo and other human spaceflight initiatives undertaken by NASA from the 1960s until the present. It stresses the origins of the facility as the Manned Spacecraft Center and its institutional development within NASA. Located in Houston, Texas, in 1961, the center was renamed for former president Lyndon B. Johnson, a native Texan and proponent of the Apollo lunar landing program, in 1973. As the home base for NASA astronauts and the site of mission control for human spaceflight, it has experienced a dramatic history captured in this narrative.

The book can be ordered by mail from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402-9325 or by telephone from the GPO order desk at 202-783-3238.

FRED WEICK PAPERS DONATED TO LANGLEY RESEARCH CENTER

The personal papers of Fred E. Weick, an early National Advisory Committee for Aeronautics (NACA) engineer, have been given by his family to NASA's Langley Research Center for inclusion in the Historical Collection for permanent retention and use by aviation historians. His contributions to the NACA touched virtually every aeronautical innovation at the Langley Aeronautical Laboratory, at Hampton, Virginia, during the first half of the twentieth century. In the process he helped to remake the nation's struggling aircraft industry into the most advanced in the world. He helped to design Langley's first wind tunnel devoted to full-scale propeller research and to develop a streamlined, lowdrag engine cowling that in 1929 received the Robert J. Collier Trophy. This was the first of several Collier trophies received by NACA/NASA since the award's inception.

Future editions of *Research in NASA History* will contain full descriptions of the materials contained in the Fred Weick collection at Langley Research Center. Those interested in further details should contact Richard T. Layman, Code 123, Langley Research Center, Hampton, VA 23681, telephone 804-864-3441.

HISTORY PUBLICATIONS FROM THE JOHNSON SPACE CENTER

The Johnson Space Center History Office staff recently published *Thirty Years Together: A Chronology of U.S./Soviet Space Cooperation* (NASA Contractor Report 185707, 1993); *Where No Flag has Gone Before: Political and Technical Aspects of Placing a Flag on the Moon* (NASA Contractor Report 188251, 1993); and *Orbital Debris and Near-Earth Environmental Management: A Chronology* (NASA Reference Publication 1320, 1993). Work has also begun on a new NASA publication tracing Mir hardware heritage. These publications are available by contacting David S.F. Portree, JSC History Office/JM12, Johnson Space Center, Houston, TX 77058, 713-483-6707.

HISTORICAL ACTIVITIES AT WALLOPS FLIGHT FACILITY

The Wallops Flight Facility is currently making plans for the fiftieth anniversary of its creation on Virginia's Eastern Shore in 1995. The facility was established by Langley Research Center as a site to launch experimental rockets, and the first test flight took place on July 27, 1945. One of the activities underway is a history of the installation, being written by Hal Wallace, University of Maryland-Baltimore County, which may be completed in time for the anniversary.

SUMMER FELLOWSHIP OPPORTUNITY FOR AEROSPACE HISTORIANS

The Goddard Space Flight Center is prepared to award one summer faculty fellowship to a historian to work on document collection, oral histories, and other preparations necessary for the writing of a history of the Earth Observing System project presently underway at Goddard. Interested persons should contact Roger D. Launius, NASA History Office, Code

ICH, NASA Headquarters, Washington, DC 20546, telephone 202-358-0384, as soon as possible.

FELLOWSHIPS AND GRANTS OF INTEREST TO AEROSPACE HISTORIANS

The National Science Foundation offers dissertation research grants in two programs in Science, Technology and Society: the Science and Technology Studies Program (STS) and the Ethics and Values Studies Program (EVS). More information about the nature of dissertation improvement grants, applicant eligibility, and proposal and grant processing is provided in "Grants for Improving Doctoral Dissertation Research" (NSF 92-114). For further information contact: Ronald J. Overmann, Program Director, Science and Technology Studies, or Rachelle Hollander, Program Director, Ethics and Values Studies, at the National Science Foundation, Washington, DC 20550.

The National Endowment for the Humanities' Interpretive Research Program offers three categories of support that are
designed to promote joint research efforts in the humanities:

1. Collaborative projects involving two or more scholars undertaking research for periods of more than one year.
2. Humanities, Science, and Technology grants supporting research that brings the knowledge, methods, and perspective of the humanities to bear on the subjects of science, technology, and medicine.
3. Conferences uniting scholars working on related topics in order to encourage the open exchange of ideas and thus stimulate scholarly research.

For more information write the Interpretive Research Program, NEH, Room 318, 1100 Pennsylvania Avenue, N.W., Washington, DC 20506.

The Smithsonian Institution offers several predoctoral and post-doctoral fellowships. Write for a brochure and catalog to the Office of Fellowships and Grants, Desk P, Smithsonian Institution, L'Enfant Plaza, Suite 7000, Washington, DC 20560.

The California Institute of Technology announces a two-year Mellon Postdoctoral Fellowship in the history of technology and/or material culture beginning 1 October 1994. To apply contact the Mellon Postdoctoral Search Committee, Division of Humanities and Social Sciences, California Institute of Technology, Pasadena, CA 91125.

Supported by a five-year grant from the National Science Foundation, the University of Minnesota offers TWO one-year, full-time, postdoctoral positions in the history, philosophy, or sociology of science and technology. Applicants should contact Professor Ronald N. Giere, Department of Philosophy, University of Minnesota, 355 Ford Hall, 224 Church Street S.E., Minneapolis, MN 55455.

The Friends of the Princeton University Library are sponsoring several short-term Visiting Fellowships to promote scholarly use of the research collections of the Library. Each fellowship of $1,500 helps defray expenses in traveling to and from Princeton and residing in the city during the research period. Applicants are asked to submit by January 31, 1994, a resume and a brief research proposal to Fellowship Committee, Princeton University Library, One Washington Road, Princeton, NJ 08544.

CALLS FOR PAPERS OF INTEREST TO AEROSPACE HISTORIANS

The Society for Social Studies of Science has issued a call for papers for its 19th annual meeting to be held in conjunction with the History of Science Society and the Philosophy of Science Association in New Orleans, October 12-15, 1994. The theme of the conference is "Science, Technology, and Multiculturalism." Three copies of proposals should be sent by March 31, 1994, to Linda Layne, Department of Science and Technology Studies, Sage Lab 5508, Rensselaer Polytechnic Institute, Troy, New York 12180-3590.

The Society for the History of Technology has issued a call for papers for is annual meeting to be held on October 6-9, 1994 in Lowell, MA. Proposals should be sent by March 15, 1994, to Virginia Dawson, Department of History, Case Western Reserve University, Cleveland, OH 44106-7107.

The Astronomical Society of the Pacific will hold its annual meeting in Flagstaff, AZ, June 25-July 1, 1994. The ASP history committee will present several sessions on the history of astronomy, especially the founding and development of the Lowell Observatory. Proposals should be sent to Joseph S. Tenn, Department of Physics & Astronomy, Sonoma State University, Rohnert Park, CA 94928-3609.

UPCOMING CONFERENCES

The University of Durham, England, is hosting a conference on "Constructing the Social Origins, Achievements and Problems in Social Constructionism," on April 7-8, 1994. Further details are available from Joan Trowbridge, History of the Human Sciences, University of Durham, Elvet Riverside II, New Elvet, Durham City, England DH1 3JT, Tele: (091) 374 2305.

The Fourth Annual International Conference on Comparative Scientific Traditions, will be held at the University of Massachusetts at Amherst on April 8-10, 1994. The focus of the meeting will be "Dissenting Ways of Knowing: Challenging Global Scientism."

Contact Helaine Selin, Science Librarian, Hampshire College, Amherst, MA 01002.

NEW BOOKS OF INTEREST TO AEROSPACE HISTORIANS

A few new books on aerospace history have come to our attention.

Breuer, William B. *Race to the Moon: America's Duel with the Soviets*. Westport, CT: Praeger, 1993.

Burgess, Eric. *Outpost on Apollo's Moon*. New York: Columbia University Press, 1993.

Cornett, Lloyd H., Jr. ed. *History of Rocketry and Astronautics: Proceedings of the Twentieth and Twenty-first History Symposia of the International Academy of Astronautics*. San Diego, CA: Univelt, 1993.

Crouch, Tom D., and Spencer, Alex M. eds. *History of Rocketry and Astronautics: Proceedings of the Eighteenth and Nineteenth History Symposia of the International Academy of Astronautics*. San Diego, CA: Univelt, 1993.

Fraser, Mary Ann. *One Giant Leap*. New York: Henry Holt, 1993.

Freeman, Marsha. *How We Got to the Moon: The Story of the German Space Pioneers*. Washington, DC: 21st Century Associates, 1993.

Glaser, Peter E., Davidson, Frank P., and Csigi, Katinka I. eds. *Solar Power Satellites: The Emerging Energy Option*. New York: Ellis Horwood, 1993.

Hawthorne, Douglas B. *Men and Women of Space*. San Diego, CA: Univelt, 1992.

Jenkins, Dennis. *Space Shuttle: The History of Developing the National Space Transportation System*. Osceola, WI: Motorbooks International, 1992.

Korn, Paula, ed. *Humans and Machines in Space: The Payoff*. San Diego: American Astronautical Society, 1992.

Kosloski, Lillian D. *U.S. Space Gear: Outfitting the Astronaut*. Washington, DC: Smithsonian Institution Press, 1993.

Krug, Linda T. *Presidential Perspectives on Space Exploration: Guiding Metaphors from Eisenhower to Bush*. New York: Praeger, 1991.

Metcalf, George F. *Making Waves in the Information and Space Age: Creativity and Management in the Electronic Era*. Portland, OR: Binford & Mort Publishing, 1992.

Neufeld, Jacob. ed. *Reflections on Research and Development in the United States Air Force*. Washington, DC: Center for Air Force History, 1993.

Stulinger, Ernst, and Ordway, Frederick I, III, *Werhner von Braun: Crusader for Space, an Illustrated Memoir*. Malabar, FL: Krieger Publishing Company, 1994.

Waltz, Donald M. *On-Orbit Servicing of Space Systems*. Malabar, FL: Krieger Publishing Company, 1993.