# ROGER D. LAUNIUS, J. D. HUNLEY

# AN ANNOTATED BIBLIOGRAPHY OF THE APOLLO PROGRAM

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### Preface

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When future generations review the history of the twentieth century they will judge humanity's movement into space, with both machines and people, as one of its most important developments. Even at this juncture the compelling nature of space flight, and the activity that it has engendered on the part of many peoples and governments, makes the U.S. civil space program a significant area of investigation. People from all avenues of experience and levels of education share an interest in, if not always an attraction to, the drama of space flight. No doubt the lunar landing of Apollo 11 in the summer of 1969 is the high point of this continuing drama.

Although President John F. Kennedy had made a public commitment in 1961 to land an American on the Moon by the end of the decade, before this time Apollo had been all promise, and now the realization was about to begin. Its success was an enormously significant accomplishment coming at a time when American society was in crisis; if only for a few moments the world united as one to focus on the historic occasion.

Apollo 11 lifted off on July 16, 1969, and after confirmation that the hardware was working well began the three day trip to the Moon. Then, at 4:18 p.m. EST on 20 July 1969 the Lunar Module-- with astronauts Neil A. Armstrong and Edwin E. Aldrin--landed on the lunar surface while Michael Collins orbited overhead in the Apollo command module. After checkout, Armstrong set foot on the surface, telling millions who saw and heard him on Earth that it was "one small step for man--one giant leap for mankind." Aldrin soon followed him out and the two plodded around the landing site in the 1/6 lunar gravity, planted an American flag but omitted claiming the land for the U.S. as had been routinely done during European exploration of the Americas, collected soil and rock samples, and set up scientific experiments. The next day they launched back to the Apollo capsule orbiting overhead and began the return trip to Earth, "splashing down" in the Pacific on July 24.

This flight rekindled the excitement felt in the early 1960s during the first Mercury space flights, and set the stage for later Apollo landing missions. An ecstatic reaction circled the globe, as everyone shared in the success of the mission. Ticker tape parades, speaking engagements, public relations events, and a world tour by the astronauts served to create good will both in the U.S. and abroad. Five more landing missions followed through December 1972, three of them using a lunar rover vehicle to travel in the vicinity of the landing site, but none of them equalled the excitement of Apollo 11.

During and since the completion of the Apollo 11 landing twenty-five years ago numerous books, studies, reports, and articles have been written about the project. This selective, annotated bibliography discusses primarily those works judged to be most essential for researchers seeking to learn more about the Apollo program's varied history. It should be noted that the word "selective" is judiciously chosen here; the works listed below do not begin to exhaust the list of those that could have been included. A complete

bibliography of books and articles on lunar science alone would at least double the size of the present bibliography. It should also be noted that many of the works included below are not recommended to researchers but are included here to give them a sense of some relevant titles that they may not wish to consult. A thematic arrangement of material concerning the project will, it is hoped, bring clarity and simplicity to such a complex subject. Any such division is necessarily somewhat arbitrary, but subjects include Apollo and its precursors, the race with the Soviets, the Apollo decision, Apollo technology, operations (including coverage of specific missions and reference works dealing with lunar photography, for want of a better place to put the latter), popular culture and promotion of spaceflight, science, the astronauts, and the management of the Apollo program, with a section on juvenile literature at the end. Along with a summary of the contents of each item, judgments have been made on the quality, originality, or importance of some of these publications. An index concludes this work.

Many people assisted in producing this compilation. Lee D. Saegesser, ably assisted by William S. Skerrett and Jennifer M. Hopkins, was instrumental in obtaining many of the documents listed below, and the three of them selected the photos that appear in the bibliography and on its cover; J.D. Hunley compiled roughly half of the entries, then edited and critiqued the text; Patricia Shephard typed portions of the manuscript; the staffs of the NASA Headquarters Library and the Scientific and Technical Information Program provided expert assistance in locating bibliographical materials; Martin Manning of the United States Information Agency provided a copy of a USIA report; and the NASA Headquarters Printing and Design Center developed the layout and handled printing. Special thanks go to Dr. Joseph N. Tatarewicz who provided a great deal of information for the entries in Chapter 7 on Science.

This is the second publication in a new series of special studies prepared by the NASA History Office. The Monographs in Aerospace History series is designed to provide a wide variety of studies relative to the history of aeronautics and space. This series' publications are intended to be tightly focused in terms of subject, relatively short in length, and reproduced in an inexpensive format to allow timely and broad dessimination to researchers in aerospace history. Suggestions for additional publications in the series are welcome.

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#### **General Works**

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Alexander, T. "The Unexpected Payoff of Project Apollo." Fortune. 80 (July 1969): 114-117, 150, 153-154, 156. Written before the first lunar landing, this article argues that Project Apollo had already restored the damaged selfesteem of the United States, its original purpose. It had also developed techniques for managing thousands of individuals from government, universities, and the private sector to achieve a fixed goal, and it appeared to have achieved that goal for very nearly the cost projected at the outset of the project. The article goes on to discuss NASA's project management system that yielded so successful an outcome.

Anderton, David A. Man in Space [also entitled America in Space/The First Decade]. Washington, DC: NASA EP-48, 1968. This pamphlet contains information on Mercury, Gemini, and Apollo, launch vehicles, test vehicles, astronauts, pressure suits, and space medicine, but it treats each subject in overview fashion.

Andrews, John Williams. A.D. Twenty-One Hundred: A Narrative of Space. Boston: Branden Press, 1969. This is an epic poem of Project Apollo. It contains a foreword by Walter Cronkite who concluded that Williams had turned the space "experience into meaningful felt reality, as Housman made us feel springtime in Shropshire, or Frost, wintertime in Vermont." Apollo in its Historical Context. Washington, DC: The George Washington University Space Policy Institute, 1990. See under Logsdon, John M. "Apollo Midstream." Astronautics and Aeronautics. 3 (April 1965): 26-80. Features include: Joseph F. Shea, "The Approach to Apollo," 26-29; Roy F. Brissenden, "LEM Docking in Lunar Orbit," pp. 30-32; Dale D. Myers, "Apollo Spacecraft--on the Mark," pp. 38-45; Jack G. Gavin, Jr., "LEM Design Evolution," pp. 46-51; Owen G. Morris, "Apollo Reliability Analysis," pp. 52-59; Max Faget, "Apollo--The Long View," pp. 60-63; William E. Stoney, Jr., "The Designer Faces Up to Long Mission," pp. 64-69; Willard F. Libby, "Science and Manned Spacecraft," pp. 70-75; and Dean N. Morris, "Third Manned Space Flight Meeting," pp. 76-80.

Ashworth, William B. The Face of the Moon: Galileo to Apollo, an Exhibition of Rare Books and Maps, October 13, 1989-February 28, 1990. Kansas City, MO: Linda Hall Library, 1989. This exhibition catalog shows "how the face of the moon has been variously delineated [over the centuries] as telescopes improved, new inventions such as photography were applied, and ultimately, as space travel led humankind to the very surface of the moon."

Benedict, Howard; Morse, Ralph; and Glenn, Christopher. "Full-Court Press: Apollo Meets the Media." Air and Space/Smithsonian. 4 (June/July 1989): 82-89. Three members of the media who covered Apollo and earlier space and missile efforts discuss their recollections of the American space efforts in the late 1950s and the 1960s.

Benson, Charles D. and Faherty, William Barnaby. Moonport: A History of Apollo Launch Facilities and Operations. Washington, DC: National Aeronautics and Space Administration SP-4204, 1978. An excellent history of the design and construction of the lunar launch facilities at Kennedy Space Center. Of Moon- port, a reviewer in the Journal of American History said in 1979, "The authors had access to official documents, letters, and memoranda, and they have apparently consulted all the relevant historical, technological, and scientific secondary materials...all the involved historians obviously spent considerable time studying and intellectually digesting technical reports and manuals in order to give their lay readers such lucid accounts of highly complex procedures and opera- tions...it is important to public knowledge to have professionally trained historians employ historical methods to explain significant events and place them in a meaningful historical context. Here is a broad lesson...that contemporary society can ill afford to ignore."

Bockstiegel, Karl-Heinz. Editor. Manned Space Flight. Cologne: Carl Heymanns Verlag, 1993. This collection of papers delivered at the Institute of Air and Space Law's international colloquium on human spaceflight in May 1992 is not specifically about Apollo but includes information about Apollo missions and an extensive bibliography.

Booker, Peter Jeffrey; Frewer, G.C.; and, Pardoe, G.K.C. Project Apollo: The Way to the Moon. New York: American Elsevier Pub. Co., 1969. A popular and readable account prepared in anticipation of and released just after the Apollo 11 mission in 1969, this book condenses the essential details of 10 years of American space activities into a short narrative. It begins with a discussion of the enormous growth of NASA and the entire space effort in the early 1960s and ends with speculation on future developments in human exploration of the Solar System. Bradbury, Ray. "An Impatient Gulliver Above our Roofs." Life. 24 November 1967, pp. 31-37. 9 color photos. Story by Ray Bradbury on assignment for Life at the Manned Spacecraft Center in Houston and his impressions of the Saturn 5 launch.

Brian, William L., II. Moongate: Suppressed Findings of the U.S. Space Program, the NASA-Military Cover-up. Portland, OR: Future Science Research Pub. Co., 1982. As the title suggests, this is a sensationalistic expos, arguing that "the true circumstances surrounding the Apollo missions and related discoveries were carefully suppressed from the public." The author claims that far from NASA's space program being a civilian effort as advertised, "the military had almost complete control over it and...many NASA findings were withheld from the public." The title of Chapter 10, "Evidence of Extraterrestrial Interference in the Space Program," will suggest the highly speculative and tenuous tenor of the book, much of which is guite technical, to boot. Lightly footnoted with references alike to scholarly sources and The National Enquirer, the work should be consulted with great caution by those without a solid grounding in space history and technology.

Brueton, Diana. Many Moons: The Myth and Magic, Fact and Fantasy of Our Nearest Heavenly Body. New York: Prentice Hall Press, 1991. An excellent discussion of the Moon in human legend, lore, science, and popular culture.

Bruno, Leonard C. "We have a sporting chance": The Decision to go to the Moon, An Exhibition at the Library of Congress, July 16-September 16, 1979. Washington: Library of Congress, 1979. This catalog for the tenth anniversary

exhibit commemorating Apollo 11 provides an overview in narrative and photos of the background to the mission that carried out President Kennedy's pledge in 1961 to land Americans on the Moon within the decade and return them safely to Earth. Also included is a retrospective reflection on the mission. A good overview with excellent photographs.

Burgess, Eric. Outpost on Apollo's Moon. New York: Columbia University Press, 1993. This heavily illustrated new book argues that employing Apollo hardware on the Moon could permit permanent settlements that would benefit science, humanity, and business. Contains an evaluation of the successes and failures of Apollo as well as how they could be adapted to today's needs.

Burrows, William E. Exploring Space: Voyages in the Solar System and Beyond. New York: Random House, 1990. This journalistic account covers Apollo only in passing but has intelligent things to say about it.

Butler, S.T., and Messel, H. Editors. Apollo and the Universe: Selected Lectures on the U.S. Manned Space Flight Program and Selected Fields of Modern Physics and Cosmology. New York: Pergamon Press, 1968. Most of this small but not short book has nothing to do with Apollo, but the first lecture, "Space Rocketry and a Man on the Moon," by NASA Associate Administrator for Manned Space Flight George E. Mueller devotes a chapter to the Mercury and Gemini programs and another to Apollo as it had evolved until 1968.

Chamberland, Dennis. "Splashdown!" Proceedings of the U.S. Naval Institute. 115 (1989): 36-43. Covers the evolution

of spacecraft recovery techniques from Mercury through Apollo.

Chappell, Russell E. Apollo. Washington, DC: National Aeronautics and Space Administration, 1974. Heavy on spectacular photographs, this is an overview not only of Apollo through the lunar landing in July 1969 but also Mercury and Gemini before it.

Chester, Michael, and McClinton, David. The Moon: Target for Apollo. New York: Putnam, 1963. Illustrated with photos and line drawings by Robert Bartram. A pre-Apollo 11 account of what humans learned about the Moon from the third century B.C. to the lunar probes (Pioneer through Ranger).

Closets, Francois de. La lune est ... vendre; essai. Paris: Denoel, 1969. Entitled in English "the Moon is for sale; essay," this little book provides readers of French some thoughtful reflections on humanity's conquest of lunar space.

Collins, Michael. Liftoff: The Story of America's Adventure in Space. New York: Grove Press, 1988. This book, a general history of the U.S. space program for a popular audience written by one of the three participating astronauts in the Apollo 11 flight. He begins with an account of that flight, then flashes back to the post- World War II beginnings of the United States' interest in space and traces the evolution of the space program through the founding of the National Aeronautics and Space Administration (NASA) in 1958 and its launching of the Mercury and Gemini programs to the history of the Apollo program itself. These sections account for roughly two-thirds of the book, with the remainder taking the story of U.S. space exploration through Skylab to the Challenger accident and the prospects for space efforts as they looked in the late 1980s.

Cooke, Hereward Lester, with the collaboration of Dean, James D. Foreword by J. Carter Brown. Preface by Thomas O. Paine. Eyewitness to Space: Paintings and Drawings Related to the Apollo Mission to the Moon Selected, with a Few Exceptions, from the Art Program of the National Aeronautics and Space Administration (1963 to 1969). New York: H.N. Abrams, 1971. A collection of 258 paintings and drawings in reproduction, created by a variety of artists ranging from Norman Rockwell to Chesley Bonestell. A magnificent and variegated collection.

Cortright, Edgar M. Editor. Apollo Expeditions to the Moon. Washington, DC: NASA SP-350, 1975. This largeformatted volume, with numerous illustrations in both color and black and white, contains essays by numerous luminaries ranging from NASA administrator James E. Webb ("A Perspective on Apollo") to astronauts Michael Collins and Edwin E. Aldrin, Jr. ("'The Eagle Has Landed'"). By no means a scholarly work, this collection consists rather of the recollections of participants and one correspondent (Robert Sherrod). Among the perspectives offered are those of Robert R. Gilruth on engineering, Wernher von Braun on Saturn, George M. Low on the spaceships, Christopher C. Kraft on mission control, Samuel C. Phillips on the shakedown cruises, and George E. Mueller on "Getting It All Together."

The Early Years: Mercury to Apollo-Soyuz. Washington, DC: National Aeronautics and Space Administration, 1988.

This 14-page information summery contains brief accounts of projects Mercury, Gemini, Apollo, Skylab, and Apollo-Soyuz with appendices about manned spacecraft and launch vehicles.

Fairley, Peter. Man on the Moon. London: Arthur Barker Limited, 1969. Yet another popular, undocumented account published soon after Apollo 11's conclusion, this volume covers not only that mission but the background to it, the Apollo 204 fire, and the missions yet on the agenda. It also discusses the race with the Soviets.

Freeman, Marsha. How We Got to the Moon: The Story of the German Space Pioneers. Washington, DC: 21st Century Associates, 1993. The author of this book tries to make the German emigrees who came to the United States with Wernher von Braun in 1945 the central force behind the success of Project Apollo. Freeman traces all spaceflight ideals and imagination to a German group formed by Hermann Oberth and Willy Ley and including Wernher von Braun, among others, in the first part of the twentieth century, who created the U.S. space program and the "glory" of Apollo. In so doing, she concentrates on such ancillary stories as the development of the V-2 by von Braun's "rocket team" for Germany in World War II, totally ignoring the contributions of other people and nations to the overall space effort.

Fries, Sylvia D. NASA Engineers and the Age of Apollo. Washington, DC: NASA SP-4104, 1992. This book is a sociocultural analysis of a selection of engineers at NASA who worked on Project Apollo. It analyzes the manner in which different personalities, perspectives, backgrounds, and priorities came together to inform the direction of NASA during the 1960s. The author makes extensive use of oral history in this study, providing both a significant appraisal of NASA during its "golden age" and important documentary material for future explorations.

Furniss, Tim, "One Small Step"--The Apollo Missions, the Astronauts, the Aftermath: A Twenty Year Perspective. Somerset, England: G.T. Foulis & Co., 1989. Developed for a retrospective celebration on the twentieth anniversary of the lunar landing, this book tries to recreate the exhilaration of the Apollo missions.

Gregory, William H. "Project Apollo in Retrospect." In Ordway, Frederick I., III and Liebermann, Randy. Blueprints for Space: Science Fiction to Science Fact. Washington, DC: Smithsonian Institution Press, 1992. Pp. 155-65. Provides a good, brief overview of the entire Apollo program from background through inception to its completion with the splashdown of Apollo 17 on 19 December 1972. It covers the major management decisions, technological achievements, and political contexts as well as providing perspective on the program from the vantage point of two decades after the events. Also includes a brief bibliography.

Hallion, Richard P., and Crouch, Tom D. Editors. Apollo: Ten Years Since Tranquility Base. Washington, DC: Smithsonian Institution Press, 1979. This is a collection of essays developed for the National Air and Space Museum, commemorat- ing the tenth anniversary of the first landing on the Moon, July 20, 1969. It consists of sixteen articles, mostly written directly for the National Air and Space Museum by a variety of experts, that range from Roger E. Bilstein's overview entitled, "The Saturn Launch Vehicle Family," to Kerry M. Jo‰ls' "Apollo and the 'Two Cultures'." Other contributions by such luminaries as John M. Logsdon; Frederick C. Durant, III; Farouk El-Baz; and Rocco A. Petrone, not to mention the two editors, attempt to set the Apollo missions in historical perspective and to explain such matters as operational support, the command and service modules, the lunar module, and the Apollo space suit. Dominick A. Pisano has provided a selective bibliography at the conclusion of the volume.

Hechler, Ken. Toward the Endless Frontier: History of the and Technology, Committee on Science 1959-1979. Washington, DC: U.S. House of Representa- tives, 1980. This lengthy tome contains the best account to date of Congressional Apollo, wrangling over Project and demonstrates the bipartisan nature of both Apollo support and opposition.

Hirsch, Richard, and Trento, Joseph John. The National Aeronautics and Space Administration. New York: Praeger, 1973. A popularly written overview of the agency in Praeger's Library of U.S. Government Departments and Agencies, this critical but by no means scholarly account offers one chapter and scattered other references to Apollo.

Holmes, Jay. America on the Moon. Philadelphia: L.B. Lippincott, 1962. This popular account without scholarly apparatus provides an early look at the Apollo program and its background. Useful for its perspective on how Apollo in its beginnings looked to one investigator.

"How An Idea No One Wanted Grew Up To Be the LEM." Life. 14 March 1969, pp. cover, 20-27. 8 color photos, 1 color painting, 4 B&W sketches. A fascinating look at the evolution or the Lunar Excursion Module. Also discusses how the lunar rendezvous scheme was picked.

Hoyt, Edwin P. The Space Dealers: A Hard Look at the Role of Business in the U.S. Space Effort. New York: The John Day Co., 1971. This book describes the intricate interrelationships between government organizations such as NASA and the aerospace industry. Not specifically focused on Apollo, it uses that program as a test case in looking at the larger question of government/industry relations.

Hurt, Harry, III. For All Mankind. New York: Atlantic Monthly Press, 1988. Another attempt, really quite a lame one by a correspondent for Newsweek, to provide a compelling and convincing narrative of Project Apollo.

Kane, Francis X. "The NASA Program." Air University Review. 14 (Winter- Spring 1962-3): 189-204. This undocumented article by an Air Force officer discusses especially Air Force support for NASA programs, including but not focussing exclusively on Mercury, Gemini, and Apollo.

Kaysing, Bill and Reid, Randy. We Never Went to the Moon: America's 30 Billion Dollar Swindle. Cornville, AZ: Desert Publications, 1981. This curious and cheaply-puttogether compilation concludes without documentation or real evidence that "THE TRIP TO THE MOON WAS A HOAX"-to use the typography as well as the words in the authors' conclusions. Hardly definitive!

Knight, David C. Compiler. American Astronauts and Spacecraft: A Pictorial History from Project Mercury through