



## From the Chief Historian



As promised in our last newsletter, you will find a detailed report on our October 2012 history symposium “Solar System Exploration @ 50” in this issue. That article was written by one of our interns, Kelly Victor French. Writing articles is just one of the many things that our interns do for the NASA History Program. We also put them to work in our book production process in a variety of ways and depend on them to enhance our social media work (notably on Twitter and iTunes U). In fact, we toss all kinds of assignments at our interns, and they continue to surprise us with their ingenuity, skill, and speedy response. They have also been invaluable in lending a hand with wider NASA activities like our Inauguration Open House and NASA Social in January. One of the unexpected pleasures of my job is the opportunity to work with such energetic and talented students and then see what they accomplish after their time with us. As I tell each of them when they leave, “You are a member of the NASA history family now—don’t forget to write home.”

Of course, one of the pleasures that I did expect was to work with an incredible team of NASA history professionals. Both here at NASA Headquarters and at the NASA Centers, a phenomenally dedicated group of archivists and historians make what you see here in this newsletter, in our books and monographs, and online possible. We are also supported by a wide variety of other skilled professionals who do everything from designing our e-books to keeping our archival collections cool and dry. The next time

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## “Solar System Exploration @ 50” Symposium

By Kelly Victor French, NASA History Intern

In December 1962, Mariner 2 approached the planet Venus. Mariner 2 had no eyes (cameras), but it had other senses (instruments) that its human creators did not have. On 14 December, the spacecraft came within about 22,000 miles, or about 35,000 kilometers, of the planet and reported its findings to scientists on Earth. Mariner told scientists of Venus’s hot and dense atmosphere with a highly carbon dioxide composition; it did not tell of a magnetic field because there was not one to be found.

In today’s world, the story of a spacecraft providing data from another world does not sound very original. Spacecraft have been traveling to other planets and recording details of their alien environments for 50 years now. But when Mariner 2 surveyed Venus, no other humanmade object had done so before. It was the first successful interplanetary flyby.

The feat by Mariner 2 and the subsequent successes and failures of planetary exploration were cause for celebration and discussion in October 2012. The “Solar System Exploration @ 50” symposium was held at Lockheed Martin’s Global Vision Center 25–26 October and was hosted by the NASA History Program Office, NASA’s Science Mission Directorate, the National Air and Space Museum, and the Jet Propulsion Laboratory (JPL).

The event featured six panels with question-and-answer sessions and three keynote speeches, which covered a plethora of topics, including the

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you chuckle at one of our tweets or are thrilled by something you read in one of our books, join me in being thankful for the many people whose efforts are essential in bringing NASA history to you.

Godspeed,



William P. Barry  
Chief Historian

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“Solar System Exploration @ 50” Symposium (continued)

political implications of space exploration, institutional arrangements, and public perception.

Fifty years of planetary exploration offered a wealth of material for discussion. The symposium began at 8:30 a.m. with a brief introduction by the NASA Chief Historian, Bill Barry, followed by opening remarks by the vice president and general manager for civil space at the Lockheed Martin Space Systems Company, James H. Crocker.

Crocker’s inspiring speech described his own love for space and the importance of motivating young people. It should not be terribly difficult to get children mesmerized by space because, as Crocker put it, they absolutely love “dinosaurs and rovers.” Crocker’s message was clear: The importance of inspiration could not be emphasized enough. It is a fundamental component of all exploration, and it is vital to the perpetuation of space exploration. This theme was not only present in Crocker’s opening comments, but resurfaced again and again throughout the panels and speeches.

The first keynote speaker, Peter Westwick (University of Southern California), began his talk by lauding the triumphant landing of the Curiosity rover on Mars. He likened the Mars Science Laboratory rover to a second bookend at the end of 50 years of planetary exploration history; Mariner 2 and its success would be the first bookend. Westwick filled the space in between with the social, cultural, technical, and political history of exploration. His talk—aptly titled “Exploring the Solar System: Who Has Done It, How, and Why?”—provided answers to those questions, supplied a succinct and passionate history, and looked toward the future of planetary exploration.

For the first panel, “Politics and Policy in the Conduct of Solar System Exploration,” Dwayne Day (National Research Council) was the first to speak. The historical parameters of his presentation preceded the Mariner 2 milestone. He spoke of the development of the Space Science Board in 1958, which was created before NASA. He also noted that the success of Explorer 1 was heralded at the National Academy of Sciences rather than at a military institution. An intriguing note, given that the technology for a successful rocket is essential missile technology. The crux of Day’s presentation, the role of science in NASA and questions surrounding the value of the decadal survey, resurfaced again throughout the panel and the two-day event.

At the close of the first panel, participants briefly dispersed, but no one scattered too far, however, because of the lunchtime keynote address by James L. Green, director of the Planetary Science Division of NASA's Science Mission Directorate, who discussed the intersection of science and history. "NASA literally invented planetary science," he put forth. The history of planetary exploration may seem jumbled, but he said, there is a methodical approach: "flyby, orbit, land, rove, sample return." Green spoke of the accomplishments and the surprises scientists have learned from planetary missions. Science data, he suggested, are only just beginning to flow into the archives.

After highlighting the history of 50 years of planetary science, Green noted that the prospect of a sample return mission in the near future. Sample return did not escape skeptics, however; Mikhail Marov (Keldysh Institute) questioned whether the sample return was even necessary.

The topic of sample return was an appropriate segue to the second panel, "The Lure of the Red Planet." The method of planetary exploration enumerated by Green was echoed in the panel's first presentation, "Mars after 50 Years of Planetary Exploration: Then, Now, and Beyond," by Richard W. Zurek, the JPL Mars Office chief scientist.



James L. Green gave the symposium's keynote address.

The talk covered the history of the evolution of Mars as perceived by humans. It started with the Mars of fiction—which was thought to be a watery, canal-speckled world with plants and even civilization—and shifted to a Moon-like environment and on to the ever-nuanced Mars of today. Building on the themes presented in Dr. Green's speech and the Zurek talk, David Grinspoon discussed considerations for human exploration of the Red Planet, and Erik M. Conway (JPL) elaborated on the pursuit of a Mars sample return. W. Henry Lambright (Syracuse University) covered the differing approaches to Martian exploration under different NASA administrators.

Panel three, "Public Perceptions, Priorities, and Solar System Exploration," was a departure from the previous discussions. Public perceptions of solar system exploration were mentioned by Westwick and Zurek, but this panel explored the topic in greater depth. Linda Billings (George Washington University) gave a detailed account of the confusion surrounding the discovery of *Streptococcus Mitis* on

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## “Solar System Exploration @ 50” Symposium (continued)

the Surveyor 3 camera after Apollo 12 astronauts retrieved it from the Moon. Billings’s detailed historical analysis explored how scientific misunderstanding can arise and be left unsettled for many years. The audience also was treated to an overview of the public perception of asteroids and the public response and awe to the planetary escapades of Voyager. Asteroids, Laura Delgado Lopez (Institute for Global Environmental Strategies) posited, are only frightening in films. “Voyager was once a bringer of whimsical images and discoveries, the news of which graced the covers of many a newspaper,” said Giny Cheong (George Mason University).

The 50th anniversary of the Mariner 2 flyby could have afforded much more than two days of conversation. As a celebratory accent and a means to encourage further conversation, the first day of the “Solar System Exploration @ 50” symposium concluded with a reception hosted by Lockheed Martin.

The second and final day of the symposium opened with a keynote speech featuring two speakers, Wesley T. Huntress from the NASA Advisory Committee and Mikhail Marov. Huntress’s portion of the talk peered into the history of robotic Soviet planetary missions before 1996. The Soviets had many successful lunar missions, including a sample return and the first lunar rover; they also landed on and photographed the Venusian surface with Venera 7. When it came to Mars, however, they were not so fortunate. Marov tackled the latter part of the presentation and spoke of Russian solar system exploration since 1996. Keeping in step with the presentations of the previous day, Marov spoke about the future of the Russian space program on science. “Rumors on my death are too exaggerated,” uttered Marov, paraphrasing Mark Twain to explain that the Russian program is still alive and ready to reengage in planetary exploration.

Huntress and Marov set the tone for the day with their presentation on the history of Soviet/Russian planetary exploration. Many of the presentations that followed noted the degree of international cooperation in solar system exploration. The title of the fourth panel, “Exploring the Outer Solar System,” might not lead one to think that international cooperation would make much of an appearance in the presentations of the panel. The solar system is a big place, though, and it takes many eyes and minds to explore it. For example, the popular and still-going Cassini-Huygens mission to Saturn is an international cooperative effort involving NASA; the European Space Agency (ESA); and the Italian space agency, Agenzia Spaziale Italiana (ASI); as well as several separate European academic and industrial contributors. The struggles and ultimate triumphs of the collaboration were the subject of Arturo Russo’s (University of Palermo) presentation.

“Institutional Arrangements in Solar System Exploration” was the title of the fifth panel. J. D. Burke (JPL) gave the first presentation. Burke, the project manager for the Ranger mission, discussed the Ranger spacecraft as precursors for Mariner. Burke explained how the experience of the Rangers and Mariners helped to form the thinking about solar system exploration at JPL. Panel five also returned the unofficial theme of that Friday with talk about the sometimes conflicted but often positive experiences of international partnerships.

The “Solar System Exploration @ 50” symposium closed not with a final panel, but with the roundtable “From the Past to the Future.” Led by noted space historian Andy Chaikin, the discussion of and reflection on the success of Mariner 2 also was a moment to celebrate and contemplate, to think on the past, and to apply that experience to future planetary exploration.

We have 50 years of precedent. We can apply it to sample return and human exploration of Mars; we can apply it to our robotic adventures in the outer solar system; and we can even utilize that experience in how we tackle exploration beyond the bounds of our solar system.

## News from Headquarters and the Centers

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### NASA Headquarters

#### History Program Office

By Bill Barry

The History Program wrapped up 2012 with a flurry of activity. Not only did we cohost the very successful “Solar System Exploration @ 50” symposium in late October, but we also published a new monograph in late November and a new book in late December. You can read the summary report on the symposium elsewhere in this newsletter, but I’d like to note here that it was a remarkable pair of days. Bringing historians and social scientists together with engineers (particularly the engineers responsible for the history being studied) can be a tricky thing. But I think all participants had an enlightening time and left with a better appreciation and understanding of their colleagues.

On the publications front, I was particularly delighted to bring our historical monograph series full circle with the publication in late November of Monographs in Aerospace History, no. 49, *Toward a History of the Space Shuttle: An Annotated Bibliography, Part 2, 1992–2011*. Those of you who have been fans of the History Program for a while may remember that the very first monograph, published some 20 years ago, was *Toward a History of the Space Shuttle: An Annotated Bibliography*, written by Roger Launius (my predecessor) and Aaron K. Gillette. Roger began the monograph series to provide a wide variety of short studies with a tight subject focus that could be produced quickly and inexpensively. With the Space Shuttle Program coming to a close in 2011, we commissioned our friends in the Federal Research Division of the Library of Congress to research and write an annotated bibliography that would close the gap between the material covered in monograph number 1 and the end of the Space Shuttle Program. I think they did a great job. Our colleagues in the Communication Support Services Center (CSSC) here at Headquarters also did a fabulous job of creating a beautiful print

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News from Headquarters and the Centers (continued)

edition, an e-book version, and also a nested set of PDFs (that you can find on <http://history.nasa.gov>) that connect monographs 1 and 49 together.

Our final publication for 2012 is one that has been in the pipeline for quite a while. *NASA at 50: Interviews with NASA's Senior Leadership* began with a set of interviews of NASA leaders prior to the 2008 election. Edited by my immediate predecessor, Steve Dick, and Johnson Space Center's Rebecca Wright and Sandra Johnson, the manuscript got caught in a rather embarrassing production backlog (one that we are still working on). Nonetheless, the perspectives of these senior leaders, some of whom are still working at NASA and others not, remain surprisingly relevant to our current challenges. As part of our cost-saving measures, we produced this book in both hard cover and soft cover, e-book and PDF versions. As always, the e-book and PDF versions are available for free download at the NASA e-book site (<http://www.nasa.gov/connect/ebooks/index.html>) and the History Program publications page (<http://history.nasa.gov/series95.html>). The book was released the day after Christmas, and it appears that it was a popular download with people who received a new notepad or e-reader for the holidays.

With the release of "NASA at 50" in December, we finished the year with total of seven new publications. These included two monographs and five books. Of the books, three of them were released in electronic version (PDF) only. Demand for print copies of *Aeronautics and Astronautics: A Chronology* and *NASA Historical Data Books* did not warrant print copies of the newest editions to these publications. Due to the format, especially for the *Data Books*, these are particularly expensive volumes to print. To make the best use of the publishing funds, we have decided to post the chronologies for 2008 and 2009, as well as *Data Book* volume VIII online. (The chronology for 2010 is in development.)

For 2013, we have a number of interesting books in the publishing queue for you. The first one you will see is *NASA's First A*, an overview of aeronautics research at NASA by Rob Ferguson. We also have a very interesting book by Doug Vakoch called *Archaeology, Anthropology and Interstellar Communication*. If you are like me, that title probably leaves you scratching your head. But, trust me, it is a fascinating book. We also have our third book in our societal impact series coming this year. *Historical Studies in the Societal Impact of Spaceflight* is a set of case studies on everything from public opinion to integrated circuits and even NASA and the environmental movement.

As always, the amazing History Program Office staff continues to respond to questions, build and protect our reference collection, expand our online presence, stimulate the study of aerospace history, and communicate about NASA's vibrant history in an incredible variety of ways. Volunteers continue to be an important part of how we get so much done. We have been particularly blessed with many great interns. In spring 2013, we are lucky to have Kelly Victor French (back for a second term with us) and Michelle Dailey. They are both students at Georgetown who bring enormous enthusiasm and energy to our day-to-day work. We have a lot to do in 2013, but we are off to a great start.

## Historical Reference Collection

By Jane Odom

In the Headquarters Archives, the staff continues to stay busy with reference services and processing projects. During the last quarter, we hosted an average of a dozen people per month who came in person to the History Office to conduct research. We had research visits by current NASA Headquarters staff and retirees, as well as those from Goddard Space Flight Center, Kennedy Space Center, Marshall Space Flight Center, the National Air and Space Museum, the National Research Council, George Washington University, the Massachusetts Institute of Technology, Syracuse University, the University of Chicago, and the Oklahoma Historical Society.

A number of archive projects are either under way or have been completed recently that researchers will find of interest. The processing (arrangement, description, and preservation) of several collections is complete. These include a small Office of Education Collection containing Teacher in Space and Educator in Space materials, 1985–2003; a Discovery Program Collection, 1987–2005; and a Public Outreach Collection donated by a longtime, former staffer who handled astronaut appearances and significant anniversary events, 1970–2011. Additionally, a detailed finding aid has been prepared for oral history audio tapes found in the Robert Sherrod Apollo History Collection, and the scanning has been completed for a collection of reading files, 1998–2005, from the Inventions and Contributions Board. The review of boxes on loan from the Federal Records Center continues with material recently being added to the Historical Reference Collection from boxes containing Pioneers 10 and 11, Pioneer Venus items from the 1970s, and Space Station materials from 1986 to 1989.

Additionally, an effort is ongoing to capture born-digital press kits for NASA missions and congressional testimony. These will be uploaded to our internal database and will, in time, be made available externally for research use at <https://mira.hq.nasa.gov/history/>.

Recent acquisitions include a small collection of material on the Neil Armstrong memorial service held at the National Cathedral and an 8-cubic-foot collection of material on spinoff technology.

## Ames Research Center (ARC)

By Glenn Bugos

Friends and staff of the National Full-Scale Aerodynamics Complex (NFAC), the world's largest wind tunnel, celebrated the 25th anniversary of the dedication of the 80-by-120-foot test section. The ceremony took place 25 years to the day after the initial dedication on 11 December 1987. Of course, the original full-scale tunnel was the 40-by-80-foot test section of the NFAC, which opened for testing almost seven decades ago in 1944. The NFAC is now leased by the U.S. Air Force Arnold Engineering Development Complex, and because it occurred during a meeting of the facility users group, the celebration was well attended by

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## News from Headquarters and the Centers (continued)

officers of the U.S. Army and U.S. Air Force who partner with NASA in advancing aerodynamic research. Ames historian Jack Boyd started by reflecting on the importance of research, both large scale and slow speed, in the intellectual life of the Center. He showed, by contrast, a tiny model of the sort he used to test at high speeds. Speakers followed from NASA, the Army, and the Air Force, who remarked on the incredible utility of this unique national asset in supporting helicopter research, green aviation, and fundamental research in computational fluid dynamics. Afterwards, visitors were treated to extensive tours of the test sections and a rotorcraft test rig, as well as of static displays of a UH-60L helicopter and an MV-22 Osprey tilt-rotor aircraft. The forerunners of each of these rotorcraft were tested extensively in the NFAC. Visitors also could enjoy some interesting historical items, including a reprint of the brochure distributed in 1987, visitor tags from both then and now, and facsimile commemorative envelopes. Of course, Ames History Office resources were well utilized. Bill Warmbrodt, chief of the Ames Aeromechanics Branch and godfather of the event, presented two public lectures of the history of the tunnel, well attended by local school children. In an adjacent room was the refurbished 1/50th scale model of the NFAC used to test airflows before construction began. All told, the event provided an excellent opportunity to reflect on the intellectual challenges of low-speed flight, on the importance of cooperation among the many federal agencies involved in aeronautics, and to the importance of well-designed facilities as the meeting places where this work happens.

At the conference on “Solar System Exploration @ 50” in October, Glenn Bugos presented a paper on “Precursor Missions: The Science of What Comes Next.” He outlined when the notion of precursor missions grew more salient in NASA planning, how the notion forges common dialogue between historians looking backwards in time and policymakers looking forward, and how the notion tied planetary sciences to human exploration and to dreams of solar system settlement.

Archivist April Gage completed the finding aid for the NASA Ames Artifacts Collection, 1939–2009, to supplement the item-level catalog records (<http://oac4.cdlib.org/findaid/ark:/13030/c8mc90mc/>). The 645 items in our artifact collection have begun to attract interest from museums around the world. Intern Jack Doran completed processing the Planetary Atmosphere Experiments Test (PAET) Flight Project Binders, 1970–1971 (0.35 cubic feet), digitized a portion of the collection, and completed a finding aid (<http://oac4.cdlib.org/findaid/ark:/13030/c8br8rkz/>). The PAET was the precursor of a successful series of planetary atmosphere probes.

The dedication plaque for Arnold Park reads: “Henry Harley ‘Hap’ Arnold (1886–1950) was an air power visionary, Commanding General of the U.S. Army Air Forces during World War II, and a founder of the U.S. Air Force. Arnold built a strong American air force on a core of research and engineering. Arnold served on the Main Committee of the National Advisory Committee for Aeronautics (the predecessor of NASA) from 1938 to 1946, and strongly advocated for this Ames laboratory on this site spanning the cities of Sunnyvale and Mountain View. Seeing the value of advanced aircraft, Arnold also advocated for new aerospace research facilities, opened in 1951 in Tullahoma, Tennessee and named in his honor as the Arnold Engineering Development Complex. This Park is dedicated to

Arnold to recognize the enduring ties between the NASA Ames Research Center and the U.S. Air Force and all American military services.”



As part of the NFAC 25th anniversary rededication ceremony, a small park was opened to welcome future visitors before they embark on tours of the NFAC. Dale Ormond of the Army Research, Development, and Engineering Command; Brigadier General Arnold Bunch of the Air Force Test Center; and Thomas Irvine of the NASA Aeronautics Research Mission Directorate cut the ribbon.



Colonel Raymond G. Toth of the U.S. Air Force Arnold Engineering Development Complex; Pete Worden of NASA Ames; and Bill Lewis of the U.S. Army Aviation and Missile Research, Development, and Engineering Center unveiled the rededication plaque, alongside the original dedication plaque, on a beautifully sunny day.

News from Headquarters and the Centers (continued)

## Dryden Flight Research Center (DFRC)

By Christian Gelzer

In November, Christian Gelzer began serving as a member of the Technical Advisory Panel to the California Science Center's Samuel Oschin Air and Space Center, home of the Space Shuttle Endeavour and a forthcoming expansive and interactive educational center. In February, he spoke at Irvine Valley College (IVC) on Dryden's history and current work, as part of IVC's Distinguished Academic Lecture Series.

Peter Merlin spent most of a busy quarter completing a draft manuscript for *A New Twist in Flight Research: The F-18 Active Aeroelastic Wing Project*, which describes a joint NASA-USAF-Boeing exploration of the feasibility of using advanced aeroelastic design and control law software to improve aircraft maneuverability. The manuscript has completed the peer-review process and is now undergoing export control review. Merlin also approved the final layout and cover for *Crash Course: Lessons Learned from Accidents Involving Remotely Piloted and Autonomous Aircraft* (NASA SP-2013-600), which is scheduled for release on 14 February. *Crash Course* is a companion to *Breaking the Mishap Chain* (NASA SP-2011-594). Both volumes provide the basis for a number of recent and future technical papers and presentations before the Aerospace Medical Association, Society of Flight Test Engineers, and others, including safety briefings for Naval Test Wing—Patuxent River (where he will speak in the spring) and NASA Dryden. During the final quarter of 2012, Merlin oversaw distribution of more than 800 copies of *Breaking the Mishap Chain* to such organizations as the Society of Experimental Test Pilots, the USAF Test Pilot School, the Air Force Test Center, the Society of Flight Test Engineers, Embry-Riddle Aeronautical University, the AIAA China Lake Chapter (where he was asked to speak), the U.S. Naval Museum of Armament and Technology, and the International Council of Air Shows. He also supported Dryden Public Affairs activities for the final ferry flight of Space Shuttle Endeavour, and answered various information requests from internal and external customers including the National Air and Space Museum Library and Archive, the San Diego Air and Space Museum, the USAF Test Pilot School, the NASA Office of Inspector General, and others.

## Glenn Research Center (GRC)

By Anne Mills

A formal book release and book-signing event was held 19 November in honor of Bob Arrighi's new book, *Pursuit of Power: NASA's Propulsion Systems Laboratory 1 and 2*. Arrighi presented to a full house a brief history of the facility, including newly digitized and rarely seen footage of the facility's early days. From 1952 until 1972, the Propulsion Systems Laboratory (PSL) was the Agency's most powerful facility for testing full-scale engines at simulated flight altitudes. The facility's original test chambers, known as PSL Nos. 1 and 2, were first used to study the increasingly powerful jet engines of the early 1950s and the ramjets for missile programs such as Navaho and Bomarc. With the advent of the space program in

the late 1950s, the facility was used to study complex rocket engines, including the Pratt & Whitney RL-10 that was used to power the Centaur rocket and Saturn I upper stages. More information about the history of the Propulsion Systems Laboratory can be found at our PSL Web site at <http://pslhistory.grc.nasa.gov/>.

Monographs in Aerospace History can be ordered at no charge by sending a self-addressed stamped envelope to the NASA Information Center (NASA Headquarters, 300 E Street SW, Suite 1N24, Washington, DC 20546).

Ordering information and a PDF version of the book can be found at <http://history.nasa.gov/series95.html#monographs>. An e-book version of *Pursuit of Power* is also available in both e-pub and mobi formats at this Web site: [http://www.nasa.gov/connect/ebooks/pursuit\\_power\\_detail.html](http://www.nasa.gov/connect/ebooks/pursuit_power_detail.html).



Bob Arrighi signed copies of his latest book, *Pursuit of Power*.

## Jet Propulsion Laboratory (JPL)

By Erik Conway

This month marked the 50th anniversary of the first successful planetary mission, Mariner 2. The event gained some media pickup (though not quite as much as the Mayan Apocalypse that didn't happen), and I spent a good bit of his time responding to media requests. The anniversary received a particularly nice treatment from National Public Radio, which produced a segment on "All Things Considered" on 14 December and published a companion article available at <http://www.npr.org/2012/12/14/167211913/50-years-after-first-interplanetary-probe-nasa-looks-to-future>.

I presented a history of Mars sample-return efforts at the annual History of Science Society meeting in San Diego and the "Solar System Exploration @ 50" symposium in Washington, DC, during October and November. The DC trip also afforded me the opportunity to finally review the 1960s-era Surveyor program

News from Headquarters and the Centers (continued)

manager's records in Maryland at the Suitland Federal Records Center and at the National Archives, College Park. I will resume work on that project after January of this year.

We've completed episode four of our documentary series on JPL history, "The Changing Face of Mars." At 87 minutes, it covers the Viking missions and Mariners 4, 6, 7, and 9. It will premiere at Caltech's Beckman auditorium in late January. Next up will be the Mariner Venus/Mercury spacecraft (a.k.a. Mariner 10) and the Voyager missions.

Finally, the Mars exploration history will move into the next phase of review, International Traffic in Arms Regulations (ITAR) clearance, in January. Stay tuned!

## Johnson Space Center (JSC)

By Rebecca Wright

The history team at Johnson Space Center recently completed work on a project that will result in a new publication titled *First Fifty Years: Johnson Space Center*.

The book is scheduled for release by the Arcadia Publishing Company, a publisher located in South Carolina, established in 1993. The company is best known for its Images of America series that captures "small slices of hometown history" to detail American life in pictorial format. The book on the Houston-based NASA Center will be included in its Images of Aviation series that celebrates the history of flight. The publisher boasts more than 8,000 titles.

The JSC project started as an idea shared between the History Office and the External Relations Office to commemorate the 50th anniversary of the space center. From the million-plus images in the JSC repository, 194 photos were selected to tell the story of the past five decades. The pictorial history features six chapters:

- 1960s: Before This Decade Is Out...
- 1970s: Changing the Face of Space Exploration
- 1980s: Reusable and Lands Like a Plane
- 1990s: Forging Partnerships
- 2000s: Continual Presence in Space
- 2010s: Halfway to Everywhere

From the JSC History Office, Rebecca Wright, Sandra Johnson, Dr. Jennifer Ross-Nazzari, and Rebecca Hackler researched, wrote, and edited the text. Eliza Johnson from the JSC Imagery Repository was instrumental in the photo selection. Perry Jackson of Graphics and Publications and Warren Harold from Photo Operations also assisted. Jeannie Aquino coordinated the book project for the JSC External Relations Office.

The 127-page book was dedicated to the thousands of individuals who provided the nation an avenue to space and set a path for future generations to carry the legacy forward.

## Marshall Space Flight Center (MSFC)

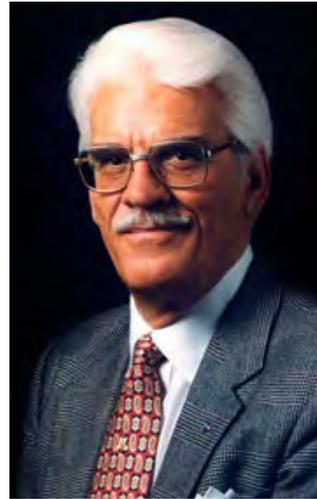
### Huntsville Space Enthusiasts and Others Will Miss Jesco von Puttkamer

By Mike Wright

Historians and others at the NASA Marshall Space Flight Center were saddened to hear of the passing of Jesco Freiherr von Puttkamer on 27 December.

An ardent advocate of human space exploration, von Puttkamer began work at the Marshall Center in 1962 and was a close associate of Dr. Wernher von Braun, Marshall's first Center Director.

Even after his transfer to NASA Headquarters in 1974, von Puttkamer frequently visited the Marshall Center and promoted the history of Huntsville and Marshall's role in the space program. Von Puttkamer often shared his recollections of his work with von Braun. In Huntsville, he helped conduct historical tours and presented papers at local conferences and public speaking events.



Jesco von Puttkamer

Von Puttkamer was also the author of *Space For Mankind's Benefit* (NASA SP-313), which documented proceedings of a space congress held 15–19 November 1971 at Huntsville.

He also worked with Gene Roddenberry as a technical advisor to Paramount Pictures for the first *Star Trek* motion picture, contributing, among else, the hypothetical theory behind the faster-than-light space warp drive and the promotional slogan "Space—The Human Adventure Is Just Beginning."

He was born 22 September 1933 in Leipzig, Germany, and became a United States citizen in 1967. He later became a NASA manager involved in the use of long-range planning of deep space human exploration and other programs, such as the International Space Station and the Space Shuttle.

## Stennis Space Center (SSC)

By Daphne Alford

An online anthology of NASA's John C. Stennis Space Center Oral History Collection is the latest project of the history office. Twenty-one oral histories offer historical recollections of former and current employees as well as members of the community. These include remembrances of the Apollo and Space Shuttle programs, Hurricane Katrina, and the Stennis Space Center's 50th anniversary.

News from Headquarters and the Centers (continued)



Virginia Seal Wagner, fourth from right, talked about this excursion on the Doris M., the Seal family boat, during her oral history interview. Pictured from left are Mr. and Mrs. Donald Suter; Wernher von Braun's sister-in-law; Fred Wagner; Mr. and Mrs. Stanton (Dallas); Wernher von Braun's father, Magnus, from Germany; Wernher von Braun's wife, Maria; Wernher von Braun; Virginia Wagner; Jack Thompson (Gulfport); and Capt. and Mrs. William Fortune. This photo was taken 26 October 1964, when Wernher von Braun and his family arrived by boat at the Mississippi Test Facility (now Stennis Space Center) during a vacation to the Gulf Coast.

Memories shared in four oral history interviews generated feature stories that span 50 years at Stennis. Stories from children of three pioneer leaders share perspectives on their fathers' vital roles during the formative years of the space center in Hancock County, Mississippi. Another feature focuses on the Kellar family matriarch and four of her six children, all of whom have worked at Stennis. A family-ties feature showcases the 22-member Thigpen family, which is reaping the benefits of a promise Senator John C. Stennis made in the 1960s that those who sold their land to make way for the rocket engine test facility would create jobs available to their families and others for generations.

The Web-based collection features photos of oral history interviewees, along with vintage photos that help visually convey the message. The entire Stennis Space Center Oral History Collection is located within the history office. The collection of about 60 oral histories features a diverse group of former residents; former community leaders: former Center Directors; roundtable discussions; a historian; and retired, former, and current employees.

A section for videos will be added to the collection in the future. For the online version of the Oral History Collection, go to <http://www.nasa.gov/centers/stennis/about/history/oral-history.html>.

# “Solar System Exploration @ 50” Oral Histories

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**By Tom Shortridge, Associate Producer, National Institute of Aerospace**

On 25 and 26 October 2012, the NASA History Program Office, NASA's Science Mission Directorate, the National Air and Space Museum, and the Jet Propulsion Laboratory hosted a symposium to mark the 50th anniversary of planetary exploration. The event was held at the Lockheed Martin Global Vision Center in Arlington, Virginia, and is available in its entirety at NASA's YouTube channel.

My production partner Scott Bednar and I had the good fortune to attend the event, even though our focus was not the panels and presentations in the auditorium. Our goal, at the direction of Kristen Erickson (Science Mission Directorate), was to capture on video oral histories of attendees and get their unique perspectives on the first 50 years of exploration of the solar system.

Often, when we capture oral histories or conduct interviews for video productions, our subjects are initially apprehensive. The combination of lights, camera, and microphones has a tendency to silence even the most outgoing of people. But our approach, to treat these interviews as conversations, seems to assuage those nerves, and soon their passion spews forth. Many times, a once-nervous interviewee finds it more difficult to *stop* talking than it was for them to *start*.

We spoke at length with nearly a dozen symposium attendees on a variety of topics. It's always interesting, in these oral histories, to go “off-book.” History texts are wonderful at what they do: providing statistics, dates, and facts. But while they are a great resource for such objective information, they cannot begin to capture the feelings, the emotions, or the things that almost happened. They cannot provide the human perspective, and that's why it's so important to preserve the memories and experiences of the people who lived these events, who can fill in the stories all the way to the margins.

When you consider the vast numbers of people who have contributed to planetary exploration, the few we were able to speak to seem insignificantly miniscule. But even still, we have encountered connections among them that would not have been obvious. Senior engineers assisted in the development of rockets that would go on to launch the missions that were organized and operated by senior program staff whose discoveries would inspire youngsters to become the current generation of scientists and journalists.

One of the most intriguing stories was told by Frederick Ordway III. As a child, his interest in spaceflight was inspired by pulp sci-fi comics and novels. After his graduate education, he worked with Wernher von Braun in developing rockets. Through connections from this work, he became close friends with Arthur C. Clarke, an acclaimed science fiction author. And through that friendship, he met filmmaker Stanley Kubrick and became a technical advisor for the film

“Solar System Exploration @ 50” Oral Histories (continued)

*2001: A Space Odyssey*, which has inspired countless more youngsters to follow in Ordway’s footsteps and pursue space as a career.

Our other interviews were no less interesting and awe-inspiring. From the director of planetary science who was able to salvage elements of the Grand Tour missions and repurpose them into the Voyagers, to the journalists inspired by space exploration who now write about space and advise NASA, to program managers of missions that are currently gearing up to launch, the vast breadth of individuals and experiences that make up the planetary science community are vital to its operation and success.

Clips from these oral histories will be used in our next episode of *NASA 360*, as we take a look at the past 50 years of solar system exploration and where we might be headed in the next 50 years. The subjects of our oral history recordings were excited, we’re excited—and we hope you are, too.

*NASA 360 is an award-winning 30-minute television show available on the NASA TV channel, online at <http://www.nasa.gov/nasa360/>, and through social media outlets, including YouTube, Twitter, and Facebook.*

## Other Aerospace History News

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### National Air and Space Museum (NASM)

Roger Launius (Space History Division) has published “Venus-Earth-Mars: Comparative Climatology and the Search for Life in the Solar System,” *Life* 2, no. 3 (2012): 255–273. Both Venus and Mars have captured the human imagination during the 20th century as possible abodes of life. Venus had long enchanted humans—all the more so after astronomers realized it was shrouded in a mysterious cloak of clouds permanently hiding the surface from view. It was also the closest planet to Earth, with nearly the same size and surface gravity. These attributes brought myriad speculations about the nature of Venus, its climate, and the possibility of life existing there in some form. Mars also harbored interest as a place where life had or might still exist. Seasonal changes on Mars were interpreted as due to the possible spread and retreat of ice caps and lichen-like vegetation. A core element of this belief rested with the climatology of these two planets, as observed by astronomers, but these ideas were significantly altered, if not dashed, during the Space Age. Missions to Venus and Mars revealed strikingly different worlds. The high temperatures of Venus dashed all hope of life, and while hopes for Venus as an abode of life ended, the search for evidence of past life on Mars, possibly microbial, remains a central theme in space exploration. This survey explores the evolution of thinking about the climates of Venus and Mars as life-support systems, in comparison to Earth.

Launius also wrote two tributes to Neil Armstrong: “Do You Know Me? The Legacy of Neil Armstrong,” *Space News* (3 September 2012): 19; “Neil Armstrong (1930–2012),” *Nature* 489, no. 7416 (20 September 2012): 368.

Cathleen Lewis (Space History) gave a paper in the workshop “Sounds of Space” in Berlin on 30 November and 1 December. The workshop was held under the auspices of the Friedrich-Meinecke-Institut at the Freie Universität Berlin. Dr. William R. Macauley, the Emmy Noether Research Associate at the institute, organized the workshop under the direction of Alexander C. T. Geppert. The workshop brought together historians, anthropologists, musicians, and others to discuss the much-neglected field of audio experience of space, both real and imagined.

Valerie Neal (Space History), who has the recently acquired Space Shuttle Discovery in her collection, joined curators of the three other Space Shuttles at the “AIAA Space 2012” symposium in Pasadena, California, in August. Dryden historian Cam Martin organized the panel to present plans for the orbiters’ display and preservation.

Michael Neufeld (Space History) spoke at the “Peenemünde 2020” symposium at the Historisch-Technisches Museum Peenemünde in September on “Exhibiting the V-2 in Museums: A Global Comparison.” In October, he presented the paper “Transforming Solar System Exploration: The Applied Physics Laboratory and the Origins of the Discovery Program, 1989–1993” in the “Solar System Exploration @ 50” symposium. He gave a revised version of the paper at the History of Science Society Annual Meeting in San Diego in November. He recently published “The Three Heroes of Spaceflight: The Rise of the Tsiolkovsky-Goddard-Oberth Interpretation and Its Current Validity,” *Quest* 19, no. 4 (2012): 4–13. He is currently editing *Spacefarers: Images of Astronauts and Cosmonauts in the Heroic Age of Spaceflight* (forthcoming, Smithsonian Institution Scholarly Press, 2013), which contains some of the papers from the April 2011 NASA history conference “1961/1981.”

The journal *History and Technology* (edited by Martin Collins, Space History) published a special issue entitled “Rethinking the Space Age: Astroculture and Technoscience,” 28, no. 3 (2012). Organized by Alexander Geppert, Freie Universität Berlin, the issue includes an introduction by Geppert and the following articles:



“Sounds of Space” workshop participants gathered for a group photo.

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## Other Aerospace History News (continued)

- Daniel Brandau, “Cultivating the Cosmos: Spaceflight Thought in Imperial Germany”;
- Robert Poole, “The Challenge of the Spaceship: Arthur C. Clarke and the History of the Future, 1930–1970”;
- William R. Macauley, “Crafting the Future: Envisioning Space Exploration in Post-War Britain”;
- James Farry and David A. Kirby, “The Universe Will Be Televised: Space, Science, Satellites and British Television Production, 1946–1969”; and
- Geppert, “Extraterrestrial Encounters: UFOs and the Quest for Transcendence in the European Space Age, 1947–1970s.”

In addition, the issue includes a regular feature of the journal called “Images, Technology, and History,” which, too, may be of interest, and contains Ryan Edgington, “An ‘All-Seeing Flying Eye’: V-2 Rockets and the Promises of Earth Photography.”

The NASA-sponsored “Moving Beyond Earth” exhibition has continued to extend its reach in 2012 with some very dynamic programming in the gallery at NASM. In July, NASM held its second Student Spaceflight Experiments Program (SSEP) two-day symposium. Teen scientists from all over the country apply to have their experiments flown in space, and the selected communities come to present their experiments in a conference-style setting. July also saw the 50th anniversary of the Telstar Satellite. NASM collaborated with the French Embassy and Globecast to commemorate the first international satellite broadcasts by connecting (via satellite) to the Telecommunications Museum in Pleumeur-Bodou, France. This program was also streamed live over the Web. NASM’s Early Childhood Education department collaborated with local puppet theater company, Pointless Theater, to produce the “Solar System Puppet Show,” a big hit with the kids. In November, the “Moving Beyond Earth” gallery hosted its most ambitious program yet—“Student Scientists Connect with ISS Astronauts.” NASA routinely facilitates a “downlink” from the International Space Station (ISS) to an audience of kids, who get the opportunity to ask ISS astronauts questions about their experiences. NASM partnered with the National Center for Earth and Space Science Education (NCESSSE) to connect 24 of its associated communities around the United States and Canada to the Museum via videoconferencing, in addition to questions from the gallery. NASA TV used NASM’s broadcast capability to present the program live on their network. Between the Vidyo participants, NASM Ustream live Web cast, and the NASA TV channel and Web streams, we reached more than 13,000 viewers live.

### **Frederick Ordway Receives 2012 Space Pioneer Award**

Frederick I. Ordway III received the National Space Society’s 2012 Space Pioneer Award for a lifetime of service to the space community at the 31st International Space Development Congress. The award honored his work with Wernher von Braun’s rocket team at the Army Ballistic Missile Agency on Redstone Arsenal in

the mid-1960s and serving as the lead science advisor on Stanley Kubrick's *2001: A Space Odyssey* (1968).

### **Society for History in the Federal Government Journal**

*Federal History Journal* 2013, an annual publication of the Society for History in the Federal Government, is now available online at <http://shfg.org/shfg/publications/federal-history-journal/>. For a printed copy, join or renew your membership at <http://shfg.org/shfg/membership/joinrenew/>. This issue features articles exploring the development of the federal government.

The journal now welcomes manuscript submissions for its 2014 edition. For more information about submission guidelines, visit online at <http://shfg.org/shfg/publications/federal-history-journal/submission-guidelines/> or e-mail the editor at [editor-shfg-journal@shfg.org](mailto:editor-shfg-journal@shfg.org).

## Creating a Democracy of Books...and an Oligarchy of Readers

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**By Guillaume de Syon, Albright College**

*The NASA History Program Office thanks Dr. de Syon for sending in a rebuttal to the "E"-Prepared for History article by Casper Uhl, published in volume 29, no. 2-3 of News and Notes. Please note that this article represents the author's opinions, and we will continue to welcome responses for any of our content to the newsletter editor at [giny.cheong@nasa.gov](mailto:giny.cheong@nasa.gov).*

In the combined second-and-third-quarter issue of the NASA History Program newsletter, Casper Uhl offered his enthusiastic support for e-publishing, arguing in particular for the ease of transmission of information to younger generations as well as the cost reduction such a program deserves. By contrast, Uhl cast the opposition to such programs as a vote for nostalgia. As a historian who relishes books in all forms and welcomes the clearing of shelf space to preserve domestic peace, I am delighted to see new e-books appear. Although I have access to all the NASA publications through a local federal government repository, the option of accessing out-of-print work right on my desktop has proven useful in the context of my research. I should thus echo Uhl's argument.

I find that I cannot, for reasons ranging from the supposed stability of the e-book format to the need for public access to information. Everything I see tells me we are rushing into the technology for the sake of a small number of readers, overlooking a majority of people of lesser means who may welcome the opportunity to read a paper book on aerospace technology at their public library.

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## Creating a Democracy of Books...and an Oligarchy of Readers (continued)

Let me address format first. Uhl offers a convincing summary of the advantages of e-books: so long as the basic format (PDF or HTML) is untouched, any number of platforms can decode it and make it legible. This assumes, however, that operating systems are stable, too. Does anyone recall a certain shift to OSX? All of us Mac aficionados religiously reinstalled OS9 alongside the new operating beast so that we could read older files. By 2005, however, as new machines entered the fray, OS9 often fell by the wayside. I still find files of saved Web pages that are no longer readable. I am now dependent on the goodwill of a mirror site that may or may not have archived the old HTML pages.

Let us assume, however, that new technologies spawning x.x versions of themselves remain readable. They will be big and claim substantial disk and operating space, and only a few will be able to operate these. Simply put, e-books do not agree with a developing world. In theory, they should, especially through a public domain portal. Even when setting aside political considerations, the time needed to download a file is substantial in many communities the world over. Many scholars at non-Western universities note that even a small PDF can take 20 minutes to load, and the university-supplied computers do not have the capacity to open big files. Getting a paper publication still makes a difference. Places that would benefit most from access to Western materials thus find themselves cut off or at least restricted from such an opportunity. Yet the problem exists at home, too.

E-booking everything may not be such a nice idea even in the name of cost savings. Publishers encourage me to assign e-textbooks, and they make a good case. These cost up to 80 percent less than the printed version. However, they also cease to be accessible after a few months, or they cannot be transferred to another reader (which is normal). I have not assigned any of these yet. The socio-economic background of my students is so varied that it ranges from the iPad-savvies all the way to adults who use the local public library to go and type their papers there. Assigning even a public domain NASA e-book would not work out for my classes. I find the old reserve system still works better to ensure fair access for all. I had high hopes of adopting an e-format for teaching, but it weakens the opportunity to learn for many who cannot afford the technical support.

Thus, the argument that public domain e-books are universally accessible is a strong exaggeration. In fact, paper books are about far more than nostalgia or art; they are about maintaining a community of learning. Boot up a six-year-old human brain with reading techniques. The basic code is now in to read anything on paper. Whether the material is understood is not the issue: it is the access granted that counts. E-books have not reached that stage of accessibility.

I am, in fact, reminded of Joseph M. Jacobson at the MIT Media Lab who noted in a 1988 interview to the *New York Times* that had books “been invented after the computer, they would have been considered a big breakthrough. Books have several hundred simultaneous paper-thin, flexible displays. They boot instantly. They run on very low power at a very low cost.” Although this statement may be challenged a quarter of a century later, it is worth remembering it and considering its implications before transitioning to an all–e-book environment.

# Recent Publications and Online Resources

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## NASA Publications

*NASA at 50: Interviews with NASA's Senior Leadership*, edited by Rebecca Wright, Sandra Johnson, and Steven J. Dick. This book is a result of many oral history interviews conducted with NASA senior management on the occasion of NASA's 50th anniversary on 1 October 2008. Available online in various e-book formats for download at [http://www.nasa.gov/connect/ebooks/nasa\\_at\\_50\\_detail.html](http://www.nasa.gov/connect/ebooks/nasa_at_50_detail.html).

*Toward a History of the Space Shuttle: An Annotated Bibliography Part 2, 1992–2011*, compiled by Malinda K. Goodrich, Alice R. Buchalter, and Patrick M. Miller of the Federal Research Division, Library of Congress. This annotated bibliography continues the first *Toward a History of the Space Shuttle: An Annotated Bibliography*, published in December 1992. (Available online as a PDF at [http://www.nasa.gov/pdf/708235main\\_Shuttle\\_Bibliography\\_1-ebook.pdf](http://www.nasa.gov/pdf/708235main_Shuttle_Bibliography_1-ebook.pdf).) This volume includes key articles, books, hearings, and U.S. government publications published on the Shuttle between 1992 and the end of the Shuttle Program in 2011. Available online in various e-book formats for download at [http://www.nasa.gov/connect/ebooks/shuttle\\_bibliography\\_2\\_detail.html](http://www.nasa.gov/connect/ebooks/shuttle_bibliography_2_detail.html).

The “Solar System Exploration @ 50” symposium is available to watch online at NASA's (NASATElevision) YouTube channel at <https://www.youtube.com/playlist?list=PL2aBZuCeDwIQjy1HMISL5-1W92Wcu3jU>.

The NASA History Program Office iTunes U site contains free multimedia downloads for important moments, activities, and figures in NASA history. New items include Surveyor and Mariner materials. Search for “NASA History Program Office” in iTunes or use the following link: <http://go.nasa.gov/ROuL7D>.

## NASA Aeronautics

By Tony Springer

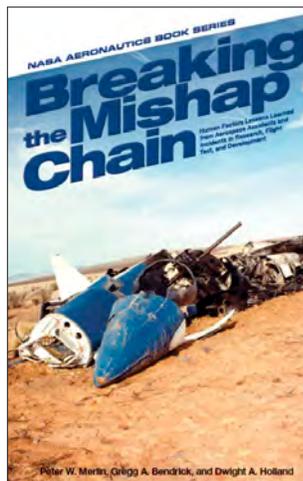
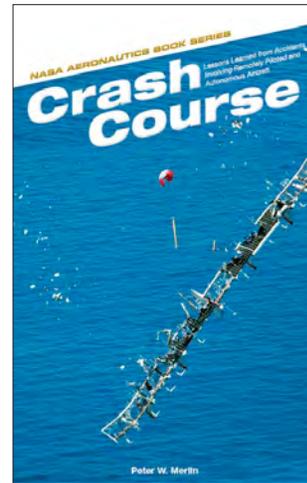
NASA Aeronautics will be releasing its latest volume in the NASA Aeronautics book series this Valentine's Day. The aptly named volume, *Crash Course*, is sure to be the gift of choice this year. All kidding aside, it should be an interesting read for all involved in uncrewed aerial vehicles. In other book news, due to its high demand, *Breaking the Mishap Chain* is being reprinted and should be available about the same time. *Breaking* was the featured review in the last issue of *Air and Space Magazine*. If you missed it, the award-winning volumes, *Coming Home* and *Dressing for Altitude*, were released last fall. Short summaries are provided below:

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## Recent Publications and Online Resources (continued)

*Crash Course: Lessons Learned from Accidents Involving Remotely Piloted, and Autonomous Aircraft*, by Peter W. Merlin (SP-2013-600):

The following investigation of Remotely Piloted Research Vehicle/Unmanned Aircraft Systems (RPRV/UAS) mishaps will examine their causes, consequences, resultant corrective actions, and lessons learned. Most undesired outcomes usually do not occur because of a single event but rather from a series of events and actions involving equipment malfunctions and/or human factors. The information provided should be of use to flight-test organizations, aircraft operators, educators, and students, among others. These lessons are not unique to the UAS environment and are also applicable to human aviation and spaceflight activities. Common elements include crew resource management, training, mission-planning issues, management and programmatic pressures (e.g., schedule, budget, resources), cockpit/control station design, and other factors.



*Breaking the Mishap Chain: Human Factors Lessons Learned from Aerospace Accidents and Incidents in Research, Flight Test, and Development*, by Peter W. Merlin, Gregg A. Bendrick and Dwight A. Holland (NASA SP-2011-594):

This volume contains a collection of case studies of mishaps involving experimental aircraft, aerospace vehicles, and spacecraft in which human factors played a significant role. In all cases, the engineers involved, the leaders and managers, and the operators (i.e., pilots and astronauts) were supremely qualified and by all accounts superior performers. Such accidents and incidents rarely resulted from a single cause but were the outcome of a chain of events in which altering at least one element might have pre-

vented disaster. As such, this work is most certainly not an anthology of blame. It is offered as a learning tool so that future organizations, programs, and projects may not be destined to repeat the mistakes of the past. These lessons were learned at high material and personal costs and should not be lost to the pages of history.

E-book available online at [http://www.nasa.gov/connect/ebooks/break\\_mishap\\_chain\\_detail.html](http://www.nasa.gov/connect/ebooks/break_mishap_chain_detail.html).

*Coming Home: Reentry and Recovery from Space*, by Roger D. Launius and Dennis R. Jenkins (NASA SP-2011-593):

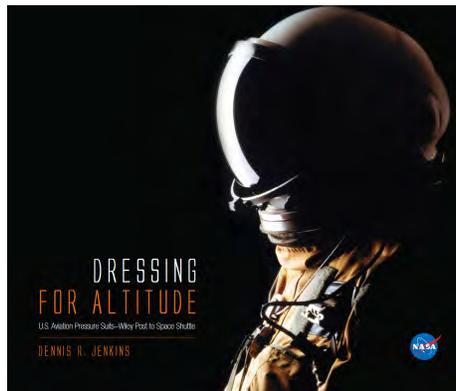
The technologies for the reentry and recovery from space might change over time, but the challenge remains one of the most important and vexing in the rigorous efforts to bring spacecraft and their crews and cargo home successfully. Returning to Earth after a flight into space is a fundamental challenge, and contributions from the NASA Aeronautics Research Mission Directorate in aerodynamics, thermal protection, guidance and control, stability, propulsion, and landing systems have proven critical to the success of the human spaceflight and other space programs. Without this base of fundamental and applied research, the capability to fly into space would not exist.



E-book available online at [http://www.nasa.gov/connect/ebooks/coming\\_home\\_detail.html](http://www.nasa.gov/connect/ebooks/coming_home_detail.html).

*Dressing for Altitude: U.S. Aviation Pressure Suits—Wiley Post to Space Shuttle*, by Dennis R. Jenkins (SP-2011-595):

Since its earliest days, flight has been about pushing the limits of technology and, in many cases, pushing the limits of human endurance. There have been a number of books written on the subject of spacesuits, but the literature on the high-altitude pressure suits is lacking. This volume provides a high-level summary of the technological development and operational use of partial- and full-pressure suits, from the earliest models to the current high-altitude, full-pressure suits used for modern aviation, as well as those that were used for launch and entry on the Space Shuttle. *Dressing for Altitude* is designed to provide the history of the technology and to explore the lessons learned through years of research in creating, testing, and utilizing today's high-altitude suits. This richly illustrated coffee-table book, which weighs almost 7 pounds, does not skimp on the technical details in order to provide the reader the large format photos and diagrams on the development and use of pressure suits. It can be easily stated that this is the definitive work on pressure suits to date.



E-book available online at [http://www.nasa.gov/connect/ebooks/dress\\_for\\_altitude\\_detail.html](http://www.nasa.gov/connect/ebooks/dress_for_altitude_detail.html).

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## Recent Publications and Online Resources (continued)

Current plans are to release the following additional volumes this year in the Aeronautics book series:

- *Quieting the Boom: The Shaped Sonic Boom Demonstrator and the Quest for Quiet Supersonic Flight*, by Lawrence R. Benson (NASA SP-2013-601)
- *Thinking Obliquely: Robert T. Jones, the Oblique Wing, NASA's AD-1 Demonstrator, and its Legacy*, by Bruce I. Larrimer (NASA SP-2013-602)
- *Sweeping Forward into the Future: Developing and Flight Testing the Grumman X-29A Forward Swept Wing Research Aircraft*, by Frederick A. Johnsen (NASA SP-2013-603)

## Commercially Published Works

Compiled by Chris Gamble

*Last Launch: Discovery, Endeavour, Atlantis*, by Dan Winters and Al Reinert (University of Texas Press, November 2012). This book is a photographic tribute to America's Space Shuttle Program. Dan Winters was one of only a handful of photographers to whom NASA gave close-range access to photograph the last launches of Discovery, Atlantis, and Endeavour. Positioning automatically controlled cameras at strategic points around the launch pad—some as close as 700 feet—he recorded images of takeoffs that captured the incredible power and transcendent beauty of the blast that sent the Shuttle hurtling into space. The author also takes us on a visual tour of the Shuttle as a marvel of technology—from the crew spaces with their complex instrumentation, to the massive engines that propelled the Shuttle, to the enormous vehicle assembly building where the Shuttles were prepared for flight.

*Asian Space Race: Rhetoric or Reality?* by Ajey Lele (Springer, July 2012). This book explores the character and contours of the Asian space powers. At present, Asian states like China, Japan, and India are investing in space technologies with similar social and scientific and possible military intents. Other Asian states like Israel, South Korea, and Malaysia are also making investments in the space arena, while states like Iran and North Korea are faulted for using space launches as a demonstration tool to achieve strategic objectives. Explaining why and how these states are making investments toward achieving their socioeconomic and strategic mandates, this book explores the possibility of an Asian space race.

*The International Atlas of Mars Exploration: The First Five Decades: Volume 1, 1953 to 2003*, by Philip J. Stooke (Cambridge University Press, September 2012). Covering the first five decades of the exploration of Mars, this atlas is the most detailed visual reference available. It brings together, for the first time, a wealth of information from diverse sources, featuring annotated maps, photographs, tables, and detailed descriptions of every Mars mission in chronological order, from the dawn of the Space Age to Mars Express.

*Hubble's Universe: Greatest Discoveries and Latest Images*, by Terence Dickinson (Firefly Books, September 2012). This book will be the premier venue for the Hubble

Telescope's most recent visual splendors, made possible by the new Wide Field Camera 3. The author showcases extraordinary late-breaking pictures and presents a breathtaking portfolio drawn from an archive of over 500,000 existing Hubble images. Combined with hundreds of brilliant images, the text includes facts and tidbits balancing accuracy with accessibility.

*Commercial Space Industry: Manufacturing, Suborbitals and Transportation*, edited by Steve O. Freeman and Kimberly I. Butler (Nova Science Publishers, Inc., September 2012). The commercial space industry has a manufacturing component and a services component. This book focuses on the global commercial space-manufacturing sector (launch vehicles, spacecraft, satellites, and parts and equipment). The space industry also builds space ports, ground stations, and ground equipment. Together, the space-and-ground infrastructure enables a much larger space services sector that includes satellite telecommunications and broadcasting services and satellite remote sensing. The space industry, broadly defined, is an important part of the U.S. industrial and technology base.

*1950s "Rocketman" TV Series and Their Fans: Cadets, Rangers, and Junior Space Men*, edited by Cynthia J. Miller and A. Bowdoin Van Riper (Palgrave Macmillan, September 2012). The heyday of the televised *Rocketman* came before our actual travels in space occurred and was a burgeoning time in TV history. The 14 essays featured here focus on series such as Space Patrol, Tom Corbett, and Captain Z-Ro, exploring their roles in the day-to-day lives of their fans through topics that include mentoring, promotion of the real-world space program, merchandising, gender issues, and ranger clubs—all the while promoting the fledgling medium of television.

*History of Rocketry and Astronautics, Volume 38*, edited by Anthony M. Springer, American Astronautical Society (AAS) History Series, vol. 38, International Academy of Astronautics (IAA) History Symposia, vol. 27 (AAS/Univelt, Inc., 2012). These are the proceedings of the 41st History Symposium of the International Academy of Astronautics, Hyderabad, Andhra, India, 2007.

*Space Strategy in the 21st Century: Theory and Policy*, edited by Eligar Sadeh (Routledge, November 2012). This book identifies a number of areas of concern pertinent to the development of national space strategy, including intellectual foundations; political challenges; international cooperation and space governance; space assurance; and political, organizational, and management aspects specific to security space strategy. The contributing authors expand their focus beyond that of the United States, and they explore and analyze the international developments and implications of national space strategies of Russia, China, Europe, Japan, India, Israel, and Brazil.

*International Space Station: 1998–2011 (all stages) Owners' Workshop Manual*, by David Baker (Haynes Publishing, November 2012). The International Space Station (ISS) is a permanently Earth-orbiting complex where astronauts carry out research into a wide range of scientific activities. It comprises modules built in the United States, Russia, Europe, Japan, and Canada. The author examines how the ISS was built, the logistics modules and freighters operated by its user nations, how the ISS

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## Recent Publications and Online Resources (continued)

works as an integrated facility, life on board, what the ISS does, the research carried out, and who benefits.

*Planetfall: New Solar System Visions*, by Michael Benson (Abrams, October 2012). New, more powerful cameras in interplanetary spacecraft with greatly improved maneuverability have traversed the wheeling satellites of Jupiter; roamed the boulder-strewn red deserts of Mars; studied Saturn's immaculate rings; and shown us our own ravishing Earth, a blue-white orb with a disturbingly thin atmosphere. These new images are the subject of *Planetfall*, a truly revelatory book that uses its large page size to reproduce the greatest achievements in contemporary planetary photography as never before.

*Inventing the American Astronaut*, by Matthew H. Hersch (Palgrave Macmillan, October 2012). Who were the men who led America's first voyages into space? Soldiers? Daredevils? The public sometimes imagined them that way: military men or hotshot pilots without the capacity for doubt, fear, or worry. Instead, the early astronauts were something else: a new kind of "organization man," calm, calculating, and attuned to the politics and celebrity of the space race. Through archival documents, popular culture, and interviews with the astronauts, the book examines the origins of a new American profession and follows it through the last Moon landing and the creation of the Space Shuttle.

*LIFE Neil Armstrong 1930–2012: "That's one small step for a man, one giant leap for mankind."* by *Life* (October 2012). *Life's* commemorative tribute coverage of Neil Armstrong, from his boyhood years in Ohio, the space race, and the Apollo 11 mission to his life after the Moon landing.

*Near-Earth Objects: Finding Them Before They Find Us*, by Donald K. Yeomans (Princeton University Press, November 2012). Of all the natural disasters that could befall us, only an Earth impact by a large comet or asteroid has the potential to end civilization in a single blow. Yet these near-Earth objects also offer tantalizing clues to our solar system's origins and someday could even serve as stepping-stones for space exploration. In this book, the author introduces readers to the science of near-Earth objects—its history, applications, and ongoing quest to find near-Earth objects before they find us.

*Space Atlas: Mapping the Universe and Beyond*, by James Trefil (National Geographic, November 2012). Filled with lavish illustrations, this book is a grand tour of the universe. Three ever widening domains are presented—the planets, the stars in our own Milky Way, and the large-scale universe itself—each including the ones before it and extending outward. To conclude, two ultimate questions remain: How did the universe begin? How will the universe end? We trace our theories back to the first fraction of a second of the life of the universe and listen to the speculations of cosmologists about how it might all have started.

*Lunar Rover Manual: 1971–1972 (Apollo 15–17; LRV1-3 & 1G Trainer)*, by Christopher Riley, David Woods, and Philip Dolling (Haynes Publishing, December 2012). This manual describes a truly unique vehicle—part car, part spacecraft—from its uncertain gestation in the 1960s through its ultimate engineering design and build

challenges, to its extraordinary off-road drives through the rugged lunar highlands in the 1970s, when the lives of six human beings depended on it. The text focuses on the Lunar Rover's engineering, design, and operation and includes many technical drawings and stunning images from NASA's rich photographic archive.

*America's Space Sentinels: The History of the DSP and SBIRS Satellite Systems*, by Jeffrey T. Richelson (University Press of Kansas; 2nd expanded edition, November 2012). Originally published in 1999, the book focused on the emergence and evolution of the Air Force's Defense Support Program (DSP) satellite system, which came on line in 1970 and continues to perform at a high level. For this new edition, the author covers significant developments during the last dozen years relating to the deployment of these satellites, especially the struggles to develop and launch the follow-on Space-Based Infrared System (SBIRS), beginning in the late 1990s and continuing up to the present. The result is a book that remains the first and best source of information regarding these vital programs.

*Use of Extraterrestrial Resources for Human Space Missions to Moon or Mars*, by Donald Rapp (Springer-Praxis, November 2012). This book carries out approximate estimates of the costs of implementing ISRU (In Situ Resource Utilization) on the Moon and Mars. It is found that no ISRU process on the Moon has much merit. ISRU on Mars can save a great deal of mass, but there is a significant cost in prospecting for resources and validating ISRU concepts. Mars ISRU might have merit, but not enough data are available to be certain. In addition, this book provides a detailed review of various ISRU technologies.

*Commercial Spaceflight: Assessments, Challenges and Trends*, edited by Nathaniel J. Clements and Edison G. Hahn (Nova Science Publishers, Inc., June 2012). This book examines the commercial spaceflight industry with a focus on space tourism and commercial space transportation of NASA crews and cargo.

*Blast Off!: Rockets, Robots, Rayguns, and Rarities from the Golden Age of Space Toys*, by S. Mark Young, Steve Duin, and Mike Richardson (Dark Horse, reprint edition, November 2012). Back in print in softcover, this book chronicles the golden era of space toys, featuring hundreds of color photos of these beautiful and sometimes bizarre playthings, plus prototypes, original packaging and instructions, catalogs, advertisements, vintage comic-strip and pulp-magazine art, and more from every corner of the globe.

*High-Flying Women: A World History of Female Pilots*, by Alain Pelletier (Haynes Publishing, November 2012). In the early days of aviation, the decision to become a pilot was not one to be taken lightly. The women who embarked upon this adventurous career had to demonstrate boldness, dedication, and patience. This lavishly illustrated book covers all areas of aviation and traces the careers of female pilots all over the world, from the first woman to board a plane in 1908 to present-day astronauts and pilots. The book contains 400 photographs, thorough text (including over 50 biographies of the most significant high-flying women), and detailed appendices.

*Spacesuit—A History through Fact and Fiction*, by Brett A. Gooden (Tattered Flag, December 2012). This book follows the remarkable history of the spacesuit through

continued on next page

## Recent Publications and Online Resources (continued)

science fiction and fact. With an absorbing blend of drama and detail, Brett Gooden explains how this seemingly impossible dream gradually evolved into the complex suits of today and how the quest continues for the “Mars and beyond” suits of tomorrow.

*Picturing the Cosmos: Hubble Space Telescope Images and the Astronomical Sublime*, by Elizabeth A. Kessler (University of Minnesota Press, December 2012). In *Picturing the Cosmos*, the author examines the Hubble’s deep space images, highlighting the remarkable resemblance they bear to 19th-century paintings and photographs of the American West and their invocation of the visual language of the sublime. Drawing on art history and the history of science, as well as interviews with astronomers who work on the Hubble Heritage Project, Kessler traces the ways that the sublime, with its inherent tension between reason and imagination, not only forms the appearance of the images but also operates on other levels.

*To Touch the Face of God: The Sacred, the Profane, and the American Space Program, 1957–1975*, by Kendrick Oliver (The Johns Hopkins University Press, December 2012). *To Touch the Face of God* is the first book-length historical study of the relationship between religion and the U.S. space program. The author explores the role played by religious motivations in the formation of the space program and discusses the responses of religious thinkers such as Paul Tillich and C. S. Lewis. Examining the attitudes of religious Americans, Oliver finds that the space program was a source of anxiety as well as inspiration. It was not always easy for them to tell whether it was a godly or godless venture. Between 1969 and 1975, more than 8 million Americans wrote to NASA expressing support for prayer and Bible-reading in space. Oliver’s study is rigorous and detailed but also contemplative in its approach, examining the larger meanings of humanity’s first adventures in “the heavens.”

*The History Program Office gives sincere thanks to volunteer Chris Gamble, who compiles this section for us every quarter. Please note that the descriptions have been derived by Chris from promotional material and do not represent an endorsement by NASA.*

## Upcoming Meetings

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The 17th Annual International Space University (ISU) Symposium will be held **5–7 March 2013** in Strasbourg, France. Please see <http://www.isunet.edu/annualsymposium> for more details.

The 44th Lunar and Planetary Science Conference will be held **18–22 March 2013** in The Woodlands, Texas. Please see <http://www.lpi.usra.edu/meetings/lpsc2013/> for more details.

A joint conference between the Society for History in the Federal Government (SHFG) and Oral History in the Mid-Atlantic Region (OHMAR) will be held **4–5 April 2013** in College Park, Maryland. Please see <http://shfg.org/shfg/events/annual-meeting/> for more details.

The 29th National Space Symposium will be held **8–11 April 2013** in Colorado Springs, Colorado. Please see <http://www.nationalspacesymposium.org/> for more details.

The annual meeting for the Organization of American Historians will be held **11–14 April 2013** in San Francisco, California. Please see <http://annualmeeting.oah.org/> for more details.

The Humans to Mars Summit will be held **6–8 May 2013** in Washington, DC. Please see <http://h2m.exploremars.org/> for more details.

The International Space Development Conference (ISDC) 2013 will be held **23–27 May 2013** in Washington, DC. Please see <http://isdc.nss.org/2013> for more details.

The 222nd meeting for the American Astronomical Society will be held **2–6 June 2013** in Indianapolis, Indiana. Please see <http://aas.org/meetings> for more details.

The annual conference for the Special Libraries Association will be held **9–11 June 2013** in San Diego, California. Please see <http://www.sla.org/content/events/index.cfm> for more details.

The annual conference for the American Libraries Association will be held **27 June–2 July 2013** in Chicago, Illinois. Please see <http://ala13.ala.org> for more details.

The 76th annual meeting for the Society of American Archivists will be held **11–17 August 2013** in New Orleans, Louisiana. Please see <http://www2.archivists.org/conference> for more details.

## Image in Aerospace History

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On 17 March 1958, the United States Naval Research Laboratory launched Vanguard 1. Although the Explorer program launched the first American satellite (31 January 1958) in response to the Soviet Union's Sputnik (4 October 1957), Vanguard 1 became the first solar-powered artificial Earth satellite and remains the oldest robotic satellite still in orbit.

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#### **NASA Headquarters History Program Office Staff Contact Information:**

William Barry, Chief Historian	<a href="mailto:bill.barry@nasa.gov">bill.barry@nasa.gov</a> 202-358-0383
Nadine Andreassen, Program Support Specialist	<a href="mailto:nadine.j.andreassen@nasa.gov">nadine.j.andreassen@nasa.gov</a> 202-358-0087
Colin Fries, Archivist	<a href="mailto:cfries@mail.hq.nasa.gov">cfries@mail.hq.nasa.gov</a> 202-358-0388
Stephen Garber, Historian	<a href="mailto:stephen.j.garber@nasa.gov">stephen.j.garber@nasa.gov</a> 202-358-0385
John Hargenrader, Archivist	<a href="mailto:jhargenr@mail.hq.nasa.gov">jhargenr@mail.hq.nasa.gov</a> 202-358-0387
Jane Odom, Chief Archivist	<a href="mailto:jane.h.odom@nasa.gov">jane.h.odom@nasa.gov</a> 202-358-0386
Yvette Smith, Editor	<a href="mailto:yvette.smith-1@nasa.gov">yvette.smith-1@nasa.gov</a> 202-358-5196
Elizabeth Suckow, Archivist	<a href="mailto:elizabeth.suckow-1@nasa.gov">elizabeth.suckow-1@nasa.gov</a> 202-358-0375

Created and produced by the following:

Giny Cheong, Newsletter Editor  
 Kevin Harris, Editor, NASA Headquarters Communications Support Services Center (CSSC)  
 Janine Wise, Publication Specialist/Graphic Designer, NASA Headquarters CSSC  
 Tun Hla, Printing Specialist, NASA Headquarters CSSC  
 Trenita Williams, Mail Coordinator, NASA Headquarters Mail Room  
 Carl Paul, Distribution, NASA Headquarters CSSC



National Aeronautics and Space Administration

**NASA Headquarters**  
300 E Street SW  
Washington, DC 20546

[www.nasa.gov](http://www.nasa.gov)