



FROM THE CHIEF HISTORIAN



The 50th anniversary of the Space Age finds the History Division, appropriately, balancing an extraordinary variety of projects, ranging from books to conferences, grants, and activities related to the National Aeronautics and Space Administration's (NASA) 50th anniversary next year.

Books recently published. Thor Hogan's *Mars Wars: The Rise and Fall of the Space Exploration Initiative* will prove useful not only as the first substantial history of the ambitious plan to return to the Moon and go to Mars (announced at the 20th anniversary of the Apollo 11 landing in 1989), but also for its lessons learned for the current Moon-Mars program. *America in Space: NASA's First Fifty Years* is a large-format coffee-table book produced jointly by the History Division and NASA's Office of Public Affairs and published by Abrams in New York. It features many unusual and seldom-seen photographs, in addition to a foreword by Neil Armstrong. Among other things, it is a tribute not only to NASA's achievements, but also to NASA photographers over the last half-century.

Books due out by the end of 2007. The next few months will see the arrival of some long-awaited books. Tom Heppenheimer's *The Hypersonic Realm* has been long in the making, but we believe the wait will have been worth it. Volume 2 of Jim Hansen's *The Wind and Beyond: A Documentary Journey into the History of Aerodynamics in America* is about to roll off the press, and it will be followed by four more volumes. Volume 7 of the popular series NASA Historical Data Books, by Judy Rumerman,

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Lessons Learned from the Space Exploration Initiative

By Thor Hogan (Illinois Institute of Technology), author of the new *Mars Wars: The Rise and Fall of the Space Exploration Initiative* (NASA SP-2007-4410)

On the 20th anniversary of the first human landing on the Moon (20 July 1989), President George H. W. Bush stood atop the steps of the National Air and Space Museum in Washington, DC, and proposed a long-range human exploration plan that included the successful construction of an orbital space station, a permanent return to the Moon, and a mission to Mars. This enterprise became known as the Space Exploration Initiative (SEI). The president charged the newly reestablished National Space Council with providing concrete alternatives for meeting these objectives. To provide overall focus for the new initiative, Bush later set a 30-year goal for a crewed landing on Mars. Within a few short years after this Kennedyesque announcement, however, the initiative had faded into history—the victim of a flawed policy process and a political war fought on several different fronts.

The story of this failed initiative was one shaped by key protagonists and critical battles. It was a tale of organizational, cultural, and personal confrontation. Cultural struggles pitted the increasingly conservative engineering ethos of NASA against the “faster, better, cheaper” philosophy of a Space Council looking for innovative solutions to technical problems. Personality clashes matched Vice President Dan Quayle and Space Council

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Lessons Learned from the Space Exploration Initiative (continued)

Executive Secretary Mark Albrecht against NASA Administrator Dick Truly and Johnson Space Center Director Aaron Cohen. Some commentators have argued that SEI was doomed to fail, due primarily to the immense budgetary pressures facing the nation during the early 1990s. The central thesis of *Mars Wars: The Rise and Fall of the Space Exploration Initiative* suggests, however, that failure was not predetermined. Instead, it was the result of a deeply flawed decision-making process that failed to develop (or even consider) policy options that may have been politically acceptable given the existing political environment.



President George H. W. Bush announces his Space Exploration Initiative plan on 20 July 1989, the 20th anniversary of the Apollo 11 lunar landing. (Image Number 89-H-380)

By 1989, the American space program arguably had been in a steady decline for nearly two decades. NASA had failed to find its footing in the years following the triumphs of the Apollo Moon landings. During the intervening period, the space agency had become increasingly conservative, risk-averse, and bureaucratic. After failing to gain support for a robust post-Apollo human exploration program, the Agency had retreated and become an ever more cautious organization. During this time, the space program had no great supporters in the White House or great advocates within Congress. This lack of support forced the Agency to focus its political energies on protecting its turf (e.g., the Space Shuttle and Space Station programs) and trying to slow the regular reductions in its annual appropriation. The end result was a NASA that hardly resembled the one that had taken on the Soviet Union on one of the most prominent battlegrounds of the Cold War—an agency that had won a great victory for the United States.

Despite this long interlude, there had been stirrings within the space policy community that seemed to indicate that a return to glory might be achievable. During the mid- to late 1980s, the American public had rallied around NASA in the wake of the Space Shuttle *Challenger* accident, the National Commission on Space had recommended human exploration of Mars as the appropriate long-term objective of the space program, and President Bush was an outspoken supporter of the space program. On the larger national stage, however, more significant forces were developing that did not bode well for the adoption of an overly aggressive or expensive new undertaking in human spaceflight. In particular, a struggling economy and rising deficits were placing enormous pressure on the federal budget. This political reality would be the most important constraint facing the adoption of an expanded exploration program and attempts to revitalize the national space program. In fact, the situation was so serious that it called into question whether the new president should support such an endeavor at all. Despite the potential hazards, only a few short months after taking office, President George Bush and his key space policy advisers decided to champion an ill-defined yet exorbitantly expensive exploration plan.

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covers the period 1989–98, with volume 8 to follow shortly. *Societal Impact of Spaceflight*, edited by Roger Launius and me, represents the proceedings of the meeting we held last year on this important subject. The arrival of copies of Sunny Tsiao's *Read You Loud and Clear! The Story of NASA's Spaceflight Tracking and Data Network* is also imminent. Finally, an update of monograph 9, *U.S. Human Spaceflight*, covering 1961–2006, will soon be published.

Books due out in 2008. Volume 7 of John Logsdon's documentary history of the of the U.S. civil space program, *Exploring the Unknown*, covers human spaceflight and will appear in early 2008, followed later in the year by the final volume. Volume 3 of our translation and annotation of Boris Chertok's memoirs (series editor Asif Siddiqi) will also be published early in the year, with one more volume to follow. Paul Dickson has updated and extensively added to the *Origins of NASA Names* (1975) to produce a new *Dictionary of the Space Age*, to be published by Johns Hopkins University Press in the New Series in NASA History. Hopkins will also publish Erik Conway's history of the atmospheric sciences in the same series. Doug Mudgway's biography of W. H. Pickering will appear just in time for the Explorer 1 anniversary. And Michael Meltzer's *Keeping the Solar System Clean: A History of NASA's Planetary Protection Effort* is now complete.

Further down the line. Work is actively proceeding on full-scale histories of deep space navigation (Andrew Butrica), NASA's international relations (John Krige and his team at Georgia Tech), NASA's Decadal Planning Team and events leading to the new Vision for Space Exploration (Steve Garber and Glen Asner), a history of aeronautics at NASA since 1958 (Rob Ferguson), an updated history of NASA's wind tunnels (Larry Lee), a history of life sciences at NASA since 1980 (Maura Mackowski), a translation and commentary on selected parts of the Mishin and Feokstikov diaries (Peter Gorin and Asif Siddiqi), and a new volume of *Astronautics and Aeronautics: A Chronology*, covering 1996–2000. Michael Meltzer has just been awarded a contract to write a history of the Cassini project.

History of the Scientific Exploration of Earth and Space (HSEES). This is a major initiative to fill the gap in the history of the Earth and space sciences, sponsored jointly by the Science Mission Directorate and the History Division. A peer-review panel met in June and selected a dozen projects to be funded, many of them full-scale books. A full list will be published in the next newsletter.

NASA Historical Reference Collection. This mainstay of the NASA History Division, some 2,000 cubic feet of materials, continues to be heavily used, especially in light of the 50th-anniversary activities. You can see more details at our Web site.

Remembering the Space Age. This conference was held 22–23 October in Washington, DC, immediately following the Society for the History of Technology (SHOT) meeting. The Proceedings will follow next year.

New NASA History Grant Programs. Readers of this newsletter will be aware of the long-established American Historical Association (AHA) fellowship in Aerospace History. We have now added two more grants: one in the history of space science, administered by the History of Science Society (HSS), and the fellowship in the history of space technology, administered by SHOT. Application information is available at each society's Web site.

NASA at 50. This oral history project is funded by the History Division and carried out by our expert oral history team at Johnson Space Center, including Rebecca

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Wright and Sandra Johnson. The idea is to have a snapshot of NASA at 50, its current goals and future aspirations, as seen by top NASA management throughout the Agency. As photos in this newsletter will attest, interviews were recently undertaken with Administrator Michael Griffin and Deputy Administrator Shana Dale. We plan to publish a selection of these interviews in book form for NASA's upcoming 50th anniversary.

The Bigger Picture. Planning for NASA's upcoming 50th anniversary goes far beyond the History Division. The Office of Communications Planning, located in the Strategic Communications part of NASA Headquarters, is planning a full year of events, some of which are already beginning. The events are being implemented by the 50th Anniversary Working Group, on which the History Division is represented. On 13 September, NASA unveiled its 50th-anniversary logo. On 17 September, Administrator Griffin kicked off NASA's 50th-anniversary lecture series with remarks on the value of the space economy. The full lecture is at http://www.nasa.gov/pdf/189537main_mg_space_economy_20070917.pdf. NASA will celebrate its history through a variety of publications and events at the local and national level.



Happy anniversaries!
Steve Dick

Lessons Learned from the Space Exploration Initiative (continued)

SEI reached the national agenda after an incredibly short two-month alternative generation process that was conducted in secret by senior leaders at NASA Headquarters and Johnson Space Center. Rather than providing President Bush with a variety of potential mission architectures, the space agency selected a long-term strategy (based largely on existing technology) that would have cost an estimated \$400 billion. Although this would require NASA's budget to increase to over \$30 billion annually, Vice President Dan Quayle and the National Space Council initially supported the space agency's approach. Thus, on 20 July 1989, President Bush announced a long-range, continuing commitment to human spaceflight: "First, for the coming decade, for the 1990s: Space Station *Freedom*, our critical next step in all our space endeavors. And next, for the new century: back to the Moon; back to the future. And this time, back to stay. And then a journey into tomorrow, a journey to another planet: a manned mission to Mars."

Unfortunately, the public and congressional reaction to President Bush's announcement was generally negative. For example, Senator Al Gore said that "by proposing a return to the Moon and a manned base on Mars, with no money, no timetable, and no plan, President Bush offers the country not a challenge to inspire us, but a daydream." In fall 1989, things got worse when NASA released its *Report of the 90-Day Study on Human Exploration of the Moon and Mars*. What the Bush White House had expected would be a study providing additional project alternatives with a broad range of cost profiles turned out to be an endorsement of a single architecture offered with three different timelines (it would have cost upwards of \$550 billion). The universal response was outrage—the initiative never recovered and slowly faded away over the next year.

There are numerous lessons that can be learned from the failure of SEI. The initiative was originally endorsed by President Bush to provide direction to what some felt was a directionless agency. The Space Council, however, failed to provide adequate guidance regarding the political and budgetary constraints confronting any new programs. As a result, NASA's *90-Day Study* was significantly at variance with what Congress judged to be in the long-term interest of the nation. This situation might have been ameliorated if the Space Council had engaged space policy community actors outside NASA that could have provided architecture alternatives that leveraged new technologies and had different cost profiles. However, Vice President Quayle and Mark Albrecht largely abdicated their authority to the space agency. Responsibility should not land entirely at the White House doorstep, as missteps by NASA's leaders shared equally in the initiative's failure. Many within the Agency believed that President Bush's endorsement of a bold human spaceflight initiative was an opportunity to obtain a large funding increase. Preparing expensive plans for SEI based on this fundamental principle proved to be an enormous political miscalculation, and the Agency missed a historic opportunity to right itself two decades after the post-Apollo deceleration. If the White House had consulted with Congress during the agenda-setting process for the initiative, the glaring shortcomings with the NASA approach might have been understood and addressed much earlier. The failure to engage Congress explains why SEI never had any true champions on Capitol Hill, even among constituencies usually supportive of the space program.

During the second half of the 20th century, there were a number of seminal moments in American space policy. These included the creation of NASA, President Kennedy's Moon decision, and the Space Shuttle and Space Station decisions. Due to its influence on the space program's future course, SEI rightfully belongs on this list. It is an anomaly in some respects because it was a failed initiative. Combined with the Hubble Space Telescope flaw and Space Shuttle fuel leaks, its demise led to significant changes at NASA. Perhaps the most important of these was the appointment of Dan Goldin, the most change-oriented NASA Administrator since James Webb. The most important change he wrought was forcing NASA to face budgetary reality and focus on evolutionary advancement. This arguably would not have happened absent the extraordinary budgetary requirements of NASA's SEI system architecture approach and the resulting downfall of the initiative.

As indicated above, the demise of SEI was a classic example of a defective decision-making process. The decision to conduct the agenda-setting process in secret made it difficult to generate support within Congress or the larger space policy community. The Space Council's inability or unwillingness to provide high-level policy guidance, combined with NASA's failure to consider critical fiscal constraints independently, derailed the initiative before it really got started. Finally, the failure of the Space Council to initiate a competition of ideas after President Bush's announcement speech removed any possibility of gaining congressional support after the devastating release of the *90-Day Study*. It is far from obvious that the failure of SEI was predetermined. What is clear, however, is that its failure was ensured because options that might have been politically feasible were not considered. While this had the benefit of forcing some positive changes within NASA, some observers believe it also damaged the Agency's reputation. To ensure the success of future efforts to send humans to Mars, current and future policy-makers must learn the lessons of SEI. This alone is why its history is so fundamental to understanding what is required to gain support for large human spaceflight initiatives.

NEWS FROM HEADQUARTERS AND THE CENTERS

Headquarters

Jane Odom continues to acquire new material for the Historical Reference Collection. She appraises new and existing material in the collection and directs the subsequent processing of collections. She has been offering guidance especially to Liz Suckow, our newest archivist, as she works on processing a number of different collections. Additionally, an archival practicum student is working under Jane's direction to process a space sciences collection dealing with solar missions. Jane continues to answer reference requests and also facilitates the entry of our international visitors into the building. The entire archival staff worked with the information technology (IT) staff on a modification to the database that will allow selected PDFs in the database to be published to an external Web site accessible to all. Jane attended the Society of American Archivists' (SAA) Annual Meeting from 29 August to 1 September in Chicago. She attended sessions on conducting oral histories, evaluating archival user tools such as finding aids and Web sites, the impact of minimal processing on reference services when applied broadly across an institution, the roles of female leaders in archival institutions, and a discussion by three early SAA feminist leaders on the profession's past and present challenges.

Colin Fries and John Hargenrader have completed a two-and-a-half-year project to scan and add the *Current News* collection to our database. This will be a valuable collection for historians and others seeking secondary source material on NASA's activities over the years. They have begun the next scanning project, which involves digitizing all of the past Administrators' and Deputy Administrators' speeches and adding them to our database. John and Colin continue to work jointly to process the NACA Collection, which consists of 40 cubic feet. Colin is processing the subject files and John the biographical files; they are at the point where they are adding descriptions to the database.

Colin continued reorganizing the History Division book series Web page, which lists all of our publications, and is correcting errors on the Web site. John is working on preparing photographs from the Plum Brook monograph to be added to our GRIN Web site. John has completed the preservation photocopying of all the old newspaper clippings in the human spaceflight files. He, Colin, and Liz Suckow continue to photocopy deteriorating items throughout the collection as they encounter them.

Liz Suckow appraised 16 cubic feet of former Headquarters official Francis Hoban's files on project management and the space station and copied numerous items for inclusion in the Historical Reference Collection. She has prepared the official files for transfer to the National Archives and Records Administration (NARA) and has described in the database the copies that will be retained in our office. Liz also processed 2.5 cubic feet of oral history interviews on NASA culture, SEI, and space station donated by Howard McCurdy. She appraised 8 cubic feet of Teacher in Space and Educator Astronaut files and prepared this collection for transfer to NARA. Her current project involves processing a 7-cubic-foot collection of life sciences material, ca. 1991–2002. John, Colin, and Liz share reference duties such as answer-

ing inquiries sent to the public e-mail account on the History Division Web site and assisting walk-in researchers.

Welcome to Nicole Herrmann

The NASA History Division welcomes aboard Nicole Herrmann as an intern this fall. Nicole hails from New Jersey and is a junior at the University of Maryland, where she is majoring in history and also studying for a minor in astronomy. She quickly has gotten involved in a number of projects and has been particularly instrumental in creating content for NASA's new 50th-anniversary Web site (<http://www.nasa.gov/50th/home.html>).

Ames Research Center (ARC)

Jack Boyd kicked off the celebration of NASA's anniversary year with a series of television and newspaper interviews on Sputnik and its impact on Silicon Valley. Jack has also begun honing his presentation on the 50-year span of NASA history, and he has begun delivering it to visiting dignitaries. Jack and Glenn Bugos delivered two papers at the American Institute of Aeronautics and Astronautics (AIAA) Space 2007 meeting in Long Beach, one on the National Advisory Committee for Aeronautics (NACA) as a model for NASA support of space commercialization efforts, the other on how the Ranger, Surveyor, and Lunar Orbiter programs served as precursors to Apollo. Glenn also spoke on the role of NASA in Silicon Valley at a conference at the Huntington Museum on "Rockets and Region: The Rise, Fall, and Rise of the Aerospace Industry in Southern California."

April Gage, Ames Archivist, is now a Certified Archivist, having passed the exam of the Academy of Certified Archivists. The NASA Ames History Office welcomed Ruth Dasso Marlaire on a six-month assignment from the Ames Public Affairs Office. Ruth will be writing various articles to support plans and outreach for NASA's 50th anniversary.

Artifacts have been the theme recently at the NASA Ames History Office, both accessioning them and putting them on display. In the lobby of N207, where the History Office is located, the staff set up an exhibit on projects and research done by scientists, engineers, and test pilots from Ames's NACA and NASA years. The exhibit includes models, photographs, timelines—most compiled by longtime Ames employee Roger Ashbaugh—describing an array of innovations in aeronautics research, contributions from planetary research spacecraft, and the use of specialized airborne science aircraft to increase our understanding of the planet Earth.

History Office staff are also partnering with other divisions to install small outreach exhibits in buildings around the Center. This endeavor includes finding ways to support these ongoing efforts without overstraining resources and space. The office developed new procedures for tracking accessions, as well as policies and procedures for loaning artifacts from its collection. Gradually, staff members are compiling caption information for the artifacts already in the History Office's possession. The first exhibit, featuring small spacecraft, will be installed in the lobby of the building housing the NASA Ames Small Spacecraft Division and will include historical information taken from existing History Office publications, as well as mockups and models from its artifact collection, including Galileo, Pioneers 6 through 9, and Lunar Prospector.

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News from Headquarters and the Centers (continued)

Dryden Flight Research Center (DFRC)

Christian Gelzer continued work on the truck fairings monograph. He, Peter Merlin, and Curtis Peebles relocated most of the historical artifacts in the collection to make them more accessible.

Curtis Peebles has completed editing *The Spoken Word: Recollections of Dryden History, Beyond the Sky*. This is the second volume of oral histories with former employees of the Center, and it deals with Dryden's space activities from the 1960s to the first Shuttle. The text is now moving to page layout. In August, he presented "The Antelope Valley and Aerospace: An Overview" (a look at the influence of the aerospace industry on the Antelope Valley) at an aerospace history conference jointly sponsored by the University of Southern California and the Huntington Library.

Peter Merlin has finished his SR-71 manuscript (intended for AIAA publication) and is cleaning up odds and ends on the book. He assisted an outside magazine publisher with information on X-planes, looking for old line drawings, including plans for model variations that never left the drawing board. He provided a special tour to the Dryden Technical Library staff and visitors, answered nearly 50 information requests, and assisted James Murray with information regarding aircraft accident data for use in the search for missing aviator Steve Fossett. He also assisted the Edwards Air Force Base (AFB) Environmental Management Division with the identification of World War II–vintage aircraft debris collected during archaeological survey.

Bill Dana's book on flight-testing the X-38 has now been published. (Bill is a former research pilot, was the Chief Engineer at DFRC, and was the last man to fly the X-15.) We will be sending each Center copies of the book, the second in the Dryden Historical Study series. Those outside the immediate NASA community who wish to obtain a copy of the book may send a self-addressed, stamped envelope (with \$2.32 in postage) to this address:

History Office
NASA Dryden Flight Research Center
4800 Lilly Drive
Building 4839
Edwards, CA 93523

Betty Love continues to sort through recent accessions to the archives. She is currently working her way through the papers of R. Dale Reed, the Dryden engineer so central to the development of lifting bodies and early remotely piloted research vehicles.

Glenn Research Center (GRC)

The Glenn History Program has been very lucky to have a number of special guests in recent months. On 20 July, the Center was treated to a special prescreening of the film *In the Shadow of the Moon*. The film's producer, Chris Riley, was on hand to answer questions about the film. Through discussions with Glenn History Officer Kevin Coleman and archivist Bob Arrighi (RSIS), Riley came to know the significant contributions Glenn made to the Apollo program through its liquid-hydrogen research. Mr. Riley has chosen a number of films from our archives to

view and may include a segment about Glenn's contributions in a future planned documentary.

From 12 through 16 September, the History Program cosponsored and supported Glenn's 2nd Annual Space Memorabilia Show with the Glenn Visitor's Center. Three very special guests spoke with employees during the week and gave presentations to the public during the Memorabilia Show held on the 16th. Sy Liebergot, former Apollo Electrical, Environmental and Consumables Manager (EECOM) Flight Controller; Andrew Chaikin, science journalist and author of *A Man on the Moon*; and Scott Carpenter, former Mercury astronaut, all spoke of their unique experiences and answered questions. The events were attended by many and enjoyed by all.

Archivist Nora Blackman (RSIS) has been working with our Visitor's Center on an exhibit chronicling the history of the Cleveland National Air Races, held on the grounds where Glenn now sits. At the center of the exhibit will be a replica of the prestigious Thompson Trophy, awarded to the winner of the Thompson Trophy Race, dubbed "a horse race in the air." The trophy depicts Icarus, the first man to fly according to Greek mythology, with wings spread facing skyward, symbolizing humanity's ever-constant desire to fly. A tapered cliff rises behind Icarus, suggesting humankind's progress in conquering the air throughout the centuries. In bas relief around the cliff are sculptured epochal milestones of humankind's attainment of great speeds. The exhibit will be on display in the Glenn Visitor Center in the near future.

Archivist Bob Arrighi has moved on to the dissemination products phase of the Altitude Wind Tunnel documentation project. The Altitude Wind Tunnel (AWT) multimedia piece has been nearly completed. This piece includes facility layout sections, a chronological history, an archive of technical reports, many digital images, and historic film transfers. A monograph history of the AWT is also in progress, and a draft should be completed by early November. The AWT is scheduled for demolition in 2008. Bob Arrighi also attended the NASA Cultural Resources Management workshop at Langley Research Center, where he shared a great deal of the documentation work done on Glenn's historic facilities.

Jet Propulsion Laboratory (JPL)

This summer marked the 30th anniversary of the Voyager missions to Jupiter and Saturn. Both vehicles appear to be within the heliosheath, with Voyager 1 more than 100 astronomical units from the Sun. Both are still returning particles and fields data. JPL's commemoration of the event was low-key, with a lunchtime band, an evening lecture, and a scattering of popular media articles.

This is also the year of Sputnik anniversaries, and JPL participated in two local conferences commemorating the opening of the Space Age. The first, sponsored by the University of Southern California's Center for the American West and the Huntington Museum and Library, was titled "Rocket Science and Region." Held 3–4 August, this meeting's sessions concentrated on the impact of the Space Age in California. The second, held 20–21 September, was sponsored by the California Institute of Technology's GALCIT (now known as the Graduate Aeronautical

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News from Headquarters and the Centers (continued)

Laboratory), JPL, and Northrop Grumman Space Technologies. This meeting's panelists considered the Space Age's past and future. JPL also plans a series of events in December and January to commemorate the launch of Explorer 1, America's first satellite, on 31 January 1958.

In August, Erik Conway, JPL historian, attended the International Committee for the History of Technology's (ICOHTEC) annual meeting in Copenhagen and presented a paper on the development of the Viking mission's Mars entry, descent, and landing system. This presentation was oriented toward Walter Vincenti's question, "What do engineers know and how do they know it," which explored how that generation's engineers designed for a largely unknown planet. After the ICOHTEC meeting, Conway gave an invited lecture on NASA and climate science at the Steno Institute, Aarhus University. He has also given lectures on the history of planetary science in JPL's Von Karman lecture series (in July) and at the University of Southern California's Viterbi School of Engineering (September).

Conway's major research project is still a history of robotic Mars exploration, and he completed two more chapters this spring and summer. He plans to complete two more this winter. These will encompass the Mars Climate Orbiter and Polar Lander development and loss, the Mars Surveyor 2001 missions' development, and the Mars Sample Return effort of 1998–99.

Julie Cooper recently finished processing a 26-cubic-foot collection of Mars Pathfinder project records dated 1975–98 (collection number JPL508). The catalog record for this collection includes a link to a detailed container list in PDF format. This year, the Library, Archives and Records staff has also started a long-term effort to review and edit our older oral history transcripts against the original audio recordings (if we have them) and obtain releases for the many interviews we lack permission to release. A limited number of analog audio recordings will also be digitized to aid preservation.

Johnson Space Center (JSC)

The JSC History Office team continues to collect information for the NASA at 50 Oral History Project, sponsored by the NASA Headquarters History Office. Recently, interviews with NASA Administrator Michael Griffin and Deputy Administrator Shana Dale were conducted by Rebecca Wright, Sandra Johnson, and NASA Chief Historian Steve Dick. At least 12 more individuals will be interviewed before the project moves into the next phase, which will be a publication to be released as part of the Agency's 50th-anniversary activities.

In support of a proposed JSC publication, the JSC History Office has been conducting oral history interviews specific to the Space Shuttle Program. Speaking with former Shuttle Program Managers, the team has been gathering details of the day-to-day operations as well as the overall programmatic changes that have occurred through the years. JSC Historian Jennifer Ross-Nazzari is contributing to this Center-wide project as a coauthor on two of the chapters. She also continues to support the ongoing efforts of the Historic Preservation Office at JSC and its efforts toward documenting data for reports and responses to surveys.

Sandra Johnson continues to digitize audio recordings from the archives and, during September, prepared several of these for transcription. Shelly Henley Kelly,

the archivist at the University of Houston–Clear Lake (UH-CL), where the JSC History Collection is housed, identified approximately 15 hours of audio that, if transcribed, would be of additional value to researchers. Sandra’s preparations include the reduction of distortion and background sounds while enhancing the voices to provide a better quality for the transcribers. The transcripts will be filed in the archives as another resource.

During the next few months, the History Office will benefit from the assistance of Jessica Cannon, a graduate student from Rice University in Houston. Jessica provided research assistance for the office this past summer and will continue in these duties until the end of the fall semester. She then will return her attention full-time to finalizing her dissertation.

Marshall Space Flight Center (MSFC)

Architects, Historians, Photographers, Documenting Marshall Dynamic Test Stand

A team of student architects, professional architects, photographers, and historians has documented the Saturn V Dynamic Test Stand at Marshall. This summer, the team focused its work on the stand in the East Test Area as part of a summer project for the Historic American Engineering Record (HAER), a division of the National Park Service (NPS).

“The Historic American Engineering Record is a documentation program based out of Washington, DC, for the national government, where we document historic American engineering sites across the United States,” said Brandy Blanchard, one of the student architects working on the project.

The stand has played a significant role in Marshall history for more than 30 years and is expected to serve as a vital asset in testing space vehicles that NASA will use to send future astronauts into orbit. In the 1960s and 1970s, the Center used the stand for vibration testing. It was first used to test the Apollo/Saturn V rockets and later the Space Shuttle. In the late 1970s, Marshall played a prominent role in the yearlong Mated Vertical Ground Vibration test program, the critical evaluation of the entire Shuttle complement—orbiter, external tank, and boosters. This phased test sequence began in March 1978, when the orbiter *Enterprise* arrived at Marshall and was greeted by thousands of employees and citizens.

The orbiter was hoisted into the modified stand, mated first to an external tank, and subjected to vibration frequencies comparable to those expected during launch and ascent. Several months later, the solid rocket boosters were added for tests of the entire Shuttle assembly. The test series confirmed the structural interfaces and mating of the entire Shuttle system and allowed mathematical models used to predict the Shuttle’s response to vibrations in flight to be adjusted so that effects for future flight environments could be predicted adequately prior to launch.

Previous HAER projects at Marshall have included documenting other structures in the Marshall test area as well as the Redstone Test Stand and the Marshall Neutral Buoyancy Facility, which was once used to provide astronauts with the opportunity to experience weightlessness in a huge water-filled simulator.

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News from Headquarters and the Centers (continued)

“This particular survey related to the Dynamic Stand gives us a chance to look back in time and get an idea of what the stand was like back then so we can record it for future generations,” Blanchard added.

At 360 feet tall, the stand is considered to be a one-of-a-kind structure. Its extreme height also made it possible for Marshall to use the stand during the 1970s for zero-gravity drop tests, in which components were dropped the full height of the structure in a contained environment, allowing brief periods of weightlessness.

The 12-week survey of the stand will culminate in an archive of historical engineering documentation including more than a dozen sheets of large-format drawings. These materials added to the Historic American Buildings and Historical American Engineering Record’s archive at the Library of Congress in Washington, DC.

The HAER team has measured the stand and its instrumentation and compiled a collection of related documentation in order to interpret how the stand functioned and what tests were conducted. A staff photographer from HAER will spend several days shooting large-format photographs of the structure in its current state. The team is composed of project leader Tom Behrens, an HAER architect; student architects Blanchard (Louisiana Tech University), Sonnier Francisco (California State Polytechnic University Pomona), and Michael Sundrup (University of Cincinnati); historian Sara Wermiel, a professor at the Massachusetts Institute of Technology; and HAER staff photographer James Rosenthal. In addition, Ralph Allen, Marshall’s Historic Preservation Officer, has served as adviser for the team.

Stennis Space Center (SSC)

On 23 August 2007, SSC broke ground for a new rocket engine test stand that will provide altitude testing for the J-2X engine. The engine will power the upper stages of NASA’s Ares I and Ares V rockets. The SSC History Office has been documenting the construction progress of the A-3 Test Stand, which is the first large test stand to be built since the Apollo era. The A-1 Test Stand has been undergoing modifications for its transition from the Space Shuttle Program to the Constellation Program. This stand was converted in the 1970s to begin testing the Space Shuttle main engine and is now being converted once again to begin J-2X powerpack testing later this year. The SSC History Office has been documenting this process as well through video, photos, and interviews.

The SSC History Office recently worked with the Headquarters History Division to have *Way Station to Space: A History of the John C. Stennis Space Center* placed online.

THE LEGENDS OF THE FALL

By Colin Fries

As we celebrate the anniversary of the dawn of the Space Age on that fateful day, 4 October 1957, when Sputnik 1 entered orbit, we may forget that there exists a perennial controversy over where the pieces of the spacecraft landed after it reentered the atmosphere. According to the National Space Science Data Center (NSSDC), the satellite's orbit was observed optically to decay 92 days after launch on 4 January 1958, when the satellite had completed about 1,400 orbits of Earth over a cumulative distance of 70 million kilometers. The Russians stated in December 1957 that burned remnants fell in Alaska and other northern areas of North America, and Soviet scientists demanded their return.

All that exist are replicas in Russian museums and at the Smithsonian's National Air and Space Museum (NASM). Though many private citizens have claimed to have recovered charred fragments of the original, there has never been a credible confirmation. The latest claim to hit the media was reported by the *New York Times* on 18 February 2007. The Beat Museum in San Francisco advertised that it had obtained several chunks of Sputnik 1 from Bob Morgan, whose grandfather recovered them on the morning of 8 December 1957 when they fell from the sky. Roger Launius, space history curator at NASM, and other experts concluded that the debris was unlikely to have been from the satellite but that it might have been part of the satellite's booster. "Extraordinary claims require extraordinary proof," stated Carl Sagan, describing a category that includes the recovery of the remains of famous spacecraft and satellites in the backyard.

Throughout the Space Age, a growing mythology has developed around space debris and its extent. On one hand, the conventional wisdom (typically that of the launching governments and space industry) is that large objects burn up when they enter the atmosphere—this despite the fact that hundreds of pieces have been found and returned to their respective governments. On the other is the popular belief that these pieces frequently land in inhabited areas and have injured people. Nothing could be farther from the truth. The Center for Orbital and Reentry Debris Studies estimated that in the first 40 years of the Space Age, 1,400 tons of debris has reached Earth, but only 250 pieces of verifiable spacecraft have been identified. This is because most pieces have landed in water. Such was the case with the *Mir* space station when it harmlessly reentered the atmosphere on 23 March 2001 over the South Pacific.

Nevertheless, the premise of a cult Showtime cable series, *Dead Like Me*, was based on the heroine's being hit and killed in the first episode by a zero-gravity space toilet reentering from *Mir*. (She survives as a grim reaper in this black-comedy fantasy). There is only one reported case of someone being hit by debris. On 22 January 1997, after watching a fireball streak across the sky, a woman in Tulsa, Oklahoma, was brushed on the left shoulder from charred woven fabric later identified as originating from a Delta 2 reentry. And on 30 November 1960, the Cuban government claimed that a cow was killed by debris from the failure of the U.S. Thor booster used to launch the Transit 3 satellite and demanded compensation.

Another case for the "Strange But True" category was related by Soviet engineer Boris Chertok in his memoir *Rockets and People, Volume 2*. In the summer of

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The Legends of the Fall (continued)

1963, Sergey Korolev, Chief Designer, summoned Chertok to his office. He held up a partially melted piece of iron on which an inscription could still be read: “*1961* Union of Soviet Socialist Republics *”. It was a medal that had been certified for flight in 1961 aboard a probe intended for Venus and was designed to survive the heat of entering that planet’s atmosphere. The spacecraft burned up over Siberia instead, and after a local boy hurt his foot on a piece of iron while swimming in a tributary of the Biryusa River, the object was identified as the Venus pendant and returned to Moscow by the KGB. Since the Pacific was the likely point of impact, the probability of this reentry happening over the USSR was 3 percent, according to Chertok. It then follows, he stated, that the probability of anyone finding the pendant was close to zero.

Unlike this anecdotal event, which remained within the jurisdiction of the Soviet Union, another piece of falling Russian space junk attracted international attention and held significant implications for Cold War relations and international space law. The spacecraft was dubbed Korabl-Sputnik 1 (satellite ship), or Sputnik 4 in the West, and was an unmanned rehearsal intended to test reentry systems for the upcoming Vostoks. Launched on 15 May 1960, it was the first full-scale test in the series, and it failed miserably. Instead of returning as planned, it was boosted to a higher orbit and broke up on 5 September 1962.

The Korabl program proceeded, and by Korabl-Sputnik 4, the Russians got it right. Launched on 9 March 1961, it carried a dog, Chernuschka, and a full-size mannequin in the ejection seat. Both were recovered successfully. After one additional test flight, the Russians were ready to launch a human, and on 12 April 1961, they did just that—and the human was Yuri Gagarin.

Yet important as it was technically, this next-to-last Korabl was famous for a little-known first: it broadcast the first music from space. One of the Vostok engineers explained:

[T]he main purpose was to ensure reception of voice transmissions from [the ship]. We rejected a numerical countdown, fearing Western radio stations would monitor the human voice and raise a clamor throughout the world alleging that Russia has secretly put a man in orbit. A song also aroused objections because it would be said in the West that “the Russian” cosmonaut had lost his head and started singing! It was then decided to tape a popular Piatnitsky Russian choir, and when the dummy, clothed for purposes of decency in a white smock, suddenly sang like a choir, it was very funny.¹

Even though intended as a joke, this may have sounded like a cosmic manifestation of the Greek “The Music of the Spheres” to anyone who *did* listen in.

The Smithsonian Astrophysical Observatory in Cambridge, Massachusetts, had alerted its Moonwatch teams around the world to watch the skies for Sputnik 4 since its orbital decay was being tracked and its date of entry had been predicted in advance. The watch was part of a concerted effort to recover an object exposed to the radiation of space.

¹ Asif Siddiqi, *Challenge to Apollo* (Washington, DC: NASA SP-2000-4408, 2000), p. 265.

“We have chosen Sputnik IV as our first re-entry observing satellite because it is the next large artificial earth satellite expected to re-enter the earth’s atmosphere after a long exposure to the space environment,” the observatory stated.²

Pieces rained down on the American Midwest after it disintegrated, particularly on several locations in Manitowoc, Wisconsin. The largest of these became embedded three inches deep into 8th Street. Two patrolmen noticed it, but, assuming it was a mound of cardboard or slag from a foundry, ignored it for an hour. Then, after they associated it with the fiery streaks across the sky that the public was reporting, they hauled it away—7 hours later.

After the 20-pound fragment was identified and analyzed as an authentic remnant of Sputnik 4, the U.S. government tried to return it during a meeting of the United Nations (UN) Committee on Peaceful Uses of Outer Space on 14 September. The Soviet delegate to the Committee, P. D. Morozov, refused to accept it, charging that it was a “circus trick” designed to solidify the U.S. position to set rules for reimbursing parties injured or damaged by falling space debris.

On 15 November 1963, the International Association of Machinists placed a brass ring in the middle of 8th Street to commemorate where the debris had fallen. A plaque near the sidewalk reads: “Sputnik IV Satellite Fragment was Recovered at This Site, Sept. 6, 1962.”

The U.S. offered the Manitowoc fragment to the Soviet Union twice, and they refused it each time. However, by 1963, the Cold War had thawed and good things began to happen at last. Negotiations began between the two superpowers on a couple of levels—it was the year that the two governments managed to agree on a limited test ban treaty. And it all began on a good note on 5 January 1963, when a Russian representative picked up the fragment at the State Department. It was quickly crated and shipped home.

Still, the space law issues remained unsettled until 1972, when the UN (with the USSR as a signatory) agreed to a Convention on International Liability for Damage Caused by Space Objects.

Although these earthly encounters with falling junk are so infrequent, orbital debris has become such a problem that it would increase even if all launches were halted. As of 4 July 2006, the U.S. Space Surveillance Network was tracking 8,680 pieces of debris. On 11 January 2007, the Chinese destroyed an old weather satellite with an antisatellite (ASAT) weapon in what was called the worst space debris event ever. Sharp criticism prompted China to join with the subcommittee of the UN Committee on the Peaceful Uses of Outer Space to draft guidelines for the limitation of such junk. The fear is that a massive chain reaction of all this accumulation is soon to occur, endangering orbiting satellites and the International Space Station (ISS).

In retrospect, that broadcast of the Piatnitsky Russian Choir takes on a more symbolic significance. Even though meant as a joke, it can be seen as heralding a new era in some ineffable way. Perhaps we humans became citizens of the cosmos that day. Of course, there were many bumps in the road. The Cold War continued for decades, and actual cooperation in space between the two superpowers did not happen until 1975.

² Walter Sullivan, “U.S. Studies Bits of Spent Sputnik,” *New York Times* (7 October 1962): 42.

The Legends of the Fall (continued)

Ken Burns, producer of *The Civil War* miniseries and *The War* documentary about World War II, quoted lines from Lincoln's first inaugural address when he spoke to the class of Lehigh University in 2006. Although uttered early in 1861 about the conflict that would rend his nation, Lincoln's words fit the Space Age quite nicely: "We must not be enemies. We must be friends . . . The mystic chords of memory, stretching from every battlefield and patriot grave, to every living heart and hearthstone, all over this broad land, will yet swell the chorus of the Union, when again touched, as surely they will be, by the better angels of our nature."

As Burns said, "It is a truly astonishing sentence. The 'better angels of our nature.' I love that; so certain as it is of our essential goodness and the perfectibility of these so obviously flawed creatures who like to call themselves human beings. And the 'mystic chords of memory.' Another great phrase, don't you think? Those 'mystic chords,' ladies and gentlemen, were not c-o-r-d-s, cords of some rope that would bind us by force together, but c-h-o-r-d-s, musical chords, signifying some celestial harmony that would unite us through all time in common purpose—in a common anthem, if you will."

This should not be considered a uniquely American vision; rather, a new mythology of a new age—the Space Age.

BOOK COMMEMORATES NASA'S 50TH ANNIVERSARY

As the world remembers the 50th anniversaries of the Space Age in 2007 and NASA in 2008, the historic legacy of the Agency is captured in a new and lavishly illustrated book published on 4 October 2007 by Harry N. Abrams, Inc., New York.

Titled *America in Space: NASA's First Fifty Years*, the book is a photographic record of the greatest adventures in the history of exploration and documents NASA's many achievements during the past five decades in aeronautics, science and technology, and human spaceflight. Published in cooperation with NASA, the book features a foreword by Apollo 11 commander Neil Armstrong, with contributions from Steven Dick, NASA Chief Historian; Bob Jacobs, Deputy Assistant Administrator for Public Affairs; Constance Moore, NASA lead photo researcher; Anthony M. Springer, lead, communications and education, NASA Aeronautics Research Mission Directorate; and Bertram Ulrich, NASA curator and multimedia manager.

"This book has a wonderful collection of imagery that chronicles the first half-century of NASA," said Shana Dale, NASA Deputy Administrator, Headquarters, Washington. "As we view the historic achievement of our first generation of space explorers and see how far we have come in 50 years, we also peer over the horizon to a new era of exploration that will provide us with an outpost on the Moon and eventually human exploration of Mars."

Almost 500 stunning color and black-and-white photographs, including many never published before, were selected from NASA's archives. The images tell the Agency's story, from the drama of liftoff to tension in Mission Control and the humor and humanity portrayed in the faces of astronauts, scientists,

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NASA HISTORY FELLOWSHIPS

The NASA History Division is pleased to announce two new fellowships in the history of space science and technology. The History Division continues to sponsor the American Historical Association Fellowship in Aerospace History (please see <http://www.historians.org/prizes/NASA.htm> for more details).

The new NASA History of Science Society Fellowship in the History of Space Science funds a nine-month research project that is related to any aspect of the history of space science, from the earliest human interest in space to the present. The program is broadly conceived and includes the social, cultural, institutional, and personal context of space science history. Proposals of advanced research in history related to all aspects of the history of space science are eligible. Space science and sciences affected by data and concepts developed in connection with space exploration include astronomy, Earth science, optics, meteorology, oceanography, and physiology. The fellowship is open to applicants who hold a doctoral degree in history or a closely related field, or students who have completed all requirements except the dissertation for a Ph.D. in the history of science or a related field. The stipend is \$17,000; the fellowship term is nine months and must fall within the period of 1 July 2008 to 30 June 2009. Please see <http://www.hssonline.org/profession/support/detail.lasso?-Search=Action&Table=Events%20web&-Database=hssguides&-KeyValue=3504> for more details. The deadline for applications is 3 March 2008.

The new NASA Fellowship in the History of Space Technology will be administered by the Society for the History of Technology (SHOT). This \$17,000 fellowship will fund one predoctoral or postdoctoral Fellow, for up to one academic year, to undertake a research project related to the history of space technology. This fellowship may support advanced research related to any or all aspects of space history and should lead to publications on such topics as the history of space technology broadly considered, including cultural and intellectual history; institutional history; economic history; the history of law and public policy; and the history of science, engineering, and management. The fellowship's stipend will be paid quarterly; funds may not be used to support tuition or fees. Applicants must possess a doctorate degree in the history of technology or in a closely related field, or be enrolled as a student in a doctoral degree program and have completed all requirements except the dissertation for a Ph.D. in the history of technology or a related field. Eligibility is not limited to U.S. citizens or residents. Application forms and further information are available from <http://www.historyoftechnology.org/awards/nasa.html> online; questions may go to SHOT secretary Amy Bix, shot@iastate.edu. The deadline for applications is 1 March 2008, and the fellowship winner will be notified by 1 May 2008.

Book Commemorates NASA's 50th Anniversary (continued)

engineers, and political leaders associated with the program during the past five decades.

"Abrams is tremendously proud to have collaborated with NASA to create *America in Space*, which celebrates some of our nation's greatest achievements and is also a milestone in photographic publishing," said Eric Himmel, Abrams vice president and editor-in-chief. "It was thrilling to see these amazing images materialize from NASA's vast visual archives as the project took shape."

The book is available from most major book retailers.

OTHER NEW AND FORTHCOMING PUBLICATIONS

New Book

Mars Wars: A Policy History of the Space Exploration Initiative (NASA SP-2007-4410), by Thor N. Hogan. This provocative book argues that the failure of President George H. W. Bush's Space Exploration Initiative (SEI) was the result of a flawed policy process. A synopsis of this book appears earlier in this newsletter.

Forthcoming Books

The Wind and Beyond: A Documentary Journey into the History of Aerodynamics in America, Volume II: Reinventing the Airplane (NASA SP-2007-4409), edited by James R. Hansen, with Jeremy Kinney, D. Bryan Taylor, and J. Lawrence Lee. The second volume in the Wind and Beyond series discusses the airplane design revolution of the 1920s and 1930s and the quest for improved airfoils. This book will appear by December 2007.

Facing the Heat Barrier: A History of Hypersonics (NASA SP-2007-4232), by T. A. Heppenheimer. Hypersonics is the study of flight at speeds at which aerodynamic heating dominates the physics of the problem (typically Mach 5 and higher) and is an engineering science with close links to supersonics and engine design. Hypersonics has had two major applications: the first has been to provide thermal protection during atmospheric entry from space; the second has involved high-speed propulsion and has sought to develop the scramjet as an advanced air-breathing ramjet. This book will appear by December 2007.

William H. Pickering: America's Deep Space Pioneer (NASA SP-2007-4113), by Douglas J. Mudgway. This biography of the long-time Director of the Jet Propulsion Laboratory was previewed in the August newsletter. This book will appear before the 50th anniversary of the Explorer 1 launch in January 2008.

The Societal Impact of Spaceflight (NASA SP-2007-4801), edited by Steven J. Dick and Roger D. Launius. The first in a new subseries for societal impact studies, this large volume will contain the edited papers from a conference that was held in September 2006. The essays cover a wide range of topics including ideology, turning points in history, and applications satellites, as well as social, cultural, and economic impacts. This book will appear by December 2007.

NEW AEROSPACE HISTORY PUBLICATIONS

Compiled by Chris Gamble

Project Mars: A Technical Tale, by Wernher von Braun (Apogee Books). This never-before-printed science fiction novel combines technical fact with a human story line. Encompassing the entire story of the journey, this novel moves from the original decision for a Mars mission through the mission planning, the building of the mighty spaceships, the journey, the amazing discoveries made on Mars, and the return home. The author's attention to the actions and feelings of the characters—both those who went and those who stayed behind—makes this an adventure of human proportions, rather than merely another fanciful tale. This book comes complete with an appendix of von Braun's original technical drawings, made in the late 1940s, on which the story's plot is based.

The Rebirth of the Russian Space Program: 50 Years After Sputnik, *New Frontiers*, by Brian Harvey (Springer, May 2007). Aspects covered in this book include piloted versus unpiloted missions; the various types of robotic applications programs; the military program; the infrastructure of production, launch centers, and tracking; the commercialization of the program and its relationship with Western companies; and the program in a comparative global context as well as Russia's future space intentions.

The Voice of Dr. Wernher von Braun: An Anthology, edited by Irene Willhite (Apogee Books, May 2007). This collection of speeches by Dr. Wernher von Braun touches on a variety of topics including education, the Cold War, religion, and the space program. Mining through more than 500 of von Braun's speeches given from 1947 to 1976, this book presents an insightful look at one of the most well-known historical figures in the American space program. The editor is the archivist of the U.S. Space and Rocket Center in Huntsville, Alabama.

Space Flight, by Gilles Sparrow (DK Adult, June 2007). With hundreds of photographs, this beautifully illustrated book about the history of human spaceflight covers every detail of the quest for the final frontier, from the first spaceflight to today's missions and beyond.

A History of the Kennedy Space Center, by Kenneth Lipartito and Orville R. Butler (University Press of Florida, June 2007). This first comprehensive history of Kennedy Space Center, NASA's famous launch facility located at Cape Canaveral, Florida, reveals the vital but largely unknown work that takes place before the rocket is lit.

Flight Research at NASA Langley Research Center, by Mark A. Chambers (Arcadia Publishing, July 2007). Chambers has assembled over 200 images that depict the storied and accomplished history of flight research at the NASA Langley Research Center.

Rocketeers: How a Visionary Band of Business Leaders, Engineers, and Pilots Is Boldly Privatizing Space, by Michael Belfiore (Collins Publishing, July 2007).

Touching Space: The Story of Project Manhigh, by Gregory P. Kennedy (Schiffer Publishing, August 2007). Project Manhigh took humans to the threshold of space using balloons. Drawing upon flight reports and technical data, this book documents

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New Aerospace History Publications (continued)

Project Manhigh and the high-altitude flights that preceded it. Manhigh existed prior to the creation of NASA and helped pave the way for human space exploration.

“Live from Cape Canaveral”: Covering the Space Race, from Sputnik to Today, by Jay Barbree (Collins, August 2007). Barbree—the only reporter who has covered every mission flown by astronauts—offers his unique perspective on the space program. He shares affectionate portraits of astronauts as well as some of his fellow journalists and tells some very funny behind-the-scenes stories—many involving astronaut pranks.

Spies in the Sky: Surveillance Satellites in War and Peace, by Pat Norris (Praxis, August 2007). This book tells the story of the single most important contribution satellites have made to humankind in the 50 years since the launch of Sputnik 1, focusing particularly on the prevention of nuclear war.

The Moon: Resources, Future Development and Settlement, 2nd edition, by David Schrunk, Burton Sharpe, Bonnie L. Cooper, and Madhu Thangavelu (Praxis, September 2007). This book tells the story of the feasible transformation of the Moon into an inhabited sister body of Earth in the coming century.

In the Shadow of the Moon: A Challenging Journey to Tranquility, 1965–1969, by Francis French and Colin Burgess (University of Nebraska Press, September 2007). *In the Shadow of the Moon* tells the story of some of the most exciting and challenging years in spaceflight, with two superpowers engaged in a titanic struggle to land one of their own people on the Moon.

Into that Silent Sea: Trailblazers of the Space Era, 1961–1965, by Francis French and Colin Burgess (University of Nebraska Press, April 2007). It was a time of bold new technology, historic moments, and international jousting on the final frontier. But it was also a time of human drama, of moments less public but no less dramatic in the lives of those who made the golden age of spaceflight happen. These are the moments and the lives that *Into That Silent Sea* captures, a book that tells the intimate stories of the men and women, American and Soviet, who made the space race their own and gave the era its compelling character.

Astronautics: Book 1: Dawn of the Space Age, by Ted Spitzmiller (Apogee Books, September 2007). Chronicling the history of space rocketry, this resource details the discoveries and engineering innovations that have occurred—in both the United States and the former Soviet Union—from World War II to the early 1970s. From European war missiles to multibillion-dollar spacecraft that orbit Earth today, this sourcebook covers the evolution of rocketry in great detail and discusses the impact rocket science has had on other areas of humanity.

Robotic Exploration of the Solar System: Part I: The Golden Age 1957–1982, by Paolo Ulivi and David M. Harland (Praxis, September 2007). This book provides a detailed history of uncrewed missions exploring the solar system. The subject is treated from an engineering and scientific standpoint. Technical descriptions of the spacecraft, of their mission designs and of instrumentations are provided. Scientific results are discussed in considerable depth, together with details of mission management.

Earth from Space: Smithsonian National Air and Space Museum, 2nd edition, revised and updated, by Andrew K. Johnson (Firefly Books, September 2007). The newest generation of satellites is extraordinarily powerful and accurate, recording the effects of human and natural forces and showing how Earth continues to change over time.

Earth from Space explains how satellite imaging works and showcases some of the most remarkable photos of the planet ever produced. Fully revised and updated, *Earth from Space* covers a world of subjects—from aeronautics to ecology to commerce—through unforgettable images.

Energiya-Buran: The Soviet Space Shuttle, by Bart Hendrickx and Bert Vis (Praxis, September 2007). The authors describe the long development path of the Soviet space shuttle system, consisting of the Energiya rocket and the Buran orbiter. The program eventually saw just one unpiloted flight in November 1988 before the end of the Cold War and the collapse of the Soviet Union sealed its fate.

Red Moon Rising: Sputnik and the Hidden Rivalries That Ignited the Space Age, by Matthew Brzezinski (Times Books, September 2007). In *Red Moon Rising*, Matthew Brzezinski takes the reader inside the Kremlin, the White House, secret military facilities, and the halls of Congress to bring to life the Soviets and Americans who feared and distrusted their compatriots as much as their superpower rivals. Drawing on original interviews and new documentary sources from both sides of the Cold War divide, he shows how Nikita Khrushchev and Dwight Eisenhower were buffeted by crises of their own creation, leaving the door open to ambitious politicians and scientists to squabble over the heavens and Earth.

A Ball, a Dog, and a Monkey: 1957—The Space Race, by Michael D'Antonio (Simon & Schuster, September 2007). *A Ball, a Dog, and a Monkey* tells the remarkable story of America's first efforts to succeed in space, a time of exploding rockets, national space mania, Florida boomtowns, and interservice rivalries so fierce that President Dwight Eisenhower had to referee them.

Epic Rivalry: The Inside Story of the Soviet and American Space Race, by Von Hardesty and Gene Eisman (National Geographic, September 2007). When Neil Armstrong and Buzz Aldrin walked on the Moon in 1969, they personified an almost unimaginable feat—the incredibly complex task of sending humans safely to another celestial body. This extraordinary odyssey, which grew from the rivalry between the United States and the Soviet Union during the Cold War, was galvanized by the Sputnik launch in 1957.

Space: The First Fifty Years, by Sir Patrick Moore and H. J. P. Arnold (Mitchell Beazley, September 2007). This book chronicles the amazing advances and discoveries made during the momentous last half-century, including the first crewed spaceflight and first man in orbit; the first unpiloted landing on the Moon; the first craft to leave Earth's orbit; the piloted Moon landings; the advent of the Space Shuttle; and the first probes to Mars, Venus, and the outer planets—Jupiter, Saturn, Uranus, and Neptune.

Spacecam, reprint edition, by Terry Hope (David & Charles Publishers, September 2007). *Spacecam* celebrates the unique perspective of cameras freed from the confines of Earth looking back at our own colorful planet and charting the activity of satellites and spacecraft. The book also explores the solar system with stunning pictures of our nearest neighbors and, thanks to technology like the Hubble Space Telescope, strange and beautiful images of deep space. With amazing photographs from spacecraft, space stations, satellites, space telescopes, probes, and planetary rovers, *Spacecam* brings together the beautiful, the pioneering, and the scientifically astounding in a spectacular photographic collection.

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New Aerospace History Publications (continued)

Von Braun: Dreamer of Space, Engineer of War, by Michael J. Neufeld (Knopf, September 2007). This is the first authoritative biography of Wernher von Braun—chief rocket engineer of the Third Reich and creator of the infamous V-2 rocket—who became one of the fathers of the U.S. space program. In this meticulously researched and vividly written biography, Neufeld portrays a man of profound moral complexities, a man glorified as a visionary and vilified as a war criminal, a man whose brilliance and charisma were coupled with an enormous and, some would say, blinding ambition.

Space Exploration 2008, by David Harland and Brian Harvey (Praxis, October 2007). The aim of the Space Exploration annuals is to provide a yearly update on recent space launches, missions, and results, to be published every September. The series will cover space exploration from a variety of angles, looking back at past missions, reviewing those currently under way, and detailing those planned for the future; it will encompass both piloted and robotic spaceflight.

Human Missions to Mars: Enabling Technologies for Exploring the Red Planet, by Donald Rapp (Springer, October 2007). This book looks at human missions to Mars from an engineering perspective. It begins by describing the pros and cons of robotic exploration versus human exploration and then examines the ideas for sending humans to Mars from the point of view of both the enthusiast and the skeptic.

America in Space: NASA's First Fifty Years, by Steven Dick, Neil Armstrong, Robert Jacobs, Constance Moore, and Bertram Ulrich (Abrams Books, October 2007). Written and edited by a team of experienced NASA staffers and illustrated with many unpublished and rare photographs from the voluminous NASA archives scattered across the country, *America in Space* offers an unparalleled vision of half a century of exploration and discovery.

Astronautics: Book 2: To the Moon and Towards the Future, by Ted Spitzmiller (Collector's Guide Publishing, Inc., October 2007). An accessible and elucidating account of the events surrounding America's commitment to land a man on the Moon, this followup book demonstrates how that venture shaped the future of space exploration. Topics ranging from the Gemini, Voskhod, Soyuz, and Apollo programs to the development of the Space Shuttle and the evolution of the International Space Station are detailed. The politics and contemporary events of the period and how they influenced space exploration are also explored.

The International Politics of Space, by Michael Sheehan (Routledge, October 2007). Michael Sheehan analyzes the space programs of the United States, Russia, China, India, and the European Space Agency and explains how central space has become to issues of war and peace, international law, justice and international development, and cooperation among the world's leading states. It highlights the significance of China's and India's commitments to space and explains how the theories and concepts we use to describe and explain space are fundamental to the possibility of avoiding conflict in space in the future.

Final Countdown: NASA and the End of the Space Shuttle Program, by Pat Duggins (University Press of Florida, October 2007). The Space Shuttle was once the cornerstone of the U.S. space program. However, each new flight brings us one step closer to the retirement of the Shuttle in 2010. *Final Countdown* is the history of NASA's Space Shuttle Program, its missions, and its impending demise. It also examines the

plans and early development of the space agency's next major effort: the Orion Crew Exploration Vehicle.

The Development of Propulsion Technology for U.S. Space-Launch Vehicles, 1926–1991, by J. D. Hunley (Texas A&M University Press, August 2007). In this definitive study, J. D. Hunley traces the development from Robert Goddard's early rockets and the German V-2 missile through the Titan IVA and the propulsion system of the Space Shuttle. Since these rockets often evolved from early missiles, he pays considerable attention to missile technology, not as an end in itself, but as a contributor to launch-vehicle technology. Focusing especially on the engineering culture of the program, Hunley communicates this very human side of technological development by means of anecdotes, character sketches, and case studies of problems faced by rocket engineers.

NEW ONLINE RESOURCES

NASA History Web Sites

With very significant historical content, NASA has unveiled a new Web site devoted to its upcoming 50th anniversary at <http://www.nasa.gov/50th/home.html> online. Special thanks to Nicole Herrmann, Cindy Miller, Eric Myers, and Erika Vick for their hard work on this site.

For those interested in the 50th anniversary of the Space Age, the NASA History Division has a site devoted to Sputnik at <http://history.nasa.gov/sputnik/> online. This site also links to a new multimedia site on this same topic on the main NASA Web site. Thanks to Colin Fries for his help with this Sputnik site.

Mack R. Herring's *Way Station to Space: A History of the John C. Stennis Space Center* (NASA SP-4310, 1997) is now available at <http://history.nasa.gov/SP-4310/sp4310.htm> online. Special thanks to Rebecca Strecker for collecting these images electronically and to Chris Gamble for formatting this in HTML.

Harold D. Wallace, Jr.'s *Wallops Station and the Creation of an American Space Program* (NASA SP-4311, 1997) is now available at <http://history.nasa.gov/SP-4311/sp4311.htm> online. Special thanks to Chris Gamble for scanning and formatting this in HTML.

We have updated our mission patch site to include patches for almost all of the individual U.S. human spaceflight missions (including each Shuttle mission). Images of most of these patches are available in high resolution. These patches are available at http://history.nasa.gov/mission_patches.html online. Thanks to Colin Fries for scanning these graphics and setting them up online.

We have also augmented our section on NASA organizational charts with some additional charts, which are available at <http://history.nasa.gov/orgcharts/orgcharts.html> online. Thanks to Colin Fries for scanning these charts and setting them up online.

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New Online Resources (continued)

Other New Electronic Resources

The American Historical Association has several new electronic resources available. A new database called Directory of History Journals is available at <http://www.historians.org/pubs/freeljournals/> and provides links to more than 350 specialized history journals; the database makes it easier for scholars to locate the best journal in which to publish their work.

The AHA site also has a recently updated site for graduate students at <http://www.historians.org/grads/index.cfm> online.

The University of Central Florida's Florida Space Coast History Project, established to preserve Florida's unique space and missile legacy, is now online at <http://132.170.190.41/cchp/index.html>. This digital history project is working to construct a three-dimensional virtual replica of Cape Canaveral from the 1950s and 1960s. The project also is a repository for over 35,000 images.

NEW CONTRACTS

Dr. Michael Meltzer has been awarded a contract to research and write a book-length history of the Cassini spacecraft program, with special emphasis on its scientific and international aspects. Dr. Meltzer is the author of *Mission to Jupiter: A History of the Galileo Project* (NASA SP-2007-4231) and a forthcoming NASA history book on planetary protection.

NASA HISTORIC PRESERVATION

By Tina Norwood

While NASA's historic accomplishments in aeronautical research, science, and space exploration are well documented, less is known about the buildings and structures that supported and enabled these accomplishments. This article is the second in a series that provides a brief review of the real property assets that NASA owns and operates across the country. Of the many assets that are listed or eligible for listing on the National Register of Historic Places, 20 are National Historic Landmarks (NHLs).

The National Park Service (NPS) manages the National Register of Historic Places (NRHP). This includes over 80,000 historic properties: buildings, districts, structures, and objects that are important to state or local history. The NRHP contains approximately 2,500 NHLs: the buildings, districts, structures, and objects that are significant to America's history nationally. In 1983, the NPS conducted an NHL Man-in-Space Theme Study. This study resulted in the designation of 24 NHLs, 20 of which are currently managed by NASA.

Though much has been published on the history of the Apollo space program, this series focuses on the unique NHL assets and the essential role they played in the success of space exploration. This issue features NASA's Space Environmental Simulation Laboratory (SESL).

NASA Space Environmental Simulation Laboratory Johnson Space Center, Houston, Texas

By Abdul Hanif

Most Americans are familiar with the Apollo Control Room, the NHL located within Building 30, the Mission Control Center at Johnson Space Center (JSC), Houston, Texas. Few people know that JSC has a second NHL, the Space Environmental Simulation Laboratory (SESL). The National Park Service designated the SESL an NHL in 1984 due to its significant association with in the human spaceflight program of the United States. The SESL is located in Building 32 at JSC. The SESL NHL is defined “by the outside perimeters of both Chambers A and B located within Building 32 at the Lyndon B. Johnson Space Center.”

The National Park Service’s NHL nomination states,

The SESL was designed, built, and used to conduct thermal-vacuum testing for all United States manned spacecraft of the Apollo-era. The large size of both chambers in the SESL meant that full scale flight hardware could be tested for a variety of design and development problems involving such factors as operating temperatures, fluid leak rates, changes in absorptive or emissive properties of thermal coatings and other materials. This testing was absolutely essential to man rate flight hardware. The safety of the astronauts and the success of the manned space program depended on information that resulted from these tests in the SESL.

Since it was constructed in 1965, the SESL has tested all Apollo command and service modules, Apollo lunar modules, space suits for extra-vehicular activity, the Skylab/Apollo telescope mount system, various Space Shuttle systems, the Apollo/Soyuz docking module, many assembled-in-orbit components of the International Space Station, and various large scale scientific satellite systems such as the parabolic reflector subsystem of the Applications Technology Satellite. The thermal vacuum testing done at the SESL since 1965 has been a significant factor contributing to the success of both the manned and unmanned space program of the United States.



JSC open house, 2005. Overall view of visitors listening to Heather Paul and Amy Ross at the spacesuits exhibit in Building 32, with Chamber A's 40-foot door open in the background. (Image Number jsc2005e16878)

Chamber A possesses several unique features and utilizes many subsystems to achieve high-fidelity space simulation. Chamber A is a 65-foot-diameter, stainless steel vessel, having an overall height of 120 feet. The diameter was established to accommodate the entire Apollo Command/Service Module. It was designed to support a weight of 150,000 pounds in a vertical position on a 45-foot-diameter rotating platform (lunar plane). The lunar plane surface temperature can be controlled from 100 to 400 kelvins. The temperature extremes are created by liquid-nitrogen panels and electrical resistance integrated into the chamber,

continued on next page

NASA Historic Preservation (continued)

while the vacuum system can create a pressure of 1×10^{-6} torr, which is equivalent to 650,000 feet of altitude.

Chamber B is one-tenth the volume of Chamber A. It has the same basic capability as Chamber A and can accommodate a variety of smaller scale tests more economically and with faster responses. Chamber B has systems to provide the capability to insert a suited crew person into the simulated space environment. A dual manlock provides easy access to the test articles as well as a means of sup-

porting and transporting test subjects to the test environment and back during manned tests. The manlock can also be used as an altitude chamber for independent tests.

The first Apollo tests began in May 1966. The SESL was utilized over the next four decades for thermal-vacuum testing of large, complex spacecraft subsystems. In the early 1970s, the chambers supported tests associated with the Skylab Program. By the end of the 1970s, they were used less and less. Chamber A was deactivated in 1982. However, it was reactivated in 1988 as part of the return-to-flight effort following the loss of *Challenger*. Currently, both chambers are maintained at operational readiness and are used in support of the Space Shuttle, Space Station, and advanced programs. They have been active contributors to testing large hardware systems and subsystems ever since.



Interior view of Chamber A with Apollo spacecraft, 1968.
(Image Number S68-34450)

At the time of the NHL nomination, the major structural elements were, and still are, the rotatable floor, the 40-foot-diameter single-hinged access door, and the dual manlocks at the floor level and at the 31-foot level. Approved modifications are currently under way to remove solar simulation modules and the lunar plane to support testing of the James Webb Space Telescope (JWST). According to Mary Halligan, SESL Facility Manager, NASA obtained approval in 2005 to make the modifications. She states, "At first we worried that it would not be possible to make major modifications to Chamber A since it's a National Historic Landmark. Yet, we were pleased to learn that the regulators are supportive of the continued use of landmarks. They understand that major modifications are needed for highly specialized facilities." John Speed, JWST Systems Engineer at JSC, was also pleased with the outcome of the consultation process.

Compliance with the National Historic Preservation Act (NHPA) is required when projects, called



High-angle interior view of Chamber A showing three astronauts preparing to enter the Block II Thermal Vacuum Test Article in 1969.
(Image Number S68-37430)

undertakings, may adversely affect properties that are listed or eligible for listing on the NRHP. The NHPA is governed by the Advisory Council on Historic Preservation (ACHP) in Washington, DC, with regulatory oversight the responsibility of State Historic Preservation Officers (SHPOs). In the case of Texas, the Texas SHPO is the commissioner of the Texas Historical Commission (THC). In consultation conducted in accordance with the NHPA, NASA agreed to prepare a Historic American Building Survey (HABS). Perri Fox, JSC's Historic Preservation Officer, explains, "HABS provides recordation that is often prepared of an historic property before it is modified or demolished. It provides a standardized recordation protocol of facilities and structures for future NASA architects and engineers." As Derek Satchell, THC Project Reviewer, emphasizes, "HABS is an acceptable option in this case for NASA to document the technical and historic uniqueness of this resource and still accommodate future use. In doing so, it reinforces the collaborative effort between the THC and the Johnson Space Center."

New Historic Preservation Officer at Wallops

By Tina Norwood

Welcome aboard to Paul Neidinger, the new Historic Preservation Officer at the NASA Goddard Space Flight Center Wallops Flight Facility. Paul Neidinger comes to Wallops from the National Park Service, where he served since 1991 as a historical architect working out of the National Park Service Southwest and Intermountain Regions in Santa Fe, New Mexico. He also served as a staff architect for the Historic Preservation Training Center in Frederick, Maryland, before making a transition to the southwest again. Through the Center, he was involved in the restoration of many buildings, including two lighthouse lantern rooms at St. Simons Island, Georgia, and Pensacola Light in Florida. He contributed to the *Historic Lighthouse Preservation Handbook* and was a team member of the condition assessment program for the historic lighthouses of the United States Coast Guard. He holds a master's degree in architecture and an undergraduate degree in environmental design from Texas A&M University.

For more information, please contact authors Tina Borghild Norwood, NASA Federal Preservation Officer, at tnorwood@hq.nasa.gov, or Abdul Hanif, Real Property Specialist, JSC, at Abdulaziz.hanif-1@nasa.gov.

OTHER HISTORY NEWS

News from the National Air and Space Museum

Michael J. Neufeld, Chair of NASM's Space History Division, has just published *Von Braun: Dreamer of Space, Engineer of War* (New York: Alfred A. Knopf, 2007). The book has received quite favorable advance reviews, including one in the *Washington Post*. Derived from this work are several papers he has published or will be presenting at scholarly conferences. "Wernher von Braun's Ultimate Weapon," an abridgement of a *Space Policy* article that appeared last year, appeared in the *Bulletin of the Atomic Scientists* (July–August 2007, pp. 50–57, 78). At the International Astronautical Congress in Hyderabad, India, in late September, Neufeld presented "Wernher von Braun and the Lunar-Orbit-Rendezvous Decision: Finding a Way to Go to the Moon." At the NASA-NASM Space History Division conference

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Other History News (continued)

“Remembering the Space Age” in October, he gave a talk on “Creating a Memory of the German Rocket Program for the Cold War.” He was in a session with a recent Guggenheim Predoctoral Fellow in Space History, Monique Laney of the University of Kansas, who spoke on “Operation Paperclip in Huntsville, Alabama.” Also at that conference, Space History curators Martin Collins and Cathy Lewis spoke on “A Second Nature Rising: Spaceflight in a Time of Representation” and on “Cosmonaut Representation in Film,” respectively; Roger Launius was active as co-organizer and as session chair.

Roger Launius has recently published “Human Spaceflight and the Foundation of USAF-NASA Relationships,” in Wayne Fessey and Jacob Neufeld, editors, *United States Air Force: Founding Centennial & 60th Anniversary, 1907—1947—2007* (Essex, U.K.: Times Group, 2007, pp. 183–188); “Is There a Borg in Our Future?” in *Ad Astra* 19 (fall 2007, pp. 26–27), with Howard E. McCurdy (a short article exploring the debate over humans and robots in space and possible futures); “Viewpoint: A Significant Moment for the Space Age,” in *Space Policy* 23 (August 2007, pp. 141–143) (discussing how anniversaries offer opportunities not only to celebrate and commemorate a significant event, but also to reflect on larger meanings and consider the place of the events and their actors in the larger fabric of modern society); and “Robots and Humans in Space Flight: Technology, Evolution, and Interplanetary Travel,” in *Technology in Society* 29 (August 2007, pp. 271–282), with Howard E. McCurdy (exploring the history and possible future for human/robotic spaceflight; one area in which all spaceflight visionaries failed to make meaningful predictions was in the rapidly advancing capabilities of robotics and electronics).

Roger Launius has also been elected a member of the International Academy of Astronautics (IAA). Founded in Stockholm on 16 August 1960, this organization includes the world’s foremost experts in the disciplines of astronautics, who explore and discuss cutting-edge issues in space research and technology and provide direction and guidance in the nonmilitary uses of space and the ongoing exploration of the solar system. The purposes of the IAA are to foster the development of astronautics for peaceful purposes, recognize individuals who have distinguished themselves in a branch of science or technology related to astronautics, and provide a program through which the membership can contribute to international endeavors and cooperation in the advancement of aerospace science, in cooperation with national science or engineering academies. Membership is highly selective, with only 1,213 full and corresponding members.

Paul Ceruzzi, Martin Collins, and Roger Launius participated in “Artefacts XII,” an annual international seminar organized by the Smithsonian, the Science Museum (London), and the Deutsches Museum to examine the relationship of museums and the history of science and technology. This year’s meeting, held 16–18 September 2007, was in Oslo, Norway. Launius presented a research paper; Collins chaired a session and, because of a family emergency, presented Paul Ceruzzi’s paper.

Paul Ceruzzi also was the chair of the Program Committee for the Society for the History of Technology (SHOT) Annual Meeting in Washington, DC, 18–21 October 2007; at it, several curators each from the Space History and Aeronautics Divisions presented papers, chaired sessions, or commented. He has two books forthcoming in 2008: *Internet Alley: High Technology in Tysons Corner, 1945–2005* and *The Internet and American Business*, the latter edited with William Aspray, both published by MIT Press.

David DeVorkin and Roger Launius, along with James Fleming of Colby College in Maine, organized a symposium at the Smithsonian's S. Dillon Ripley Center, "Making Science Global: Reconsidering the Social and Intellectual Implications of the International Polar and Geophysical Years," held 31 October–1 November 2007, just before the History of Science Society (HSS) conference in Crystal City. In addition, David DeVorkin has been honored by the American Astronomical Society's Historical Astronomy Division with the 2008 LeRoy E. Doggett Prize for all his contributions to the history of astronomy.

NASM's new Lindbergh Chair (2007–08) is Dr. Robert W. Farquhar, retired from the Principal Staff of the Johns Hopkins University Applied Physics Laboratory's (JHU/APL) Space Department. Dr. Farquhar's research interests have focused on the dynamics, control, and use of libration-point satellites. He has served as the Flight Director for a number of deep space missions including the first mission to a comet (ISEE-3/ICE) and the first mission to a near-Earth asteroid (Near-Earth Asteroid Rendezvous, or NEAR). He is working on a memoir of his experience in space science.

Space History also has two predoctoral Guggenheim fellows in 2007–08. Matthew Tribbe, University of Texas at Austin, was in residence June–August 2007. His topic is "Apollo and American Culture." Matthew Hersch is in residence at NASM during the 2007–08 academic year. He is working on a dissertation at the University of Pennsylvania entitled "SPACEWORK: Labor and Culture in America's Astronaut Corps, 1969–1985."

The National Geographic Society recently released a new book that Von Hardesty, Aeronautics Division, coauthored with Gene Eisman: *Epic Rivalry: The Inside Story of the Soviet and American Space Race*. This new overview of the space race gives balanced attention to the American and Soviet space programs, and it includes a foreword by Sergei Khrushchev. Hardesty has also edited (with a new concluding chapter) a revised version of *Milestones of Aviation*, which will appear later this year. For a collaborative effort by the Smithsonian and HarperCollins, he has written *Black Wings: Courageous Stories of African Americans in Aviation and Space History*, with a foreword by astronaut Fred Gregory, a book scheduled to appear next February to coincide with Black History Month.

On a separate front, John Anderson and Von Hardesty continue to work as editors for the Centennial of Flight series with the Cambridge University Press, with plans to publish a new book by Asif Siddiqi in the near term.

For the Sputnik 50th anniversary on 4 October 2007, Margaret Weitekamp, Space History, and David DeVorkin worked on a new pylon mini-exhibit for the Sputnik and Explorer satellites to be installed in the main Milestones of Flight hall in the Museum. For the anniversary and thereafter for six months to a year, the Sputnik 1 and Explorer 1 satellite models have been moved to the center of Milestones and placed there with a special anniversary banner. They will return to their original hanging positions in Milestones later.

Finally, in mid-November, NASM will be opening a major new gallery, America by Air, curated by Bob van der Linden, Aeronautics Division Chair, in a complete reinterpretation of the old Air Transportation Gallery. It covers the history of airlines from their origins to the present and includes as its most spectacular new addition the nose section of a Northwest Airlines Boeing 747, with a walkway to allow visitors to see the cockpit and upper deck. NASA was a major donor for this exhibition.

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Other History News (continued)

News from the American Astronautical Society's History Committee

The 2006 Emme Award for Astronautical Literature goes to Peter J. Westwick for *Into the Black—JPL and the American Space Program, 1976–2004* (Yale University Press). Maura P. Mackowski receives an Honorable Mention for *Testing the Limits—Aviation Medicine and the Origins of Manned Space Flight* (Texas A&M University Press).

The ABC-CLIO/American Astronautical Society (AAS) space history encyclopedia project, *Space Exploration and Humanity: A Historical Encyclopedia*, is now 84 percent complete. Editorial work is scheduled to be completed on the project early next year to achieve publication next fall. While there is quite a bit of work yet to do (including writing, editing, and reviewing), “we can see the light at the end of the tunnel and have decided that it really isn’t an oncoming train!” says general editor Stephen Johnson. If any historians would like to volunteer to help complete the project, please contact Johnson at stephen.b.johnson@nasa.gov or 719-487-9833.

The AAS History Committee publishes its *Explorer* newsletter quarterly. To receive *Explorer* via e-mail, send a message to michael.l.ciancone@nasa.gov. You will receive confirmation that your e-mail address has been added to the AAS History Committee’s e-mail list for the newsletter.

OBITUARIES

Charles T. Force

NASA notes with sadness the passing in August of Charles T. Force, former Associate Administrator for the Agency’s Office of Space Communications.

Force left NASA in May 1996 after an aerospace career that spanned more than four decades. He joined NASA in 1965 as director of the Guam tracking station used to support the Apollo lunar landings. He would later go on to help develop, construct, and employ NASA’s Tracking and Data Relay Satellite System, known as TDRSS.

The users of TDRSS read like a who’s who of the space program. Programs such as the Hubble Space Telescope and Landsat relay their observations to their respective mission control centers through the network.

In a 1992 op-ed in the *Washington Post*, Force complimented NASA and its employees, writing, “[I]ts [NASA’s] accomplishments are unequaled and attest to its people forming one of the most capable and effective teams ever assembled.”

Force assisted Sunny Tsiao in his research and writing of a NASA History manuscript about tracking and communications satellites. In fact, before he died, Force wrote a notable foreword for Tsiao’s forthcoming book on NASA’s Spaceflight Tracking and Data Network (STDN), which will be published in early 2008.

A native of Shoals, Indiana, Force was a 1957 graduate of Purdue University. He was 72 years old at the time of his death. For more information about Force, please see http://www.nasa.gov/about/highlights/force_obit.html and <http://www.nasa.gov/home/hqnews/1996/96-88.txt> online.

Dr. W. David Lewis

Distinguished University Professor of History

By Professor Anthony Carey of Auburn University

Dr. W. David Lewis passed away on 28 September 2007.

He was born on 24 June 1931 in Towanda, Pennsylvania. He took his B.A. and M.A. degrees from Pennsylvania State University, and he completed his Ph.D. at Cornell University in 1961.

Dr. Lewis came to Auburn University in 1971 as the Hudson Professor of History and Engineering. He founded Auburn's History of Technology program and pioneered the teaching of technology and civilization in the core curriculum. He also helped found what became the Human Odyssey program, and he was instrumental in the creation of an honors program that has grown into an Honors College. Since 1994, he was a Distinguished University Professor. Over several decades, David played a critical role in hiring department heads and faculty who have led the History Department and built its reputation. As Athletic Director Emeritus David Housel wrote, "David was a good man, and I have always thought that in many ways he revolutionized the teaching of history at Auburn."

Dr. Lewis authored or edited 13 books and published dozens of smaller pieces, as well as giving scores of talks around the globe. Among his best-known books were acclaimed studies of New York prisons in the early 19th century, of Delta Airlines, of Sloss Furnaces in Birmingham, and of Eddie Rickenbacker. His honors and awards are too numerous to mention in full. Among them, he was the Charles A. Lindbergh Professor of Aerospace History at the National Air and Space Museum and he won the Leonardo da Vinci Medal from the Society for the History of Technology.

Saying that David was enthusiastic about his work is like saying that Mount Everest is high. He once said that he became involved in the history of technology through "serendipity," since it did not exist as an organized field at the time that he attended graduate school. Early in his career, he associated with giants such as Alfred D. Chandler and Melvin Kranzberg, the former a famous historian of business and the latter the recognized founder of the field of history of technology. Whatever research or teaching David was doing at the moment was the most exciting project ever undertaken. His friends vividly recall papers that he delivered 30 or 40 years ago; they describe him jumping up and down, gesticulating broadly, and generally acting like a man who had discovered the best stories ever and could not wait to tell them.

CALLS FOR PAPERS

Society for History in the Federal Government 2008 Meeting

The Society for History in the Federal Government (SHFG) is accepting proposals for individual papers or panels on any aspect of federal government history. SHFG welcomes submissions from historians, graduate students, archivists, librarians, curators, and others, regardless of whether they are federal employees. The SHFG annual meeting will be held on Thursday, 13 March 2008, at the National Archives and Records Administration (NARA) in College Park, Maryland. The deadline for proposals is 1 December 2007. Please mail proposals to 2008 Program Committee, Society for History in the Federal Government, Box 14139, Ben Franklin Station, Washington, DC 20044, or via e-mail to shfgannualconference@yahoo.com.

Quest: The History of Spaceflight Quarterly

David Arnold, editor of *Quest: The History of Spaceflight Quarterly*, is seeking articles for publication. For more about the journal, see <http://www.spacebusiness.com/quest/>. Dr. Arnold sent a note to the editorial board indicating that he has a terrific issue coming together for the 50th anniversary of the Space Age but is looking for additional items relative both to the anniversary and to other non-anniversary-related topics for the fall 2007 issue as well as other issues. If you have possible articles for publication or know of people who might have articles about ready for publication, please contact Dr. Arnold at historyofspace@aol.com.

International Test and Evaluation Association Journal

The *Journal of the International Test and Evaluation Association* (ITEA) is looking for history articles. Each quarter, there is a column entitled “Historical Perspectives” involving short historical sketches of up to 1,200 words, with three or four photographs to accompany them. Longer historical pieces have also been published in the main part of the journal about subjects of special interest to the association.

The subject matter for these columns has been intentionally broad. The editors are appealing to a wide range of test and evaluation (T&E) practitioners—not so much professional historians—so it is important to publish subjects that are varied and novel to keep the readers interested. The journal has done one article about an incident involving flight testing during World War I, another on truck fairing tests designed to increase fuel economy during the energy crisis of the 1970s, and a third on the human factors—not just the machinery—involved in the near-fatal crash of a pilot of one of the NASA lifting bodies. All have end-notes and, although short, offer good scholarship to pique further reading and fresh perspectives.

All periods of history are open, and T&E is defined liberally: in the modern sense of complex, computerized experiments, but also the much less complex T&E as understood in earlier periods. For example, articles can be about specific aircraft (or subsystem) tests, influential individuals in the field of testing, technological turning points, or unique supporting subjects (for instance, the T&E of airline

food!). It can also be a first-person account. Moreover, submissions need not be dominated solely by test and evaluation; ideally, they will feature T&E in some broader context.

Finally, the journal is informal in its editorial process. The journal gives the historical editor wide latitude to find submissions, so once he makes contact with a potential author and hashes out a subject, it is very likely that it will indeed be published. For more information, please contact Michael Gorn, Ph.D., NASA Dryden Flight Research Center, at michael.gorn@dfrc.nasa.gov.

UPCOMING MEETINGS AND EVENTS

3–6 January 2008, the American Historical Association will hold its annual meeting in Washington, DC. Please see <http://www.historians.org/annual/2008/index.cfm> for more information.

5–6 March 2008, the annual Goddard Memorial Symposium, sponsored by the American Astronautical Society, will be held in Greenbelt, Maryland. Please see <http://www.astronautical.org> for more information.

13 March 2008, the Society for History in the Federal Government (SHFG) annual meeting will be held at the National Archives and Records Administration (NARA) in College Park, Maryland. For more information, please see <http://www.shfg.org> or e-mail shfgannualconference@yahoo.com.

29 March–1 April 2008, the next Mutual Concerns of Air and Space Museums will be held in Washington, DC. The meeting will be held at the L'Enfant Plaza Hotel, with a day of sessions at the National Air and Space Museum's Steven F. Udvar-Hazy Center. For more information, please see <http://www.nasm.si.edu/getinvolved/mutualconcerns/>.

10–13 April 2008, the National Council on Public History will hold its annual meeting in Louisville, Kentucky. Please see <http://www.ncph.org/2008annualmtg.html> for more information.

The National Academy of Science and National Research Council's Space Studies Board (SSB) is sponsoring an international public seminar series through 2007 and 2008 to commemorate the 50th anniversary of the International Geophysical Year and the establishment of the SSB. Please see http://www7.nationalacademies.org/ssb/International_Public_Seminar_Series.html for more information.

RECENT IMAGES

Among the recent visitors to the NASA History Division were Hans Mark, Deputy Administrator of NASA from 1981 to 1984, and historian Walter McDougall from the University of Pennsylvania. Dr. Mark is working on his memoirs. Professor McDougall won the Pulitzer Prize in History for 1986 and was preparing for his participation in events commemorating the 50th anniversary of the Space Age.



Steve Dick with Dr. Hans Mark.



Steve with Professor Walter McDougall.



Administrator Michael Griffin, shown with JSC oral historian Rebecca Wright, admiring his personal copy of *A Child's First Book of Stars* by Sy Barlowe. The book, published in 1953, set him on his course to astronautics.



Rebecca Wright, Administrator Griffin, and Sandra Johnson. Rebecca and Sandra interviewed the Administrator for the NASA at 50 Oral History Project, sponsored by the NASA History Division.

The NASA History Division, under the Office of External Relations, NASA Headquarters, Washington, DC 20546, publishes *News and Notes* quarterly.

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Do you have more questions about NASA history in general? Please check out our NASA History Division Home Page at <http://history.nasa.gov> on the Web. For information about doing research in the NASA History Division, please e-mail us at histinfo@hq.nasa.gov or call 202-358-0384.

We also welcome comments about the content and format of this newsletter. Please send comments to Steve Garber, newsletter editor, at stephen.j.garber@nasa.gov.

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