



From the Chief Historian



We've received a lot of positive feedback on the Space Shuttle Program special edition newsletter and also on our last newsletter's coverage of the rollout of *Rockets and People, Volume IV*. For that success we owe a big debt of thanks to our newsletter editor, Giny Cheong. Unfortunately, my late submissions and last-minute changes have continued to push the actual publication dates of the newsletter out of synch with the dates on the masthead. To get us back on schedule, we've decided to combine the second- and third-quarter editions this year into this single newsletter. Hopefully, you'll find that the quality this year will make up for the drop in quantity.

Based on the success of the Shuttle Program special edition, we've decided to make the final newsletter each year into a focused thematic issue. For 2012, the theme will be planetary exploration. The first successful planetary mission, Mariner 2, happened 50 years ago this fall, and we are marking this anniversary in a number of ways throughout the year. Our first two quarterly lunch brown-bag speakers this year (more about this inside) have talked about planetary exploration. We've also been updating materials on our Web site and tweeting more about planetary exploration topics. Most importantly, our annual history symposium, "Solar System Exploration @ 50," is devoted to the subject. Cosponsored by the National Air and Space Museum, the National Aeronautics and Space Administration (NASA) Science

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Berlin Symposium on Outer Space and the End of Utopia in the 1970s

By Friederike Mehl, Universiteit van Amsterdam, FriederikeMehl@gmx.de

Did the end of the Space Age in the 1970s really mark the end of outer space as a field for humankind's visions, longings, and projections? The termination of the Apollo program and the cessation of piloted space exploration could be regarded as proof that with the beginning of the decade started an age of limitations and boundaries that was at odds with formerly close connections between outer space and futurity. Or should we rather understand this premature "end" as yet another part of the grand narrative of decline through which the history of this "in-between decade" is so often interpreted? A number of developments in the 1970s, such as the foundation of the European Space Agency and the U.S.-Soviet Apollo-Soyuz Test Project in 1975, the upsurge of robotic space exploration missions, the renewed interest in space colonization, and the flourishing astroculture of the period, discourage all-too-easy conclusions.

At the conference "Envisioning Limits: Outer Space and the End of Utopia," held in Berlin, Germany, from 19 to 21 April 2012, more than 60 international scholars from a wide range of disciplines investigated the complex history of outer space, spaceflight, and extraterrestrial life in the 1970s. Alexander C. T. Geppert, William R. Macauley, and Daniel Brandau of

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Mission Directorate, and the Jet Propulsion Laboratory, the symposium will be held in Washington, DC, on 25–26 October. You can read more about the symposium in this newsletter.

Do you have an idea for what our theme should be for newsletter number 4 in 2013? I'd be delighted to hear it. Just drop me a note or give me a call.

In the meantime, Godspeed,



William P. Barry
Chief Historian

Berlin Symposium on Outer Space and the End of Utopia in the 1970s (continued)

the Emmy Noether Program (The Future in the Stars: European Astroculture and Extraterrestrial Life in the Twentieth Century project at the Friedrich-Meinecke-Institut of the Freie Universität Berlin) organized the three-day event, during which the decade was discussed as well as the nature of the boundaries that appeared to characterize it. Many of the participants had already taken part in an earlier international symposium entitled “Imagining Outer Space, 1900–2000,” organized by Alexander Geppert, at the Universität Bielefeld’s Zentrum für interdisziplinäre Forschung (ZiF) in February 2008.¹

Three feature presentations and nine panels provided a multifaceted analysis of astroculture as a predominant topos in the cultural imagination as it shaped the sociopolitical discourse, not only in Western Europe and the U.S., but also in the USSR and in developing countries. In the course of investigating ideas of limits and limitlessness against the backdrop of the all-too-real boundaries in a world marked by “the arms race, environmental deterioration, the population explosion, and economic stagnation,” the question was discussed whether the 1970s were indeed a period of transition, an intermission, or, for that matter, an intelligible unit at all.² What happened to spaceflight and astroculture in the 1970s, and how could these developments be positioned in the wider context of this decade that is currently so eagerly debated? In order to produce viable answers to these questions, all participants took the limits theme to heart and went far beyond the mere title of the conference with their inquiry. For one, historiographical limits, such as periodization and historical trends, were scrutinized. Furthermore, thematic limits—the range of objects of study as well as the range of disciplines involved—were decidedly widened. And lastly, geopolitical limits were called into question, regarding both national borders and the dividing lines between Earth and outer space.

1 Alexander C. T. Geppert, “Space in Europe, Europe in Space: Symposium on 20th-Century Astroculture,” *NASA History News & Notes* 25, no. 2 (2008): 1–2, 6–12.

2 Donella H. Meadows et al., *The Limits to Growth: A Report for the Club of Rome’s Project on the Predicament of Mankind* (London: Universe Books, 1972), p. 17.

At a conference about the history of outer space during the 1970s, a crucial point was of course the choice of timeframes and their explanatory potential. Accordingly, Martin Collins (Washington, DC) set the agenda when proposing that the most challenging aspect of historical research into the 1970s was that the decade had been thoroughly theorized by philosophers like Fredric Jameson, Jean-François Lyotard, and cultural studies scholar David Harvey long before it was historicized. Subsequently, the decision to concentrate on the 1970s, a period that has recently been described as marking both “the end of certainty” and “the shock of the global,” as well as a time “after the boom,” was complicated by a series of developments and events in space history.³ Robert Poole (Lancaster, U.K.) outlined how Stanley Kubrick’s legendary film *2001: A Space Odyssey* could well be interpreted as a cultural critique of the scientific self-understanding of progressivist narratives of human development. John Krige (Atlanta) took Europe’s quarrels with the United States regarding technological cooperation as the marker of more profound shifts in the United States’ global position. The breach of the American monopoly on access to space caused by the development of the European Ariane launch vehicle series, Krige argued, should be regarded a historical turning point. Further detailed readings of historical contexts of the United States were provided by Matthew H. Hersch (Philadelphia), Neil M. Maher (Newark, New Jersey), and Peter J. Westwick (Los Angeles) in their complementary accounts of U.S. domestic politics. In the end, Debora Battaglia (South Hadley, Massachusetts) neatly synthesized the discussion regarding the periodization of the 1970s when she urged that instead of looking toward what appeared as a period of confusion or transition, we should rather pay heed to the “interdiscursive density” resulting from diverging discourses that “intersect in the idea of space.”

In addition to engaging with the limits of periodization, participants also transcended limits when it came to the range of disciplines. Investigations of large-scale space science projects and their political implications were combined with questions regarding the cultural imagination of, as well as the search for, meaning in space. Andrew Jenks (Long Beach, California) termed this bridging of the division between science research and sociocultural subjects the “techie-fuzzy dialogue.”

Indeed, historians of science, scientists, and representatives of space research institutions were joined by cultural theorists, literary studies scholars, and design researchers in what emerged as a veritable crucible of interdisciplinary exchange. Conceptual innovations in the field of the history of science were proposed in a joint presentation by Lisa Messeri (Philadelphia) and Janet Vertesi (Princeton), in which they identified the two “greatest missions never flown,” the Mars Sample Return and the Terrestrial Planet Finder, and argued that these should be evaluated in their capacity to shape scientific communities as well as technological

3 Konrad H. Jarausch, ed., *Das Ende der Zuversicht: Die siebziger Jahre als Geschichte* (Göttingen, Germany: Vandenhoeck & Ruprecht, 2008); Niall Ferguson et al. (eds.), *The Shock of the Global: The 1970s in Perspective* (Cambridge, MA: Belknap Press, 2010); Anselm Doering-Manteuffel/Lutz Raphael, *Nach dem Boom: Perspektiven auf die Zeitgeschichte seit 1970* (Göttingen, Germany: Vandenhoeck & Ruprecht, 2008).

Berlin Symposium on Outer Space and the End of Utopia in the 1970s (continued)

developments. Regina Peldszus (London) explored astroculture's filmic expressions; Florian Kläger (Münster) interpreted cosmological metaphors in 1970s novels as a literary topos for sense-making and self-reflexivity; and Christina Vatsella (Paris) discussed satellite art projects as they created a sense of global immediacy and collective identity in a politically divided world. A more exotic expression of astroculture surprised with its familiarity when Thore Bjørnvig (Copenhagen) presented his research on the design of LEGO's space theme series. Also, the general economic development from generous national budgets for big science until the 1960s, through economic crisis in the 1970s, to the subsequent commercialization of spaceflight that would eventually result in space tourism in the early 21st century, crystallized in a number of talks. The broad range of disciplines present at the conference was underscored by Agnes Meyer-Brandis's (Berlin) most intriguing account of the raising and training of "Moon geese" inspired by Francis Godwin.

The discussion of geopolitical limits, the limits between nations and power blocs as well as the limits between Earth and outer space, was the most avid, if also the most speculative. The Cold War context appeared to privilege clear geopolitical definitions resulting from the binary opposition of the two superpowers, but this assumption was soon complicated. Andrew Jenks's talk about the Association for Space Explorers as they attempted to create a terrain for cosmopolitanism in the midst of competing superpowers highlighted the intricate relations between geopolitical borders, spacefaring, and the transcendence of limits. Also, the geopolitical boundaries of Earth and outer space were explored, especially regarding the conquest of space and historic visions of space colonization that were fuelled by the economic crisis and the environmental concerns of the period. Gerard O'Neill's visions of outposts in outer space were outlined by Gonzalo Munévar (Southfield, Michigan), as well as W. Patrick McCray (Santa Barbara, California). Especially telling as to his historic context was O'Neill's concern that the Earth's human population had used up most resources and done much environmental damage in the process, which led him to conclude that space colonization was a necessary consequence. To an extent, Luca Follis (Lancaster, U.K.) addressed colonial thinking, too, in his discussion of the legal problematic of "sovereigns without subjects." Follis's analysis resonated with Philippe Ailleris's (Noordwijk, Netherlands) investigation into the history of serious public contemplation of the existence of UFOs and extraterrestrial life, a debate that climaxed throughout the 1970s, when attempts were made to communicate with the as yet unknown exobiological species, but was then abandoned. This ultimate rejection of other than anthropocentric explanatory models of outer space was underscored by David A. Kirby (Manchester, U.K.) when he concluded that "from a human perspective, there is no outer space; there are just the spaces that humans inhabit." Even when leaving Earth's orbit, whether in reality or imagination, people were confronted with their inability to escape human subjectivity.

All in all, it was a most engaging conference that highlighted the importance as well as the fruitfulness of interdisciplinary research regarding the history of space exploration, extraterrestrial life, and astroculture. The sense of the excitement

generated by the exploration of new fields at the edge of traditional disciplines is probably the most characteristic feature of this emergent research area. Geppert announced that there would be a third conference of similar scale in 2014.

If outer space remained the place for projections and visions of the future throughout the 1970s, the projections were more Earth-related, the visions more short-term. Instead of an alternative to Earth, outer space developed into part of the solution to the more pressing challenges that living on Earth brought with itself, such as the prospect of environmental catastrophe and new legal, geopolitical, and military strategies vis-à-vis changing national relations. Accordingly, cultural producers started to question progressivist narratives and Cold War dichotomy thinking and to explore the impact of technological advance on the human condition. Visions of encountering the alien other, be it extraterrestrials or different forms of exobiology, gave way to self-reflection mediated through cosmology, subversive artistic use of satellites, or explorations of human limits in outer space. Therefore, while the 1970s did not mark the end of space exploration and futurity, space enthusiasm and the spirit of national progress, or technological optimism and military prowess, the causal link between them was decidedly weakened, if not dissolved. This suspension was caused by the gradual realization, following successes in human spaceflight, that the future was neither in outer space nor in a different time; it was suddenly much closer, in the present, back on Earth.

A more comprehensive version of this article can be found at <http://hsozkult.geschichte.hu-berlin.de/tagungsberichte/id=4303>; for a detailed program, abstracts of all presentations, and biographical information on all speakers, please consult <http://www.limits.geschkult.fu-berlin.de>.



News from Headquarters and the Centers

Headquarters

History Program Office (HPO)

By Bill Barry

Those of you who have been in contact with us since April may be wondering, “What happened with Steve?” After slogging away for almost two years as acting Chief Historian and then spending a year and a half helping me get up to speed, Steve Garber asked for a chance to do a developmental assignment. An opportunity popped up for him to work for our Office of Legislative and Intergovernmental Affairs (OLIA) as an embedded OLIA support person in the Science Mission Directorate (SMD). If we had waited for all of the backfill paperwork to be done, the opportunity would have disappeared. So in mid-April, we let OLIA/SMD borrow Steve for a year. We expect him back here in the History Program Office next spring, energized and full of new ideas and skills.

We were promised that we would get a backfill for Steve, and as suspected, it has taken quite a while. But in July, Yvette Smith joined us for a year on detail from the News and Multimedia Division of the Office of Communications. You are probably already familiar with her work, though you may not know it, because she is an editor/producer for the Agency’s Web site, www.nasa.gov. She has a tremendous background as a technical editor and writer on top of her degree in journalism (with an English literature minor) from the University of Oklahoma. Her writing, editorial, and Web skills will be a huge help to us in the months ahead. If you wind up talking with her, I think you will see that she will be a great fit for our team.

Speaking of staff members, let’s not forget our tremendous volunteer interns. Our intern program is not funded, but we continue to attract large numbers of highly qualified applicants. This year, we have enjoyed a continuing stream of highly energetic and productive interns. At the end of March 2012, Julie Ta, a senior at the University of California, Davis (history and philosophy double major), joined us while she was here on the UC Davis Washington Program. Julie did a tremendous job working on at least five of our book projects, writing up award nominations, making our book inventory more usable, getting our iTunes U account set up, and—as some of you former interns may have noticed—updating our “alumni list.” You would never have guessed that she was within days of graduating when she left here to head back to California on 8 June. We thank her for her tremendous contributions and wish her the best in her future career.

Fortunately, we had no gap in our intern coverage because our summer interns arrived before Julie left. Jessica Brodsky, now a junior at Brown University majoring in science and society, arrived at the end of May. Joey Meyer, a senior at Amherst College double-majoring in history and astronomy, arrived the next

week. They both immediately picked up the work on various manuscripts and threw themselves into building our iTunes U site, among other things. By the time you read this, they will be back at their respective schools, but as I'm writing this, we expect that they will make even more contributions until their internships end in August.

This fall, we will also be blessed with two interns. They are both graduate students at Georgetown University. Kelly Victor-French is working on her master's in conflict resolution, and Marshall Bennett is working on his master's degree in the Walsh School of Foreign Service. They both bring an interesting mix of skills and a passion for science and technology.

In the first half of 2012, we have had a great response to our new History Program Quarterly Brownbag Lunch Speakers. As usual, much of the idea development and heavy lifting on the logistical side has been provided by Nadine Andreassen. Our first speaker this year was Dr. Wes Huntress, one of the luminaries in the field of space science and currently serving as chair of the NASA Advisory Council Science Committee. On 26 March, Wes had a standing-room-only crowd enthralled with a presentation on the Soviet planetary exploration program. The talk was based on the book he coauthored last year: "Soviet Robots in the Solar System." For the second quarter, we brought in Professor Harry Lambright of Syracuse University. Harry is wrapping up work on a book for us on Mars exploration. His talk, "The Politics of Mars: Robotic Exploration from Mariner to MSL," was the perfect preparation for the Mars Science Laboratory (MSL) landing that was due in early August. For the third quarter, we have another fascinating speaker lined up: Dr. Nancy Roman, the legendary "mother of the Hubble Space Telescope."

If you detected a planetary science tilt in the lineup of speakers this year, that was intentional. This being the 50th anniversary of the first successful planetary probe (Mariner 2), we have been putting special emphasis on that field of NASA's activities. As mentioned in the "From the Chief" article on the front page, our annual history symposium this year is on the theme solar system exploration at 50 years. In June, we made the very difficult selections of the papers that will be presented at the symposium. We had 63 proposals for what we expected to be about 20 slots for presentations. The field is so rich and the proposals were so good that we managed to squeeze in a few extras. You can see the lineup for the symposium elsewhere in this newsletter. As you read this, we will be busy working the logistical details for the 25–26 October event.

Finally, we have not gotten much into print in the middle of 2012, but we have posted a number of valuable reference sources on our Web site. For example, you can now find *Aeronautics and Astronautics: A Chronology, 2008* and the 2009 version in PDF format on the site. At long last, we have also completed *NASA Historical Data Book, Vol. VIII: NASA Earth Science and Space Applications, Aeronautics, Technology, and Exploration, Tracking and Data Acquisition/Space Operations, Facilities and Resources, 1989–1998*. Due to the size and complexity of this volume, it will not appear in print form but will be available as a pair of PDF files on our site. With this volume, we now have a complete set of data books,

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News from Headquarters and the Centers (continued)

with two per decade, covering NASA from 1958 to 1998. We have also posted an update to the brilliant annotated bibliography on the Space Shuttle Program, written by then–Chief Historian Roger Launius in 1992. (For those of you who remember, this was the first in our highly successful Monographs in Aerospace History series.) This update was produced for us under contract by the Federal Research Division of the Library of Congress (the same folks who have been producing our annual chronologies for quite some time). In addition, with all of the interest in the MSL mission, we have updated our Web materials on Mars exploration, including our chronology and annotated bibliography. Thanks to summer intern Joey Meyer for the great job on these Mars materials. It has been a busy few months for the History Program.

Historical Reference Collection (HRC)

By Jane H. Odom

In the Headquarters archives, the staff continues to stay busy with reference services and processing projects. During the last quarter, we hosted an average of a dozen people per month who came in person to the History Program Office to conduct research. We had research visits by NASA staff as well as visitors from the National Air and Space Museum, American University, Princeton University, the Massachusetts Institute of Technology, Fordham University, the Georgia Institute of Technology, the University of British Columbia, Cambridge University (U.K.), and other educational institutions. Also, there were visitors from the National Research Council, the Naval Research Laboratory, and Haverstick Films (Pennsylvania), as well as the X-34 contract historian.

A number of archive projects are either under way or have been completed recently that researchers will find of interest. Processing (arrangement, description, and preservation) continues on a large audiovisual collection, circa 1960–2011. The collection includes over 45 cubic feet of material in numerous formats. While the processing of the reels and cassettes is complete, efforts are now focused on the videocassette portion of the collection.

Of the nearly 350 audio reels identified in the collection, six dozen were selected for digitization, with plans under way to digitize more in the coming years as funding permits. The newly digitized recordings in WAV and MP3 formats were made from 3-, 5-, and 7-inch reels dated circa 1960–71. They include interviews or speeches of aviation pioneers (Jimmy Doolittle and John Victory), Headquarters and Center officials (Hugh Dryden, George Mueller, Homer Newell, Thomas Paine, Robert Seamans, Kurt Debus, and Robert Gilruth), astronauts (Neil Armstrong and Michael Collins), and others.

The review of boxes on loan from the Federal Records Center continues full steam ahead, with material being added to the HRC from the Apollo Lunar Exploration Office files, 1965–71, and the reusable launch vehicles files, circa 1970–97.

Six cubic feet of chronological correspondence files, 2005–10, from the Administrator's Office were recently digitized. This valuable resource is fully text-searchable in an internal database, where it will be used by staff to better assist researchers.



The History Program Office and Chief Historian Bill Barry (right) thank Julie Ta (left) for her hard work as an intern at Headquarters during the spring semester.



Chief Historian Bill Barry (center) with the summer interns, Joseph Meyer and Jessica Brodsky.

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News from Headquarters and the Centers (continued)



The History Program Office: (front row from left to right) Colin Fries, Liz Suckow, Jane Odom, Jessica Brodsky, and John Hargenrader; (back row) Steve Garber, Nadine Andreassen, Joseph Meyer, and Bill Barry.

Ames Research Center (ARC)

By Glenn Bugos

NASA Ames recently inducted a new class of Ames Fellows, the highest rank that the Center can bestow upon one of its own for research excellence. Inducted were Louis Allamandola, whose work in astrochemistry and spectroscopy revealed to us our molecularly complex universe; Wayne Johnson for his fundamental research and tools on the aeromechanics of rotorcraft; Baruch Blumberg for his role in establishing the discipline of astrobiology; and Hans Mark for his success at undergirding aerospace engineering with advanced computing. At a gala dinner, Ames Fellow Heinz Erzberger toasted this new class of Fellows. To support the effort, the Ames History Office wrote biographies of the Fellows and updated our internal Web site on Ames Awards for Research Excellence.

Glenn Bugos published a paper titled “Aerospace in the Rest of California: The View From Silicon Valley,” in *Blue Sky Metropolis: The Aerospace Century in Southern California* (University of California Press, 2012), edited by Peter J. Westwick. Here, he contrasts the aerospace industry in Northern California with that in Southern California and explores the roles of Ames and aerospace generally in shaping the culture of innovation that defines the Silicon Valley as a region. Bugos also presented a paper on the role of the National Advisory Committee for Aeronautics (NACA) in the birth of American airmail at the Business History Conference in Philadelphia.

April Gage mentored Susan Edwards, a master’s student in the School of Library and Information Science at San Jose State University, as she processed the papers of her late father, John Edwards, famous for his work in aeroelastics.

The records, spanning more than 32 cubic feet of paper records and 16 gigabytes of electronic files, will reside at Dryden Flight Research Center (DFRC), and the finding aids, 264 pages long, are posted at the Online Archive of California. To leverage all the hard work that went into making this virtual internship a success, April may mentor other archive students working at remote sites. Former intern Dorothy Leung was recently hired at NASA Ames in the Life Science Data Archive.

April presented a talk titled “NASA History in Three Dimensions” at the annual meeting of the Society of California Archivists, drawing attention to our collection of artifacts. She also led a very successful vendor relations effort. Notable accessions for this period include project records from the Exobiology Branch and artifacts such as paintings, models of all the Pioneer spacecraft, and a Russian *Buran*, as well as items from the Cosmos/Bion joint Soviet-U.S. life sciences expeditions.

Mars in 3D is now available as a Blu-ray disc, including an interview with those involved in the remastering. As reported previously, this documentary used images from the stereoscopic imager on the Viking lander, and this remastering was based on materials located in the NASA Ames archives. It is fascinating to see how our understanding of the surface of Mars has changed so much over the decades. The documentary is available for purchase at <http://www.aixrecords.com/>.

Anticipating the 100th anniversary of the NACA in 2015, NASA Ames has begun to explore ways of compiling a union catalog of NACA records held at the various National Archive branches and at the NASA Centers.

In history news from around Ames, Dolores Beasley spearheaded an effort to more prominently display the many awards Ames has won over the years. In the Center’s headquarters building are three Collier Trophies won by Ames engineers, as well as many won more recently. International space partners continue to flock to NASA Ames, and Jack Boyd has introduced them all to the capabilities of the Center. Notable recent visitors include the president of Bulgaria and the head of the Italian space agency.

News from Headquarters and the Centers (continued)



Louis Allamandola receives a plaque from Ames Center Director Pete Worden upon his induction as an Ames Fellow. One of the most highly cited of all space scientists, Allamandola has stood on the forefront of astrochemistry as our understanding of the universe evolved from a physicists' hydrogen-dominated view in the early 1970s to the chemically rich and diverse molecular universe we know today. The rank of Fellow is the highest recognition that the Ames Research Center can bestow upon one of its own for a lifetime of intellectual accomplishments. With the honor comes some support to facilitate greater involvement in professional meetings.



NASA Ames recently opened N232 Sustainability Base, a collaboration-enhancing facility where the Center will hone technology useful in a lunar base. "Native to Place" design principles intersect with NASA's expertise of in situ resource utilization to produce a high-performing building that strives to lead and model resource efficiency within the federal government. Reflecting the "reduce and reuse" mantra driving the design of the building, explosion-proof emergency lamps that once graced Hangar One and that nicely complement the architecture of this new green building were installed as safety lamps.



Deb Feng, NASA Ames Associate Center Director for Mission Support, placed an Ames challenge coin and a capabilities brochure into a time capsule to mark the 10th anniversary of the Carnegie Mellon University Silicon Valley campus at the NASA Research Park.

Dryden Flight Research Center (DFRC)

By Christian Gelzer

The latest offering in the NASA Aeronautics Book Series, *Breaking the Mishap Chain*, debuted at the 83rd annual Aerospace Medical Association conference 13–17 May 2012, in Atlanta, Georgia. The three authors—Peter Merlin, Gregg Bendrick, and Dwight Holland—were on hand to discuss the book and autograph copies. The book details the human factors lessons learned from aerospace accidents and incidents in research, flight testing, and development. It includes a number of mishap case studies that focus on the human factors that are often associated with a chain of events, the changing of even one element of which could have prevented the disaster. The book was sponsored and funded by the communications and education department of NASA's Aeronautics Research Mission Directorate and is available as an e-book at http://www.nasa.gov/connect/ebooks/break_mishap_chain_detail.html.

Hard copies are available from the U.S. Government Printing Office bookstore: <http://bookstore.gpo.gov/actions/GetPublication.do?stocknumber=033-000-01356-6>.

Merlin is traveling to Tampa, Florida, where he was invited to present “Mach 3 Legend: Design and Development of the Lockheed Blackbird” as a tutorial session at the National Space & Missile Materials Symposium on 25 June. The Blackbirds hold a unique place in the development of aeronautics. In their day, the A-12, YF-12, M-21, D-21, and SR-71 variants outperformed all other jet airplanes in terms of altitude and speed. Merlin's presentation will describe the design evolution of the Blackbird, the construction and materials challenges faced by Lockheed, the aircraft's performance characteristics and capabilities, and NASA's role in using the aircraft as a flying laboratory to collect data on materials, structures, loads, heating, aerodynamics, and performance for high-speed aircraft.

Curtis Peebles has wrapped up the draft of *Controlled Impact Demonstration: NASA's Contribution to Airliner Safety*, his next monograph. He is now making editorial changes and addressing other concerns about the project that so many at the Center fondly refer to (if rather insouciantly) as the Crash in the Desert. And he is putting the finishing touches on *Thinking on the Fly: Intelligent Flight and Propulsion Control Development at NASA Dryden*.

Christian Gelzer is rapidly finishing his two Shuttle-related books while gazing at several other projects. One is a new edition of the Center's *Flights of Discovery*, to be issued as an e-book this time with a variety of active links, a project that is both exciting and daunting. He is also closely following the progress of two projects funded by the Center's Office of Chief Technologist; both operate on shoestrings and will make use of summer student interns, and Christian hopes each project will afford some sort of viable story to tell in the end, especially if either one—or both—receive additional funding and proceed to the next stage.

News from Headquarters and the Centers (continued)

Susan Edwards has almost finished cataloging her father's (John Edwards's) material. We are working on ways to incorporate it into the collection, both materially and electronically, and April Gage at Ames has been steadfast help to both of us in this.

Glenn Research Center (GRC)

By Anne Mills

The Glenn History Office is pleased to announce the availability of its newest book. Monograph in Aerospace History number 48, SP-2012-4548, *In Pursuit of Power: NASA's Propulsion Systems Laboratory No. 1 and 2*, by Robert Arrighi, is complete. The Propulsion Systems Laboratory (PSL) was the NACA's most powerful facility for testing full-scale engines at simulated flight altitudes. The original PSL chambers, referred to as PSL numbers 1 and 2, were a technological combination of the old static sea level test stands and the complex Altitude Wind Tunnel, which recreated actual flight conditions on a larger scale. PSL's significance lies in the size and power of the engines it tested. When it became operational in 1952, PSL was the nation's only facility that could run these large, full-size engine systems in controlled altitude conditions. The ability to control the test environment was important in the advancement of the ever-increasing and complex turbojet systems. Monographs in Aerospace History can be ordered at no charge by sending a self-addressed stamped envelope to the NASA Information Center. Full information about how to order and a PDF version of the book can be found online at <http://www.hq.nasa.gov/office/pao/History/series95.html#monographs>.

A new historic preservation effort it is under way to document the Small Liquid Hydrogen Facilities at Glenn's Plum Brook Station. This project will cover the Rocket Pump Research Facility (A Site), the Rocket Turbopump and Pump Research Facility (C Site), the Rocket Turbine and Controls Research Facility (D Site), the Dynamics Research Stand (E Site), the Hydraulics Research Facility (F Site), the Pilot Plant (G Site), the Fluorine Pump Research Facility (I Site), the Rocket Systems Research Facility (J Site), the H Control Building, and the Cryogenic Propellant Research Facility (K Site). A Web site outlining the history of the facilities through photographs, documents, and drawings will be created as a means of dissemination for the project.

Jet Propulsion Laboratory (JPL)

By Erik Conway

Producing a documentary on the exploration of Mars involves spending a lot of time watching old videotape and film. For the next installment of our documentary history of JPL, Erik Conway has been reviewing the footage from Mariners 4, 6, 7, and 9, in addition to the Viking missions. These collections are amazing visits to the past, if only to see how much the media landscape has changed. For the Mariner 9 and Viking missions, JPL hosted press conferences that sometimes lasted hours and involved what Conway can only explain as graduate-level lectures by mission scientists—detailed explanations of how specific instruments

worked, how data reduction and interpretation were done, principles of geomorphology and mineralogy, and so on. Certain television reporters got very good at shaping questions to elicit short, but clear, answers, in response to presentations that were technically overwhelming and could not possibly be edited into a news segment of 3 minutes or less.

The “sound bite” hadn’t made it to JPL yet.

There was a Cold War–era rationale for this: presenting the U.S. space program as an open, public, scientific effort in opposition to the secretive Soviet effort. That openness was carried to an extreme by the Viking project, led by Langley Research Center’s James S. Martin. JPL’s cameras ran for about 6 hours continuously during the Mars entries of both landers, and Martin had to deal with reporters’ questions in real time. For the first landing, which was as perfect as anything can be, that was not a problem. But during the second landing, the Viking 2 orbiter lost its fix on Earth and JPL could no longer communicate with it or receive the lander’s telemetry; Martin had to keep answering questions with little information to give. Conway found it a fascinating performance.

Due to this effort at openness, the Mariner 9 and Viking footage reveals the process of doing planetary science more fully than does that from later missions. It is also a window into how that first generation of planetary scientists and engineers saw their roles as communicators.

Johnson Space Center (JSC)

By Rebecca Wright

Earlier this year, the Johnson Space Center History Office team worked at the Kennedy Space Center complex for nine days to gather information about the Solid Rocket Boosters (SRB) Recovery Ships and Maritime Operations, as well as the Shuttle Carrier Aircraft and Ferry Flight Operations. This task included collecting relevant documentation for these two JSC assets as part of the closeout of the Space Shuttle Program and in support of the Center’s Historic Preservation Officer. The team had to research, identify, and connect with individuals involved in these two separate areas, then plan and create an integrated work schedule to meet a deadline of less than three months. The JSC History Office team gathered electronic files of videos, imagery, and documentation, as well as conducted oral history sessions with 17 people. Previously, the JSC History Office has provided support for the Space Transportation System (STS) Recordation Project by conducting oral history interviews to gather information on Shuttle-related facilities, components, and operations from individuals in Texas, California, Alabama, Florida, and Washington, DC.

The JSC History Office has begun a partnership with the Space Suit and Crew Survival Systems Branch for its Knowledge Capture effort that gathers historical information from spacesuit technicians. The interviews are videotaped and become part of the JSC Engineering Academy archives, as well as the JSC Oral History Project archives. The joint effort allows the combined resources

News from Headquarters and the Centers (continued)

to enrich the historical record and provides an educational resource for current employees developing spacesuit materials and hardware processes for future components and uses. Interviewed recently were spacesuit expert Ron Woods, who shared experiences from his more than 45 years of experience, and the Smithsonian Institution's Cathleen Lewis, Curator of International Space Programs and Spacesuits.

In June, the team was featured during the Houston History Association's annual conference, "Building Houston: From Allen's Landing to the Moon." More than 100 photos from the JSC Imagery Repository were used during the session that celebrated the relationship of more than 50 years between the Center and "Space City." The pictures and narration helped to illustrate NASA's impact on the community over the past five decades while sharing information about the projects currently under way that support technical research on Earth and future exploration deep into the solar system. Presenting were Dr. Jennifer Ross-Nazzal, Sandra Johnson, and Rebecca Wright from the JSC History Office; Eliza Johnson from the JSC Imagery Repository; and Leslie Richards from JSC's Mission Video Cataloging Area.

Langley Research Center (LaRC)

By Gail Langevin

Highway Markers Installed

Two historical highway markers are now installed at the entrance of NASA Langley Research Center. The markers, the work of Mary Gainer, LaRC Historic Preservation Officer, and Caroline Diehl, Cultural Resource Management support contractor with Science Applications International Corporation (SAIC), commemorate the National Advisory Committee for Aeronautics and Chesterville Plantation, the birthplace of George Wythe, signer of the Declaration of Independence. The remains of Chesterville sit on property that currently belongs to NASA.

Speaking at the highway marker unveiling were Steve Jurczyk, Langley Deputy Director; George Wallace, Hampton Vice Mayor; Olga Dominguez, NASA Assistant Administrator, Strategic Infrastructure, Mission Support Directorate; and Kathleen Kilpatrick, Virginia State Historic Preservation Officer. Guests attending the unveiling included Wythe Holt, descendant of George Wythe; Luci Cochran, Hampton History Museum Director; Brian Laslie, Langley Air Force Base Historian; James Leatherwood, Director of the Environmental Management Division (EMD), NASA Headquarters; and Jennifer Groman, Federal Preservation Officer, NASA Headquarters.

The text of the highway marker that commemorates the NACA reads as follows:

National Advisory Committee for Aeronautics

The National Advisory Committee for Aeronautics (NACA) was established by Congress in 1915 to "supervise and direct the scientific study of the problems of flight." The NACA created the Langley Memorial Aeronautical Laboratory at nearby

Langley Field in 1917. Overseen by an advisory committee including Orville Wright and Charles Lindbergh, the laboratory created and used specialized wind tunnels and facilities to research and accelerate aeronautic technologies during peacetime and wartime from the 1920s to the late 1950s. In 1958, the NACA was superseded by the modern NASA and the laboratory was renamed the Langley Research Center.

Author Joe Chambers Gives Colloquium and Sigma Series Talks

Langley history author Joe Chambers was invited by the Langley Colloquium Committee to give a talk to the Center on his recently completed book, *Cave of the Winds: The Remarkable History of the NASA Langley Full-Scale Wind Tunnel*. At the end of the scheduled hourlong talk, Joe stated that he had more stories but his time was up. The more than 250 members of the audience urged him to continue speaking and stayed to listen as he talked for another 30 minutes. Perhaps the most amazing story that Joe was able to corroborate was the testing of a Japanese Zero (World War II-era aircraft) in the Full Scale Tunnel.

Joe presented a similar talk for the public at the Virginia Air & Space Center as part of the Sigma Series Lectures, which was also well received. Reporter Hugh Lessig of the *Daily Press*, a newspaper that circulates widely in the cities and counties surrounding Hampton, Virginia, interviewed Joe regarding the testing of the Japanese Zero for a series on the 70th anniversary of the Battle of Midway. The article recounting the story appeared in the Thursday, 7 June, edition of the paper.

NASA Langley 95th Anniversary Open House

Planning continues for the open house celebrating Langley's 95th anniversary on 22 September 2012. Facilities to be open for public tours are being selected, and a "tweetup" is being planned.

Marshall Space Flight Center (MSFC)

By Mike Wright

History is going strong at the Center. Mike Wright, the Marshall historian, has returned to work after an absence due to illness. In addition to his NASA responsibilities, Wright will be returning to Middle Tennessee State University to work on a degree in public history.

Tracy McMahan just returned to be a co-op in the history office this summer. Her goal is to finish a first draft of the Ares history by the end of the summer. While she was away at school, one of the former Ares team members conducted a technical review the first three chapters of the document and provided detailed comments. Steve Garber of NASA Headquarters also reviewed the document and made recommendations. At school, McMahan completed her senior seminar course by writing a research paper on the history of women at Marshall from 1968 to 1975. She used three oral history interviews with women and many sources from the Marshall history collection, the Army history archives, and material provided by Colin Fries from the NASA Headquarters Historical Reference Collection. For her history of technology class, she completed a paper on NASA Earth observations

News from Headquarters and the Centers (continued)

and the environmental movement. For this paper, she used several interviews in the JSC oral history collection.

Aside from handling history office administrative tasks and responding to inquiries, Molly Porter of AI Signal Research, Inc., is in the process of transferring documents from file cabinets to a recently acquired dynamic shelving system, building collections based on recent acquisitions from Marshall's equal employment opportunity and space hardware logistics offices, and supporting research for several external history projects.

Bryan Long has also joined Mike, Tracy, and Molly this summer as an intern in the history department. He is a chemical engineering major and will be attending the University of Alabama in Huntsville this fall. Over the summer, Bryan will be doing research related to spaceflight and the important role it continues to play as part of NASA's programs and projects. He will also be assisting in transferring analog documents to digital format. Although his time here is limited, he already hopes to have a future at Marshall.

Stennis Space Center (SSC)

By Daphne Alford

On 25 October 1961, NASA announced the formation of the Mississippi Test Facility—now known as the John C. Stennis Space Center—for testing engines for the Apollo program. A high-terrace area bordering the East Pearl River in Hancock County, Mississippi, was selected for its location. NASA entrusted the U.S. Army Corps of Engineers with the difficult task of procuring each land parcel either by directly purchasing the land or through the acquisition of a perpetual easement.

To achieve this goal, five small towns—Logtown, Gainesville, Santa Rosa, Napoleon, and Westonia—would need to be removed from the area. The process of land acquisition and town relocation was documented in more than 3,200 folders, one for each parcel of land. These records serve as the principal source for the current project managed by Stennis's History Office.

Long before NASA selected the area for its test program, the French, British, and Spanish colonial governments ruled the region. At least twice in the past, the East Pearl River served as an international boundary between European colonial powers and the newly established government of the United States. Settlers came from many parts of the United States to participate in the lumber business, which was a prosperous industry due to the vast timber resources located both in Honey Island Swamp to the west and in Devil's Swamp to the east of the area.

By 1961, less than 1,000 people lived or owned property in the five former towns. NASA and the Corps of Engineers needed to acquire more than 3,200 parcels of privately owned land—786 residences, 16 churches, 19 stores, 3 schools, and a wide assortment of commercial buildings, including nightclubs and community centers. Personnel from the Mobile District, under the leadership of Colonel D. A. Raymond, were assigned the task to negotiate and acquire the rights to each land parcel. The Corps began negotiating with the myriad of corporations and private

individuals on 12 April 1962. Many owners sold readily, while others were reluctant and forced numerous lawsuits and civil actions against NASA and the Corps of Engineers. The last case was decided in 1974, although most other transactions were completed before testing began on the Saturn engines in 1967.

The Stennis History Office is writing the pre-NASA history of the region, beginning with the land acquisition program and working back in time through the colonial era to the earliest known inhabitants. In this way, NASA aims to preserve the rich past of the region while commemorating the sacrifice made by Mississippi's residents, a sacrifice that was essential to the successful Apollo and Space Shuttle programs.

On 1 November 1961, just days after the announcement of the formation of the Mississippi Test Facility, Senator John C. Stennis met at the Logtown School with nearly 1,500 residents and sympathizers from the area and promised full compensation for their land and homes. Stennis then appealed to citizens, using a phrase that has now become legendary in Stennis Space Center history: "There is always the thorn before the rose...you have got to make some sacrifices, but you will be taking part in greatness."

As a result, all Stennis facilities are located within a 13,800-acre "fee" area owned by the federal government. The Stennis fee area is surrounded by a 125,000-acre noise buffer zone designated a national asset.

Each house and building in the buffer zone and fee area had to be moved or destroyed. Interred bodies from at least four cemeteries had to be exhumed and relocated. Twenty-five to 30 Corps employees, including Orrell Moore, manager, land acquisition program, and William Matkin, land acquisition agent, had to negotiate the real estate deals. Land prices were frozen on the day of NASA's announcement, but this did not prevent land speculators from purchasing land outside the area selected by NASA, greatly complicating the search for new homes and residences to house the displaced population of the five towns.

In addition, many of the residents of the towns were descendants from original settlers dating from as early as 1767. They had lived there all their lives and expected to retire and die on their ancestral lands. Negotiations were often contentious, and appraisals were often disputed. The Corps's task was further complicated by a constant stream of congressional inquiries, including some from very powerful legislators such as John Stennis, Earl Bennett in Mississippi, and Hale Boggs in Louisiana.

Each negotiation session, land appraisal, and court decision was painstakingly recorded in individual files—one for each numbered parcel, including a photograph of every standing structure located in the buffer zone and fee area. These documents contain a wealth of historical and sociological information on Mississippi in the 1960s.

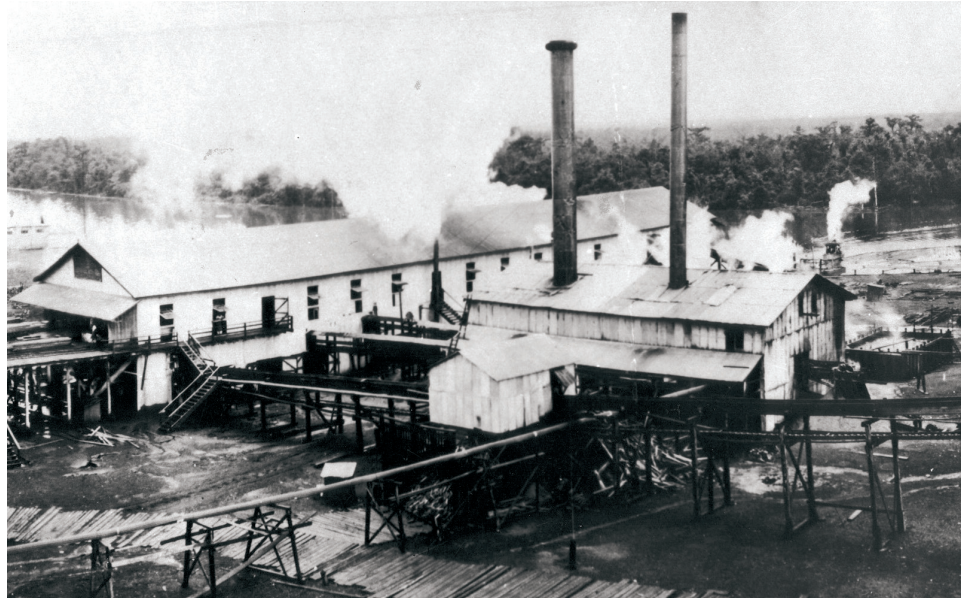
It is the history of these families and their notable ancestors that is recorded in the Corps files. The files also include letters from historic personages—like then-U.S. Attorney General Robert Kennedy and others most relevant to NASA

News from Headquarters and the Centers (continued)

history, such as Dr. Wernher von Braun; Bernard Tessman, von Braun's German colleague at Peenemünde and Deputy Director of Marshall Space Flight Center's Test Laboratory; James Webb, NASA Administrator; and many others. Most importantly, the land records minutely recorded the history of the five towns' original residents, many of whom are still living in nearby communities, and whose children and grandchildren have worked in numerous capacities for the space program.

The anticipated products from the current History Office project will include publications and multimedia presentations whose objective is to properly record this important episode in NASA history and make it available to future generations. Furthermore, the project will preserve the history of the inhabitants and celebrate their sacrifices.

Finally, the results of this project will enable NASA management at Stennis Space Center to more accurately identify and conserve some of the older, more historic sites located in the buffer zone and fee area as mandated by federal antiquities legislation.



The Weston Lumber Company was once a thriving business in Logtown, Mississippi, where the John C. Stennis Space Center is situated today. The lumber mill was one of the largest lumber centers in the United States. The mill employed 1,200 men, and at its peak Logtown had approximately 3,000 residents, but that number had declined to 250 by 1961, when NASA considered the area for development of the rocket engine test facility.

“E”-Prepared for History

By Casper Uhl, Designer, Media Fusion, Inc.

The History Program Office thanks Casper Uhl for attending our most recent NASA History Program Review and contributing this article. Please note that this article represents the author's opinions; we would enjoy fostering debate about this topic. Please send any responses or proposals for a rebuttal article to the newsletter editor at giny.cheong@nasa.gov.

Introduction

NASA is now offering published books in e-book and PDF formats for download from <http://www.nasa.gov/ebooks>. The program is unfolding in the throes of budget cuts that threaten the number of printed books the Agency can afford to produce. But the new program has provoked ambivalence. Is this worth the effort to start converting NASA publications now, or is this just a passing trend that should not replace the dignity of the printed page?

Keeping in step with modern technology and falling in step with NASA's mission to distribute information gained from its research, this new program has the potential to solve several challenges cresting over the horizon. But as with any change, adjustments can be unsettling.

The first of these challenges is maintaining NASA's mission of information distribution. NASA has always been a contributor to the public's free access to information. By ensuring that the discoveries of NASA are distributed through as many forms of modern communication media as possible, NASA can better place itself at the forefront of government agencies reaching both younger and broader audiences. By transferring knowledge to and inspiring interest in aeronautical and astronomical research in a younger audience, NASA will encourage future generations to become scientists, engineers, and mathematicians who will keep our nation at the forefront of scientific and technological capability.

The second of these challenges is NASA's present budget cuts. As with all government agencies these days, NASA has to pay attention to its financial expenses. The option of maintaining the current printing costs is no longer available. Offering downloadable e-books resolves the dilemma of trying to increase the distribution numbers while lowering printing costs.

The program will hopefully be embraced by other NASA Centers as a new source of work opportunities that will supplement existing publication processes while offering a new avenue for NASA to reach out to the public. So far, the influx of e-book submissions has been less than stellar. This growing pain comes without surprise.

Hurdles for the E-books Program

I attended the NASA History Program Review in October 2011. If there is one hurdle that needs to be overcome before the e-book program can reach escape

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“E”-Prepared for History (continued)

velocity, it may be addressing a bias toward print within Agency officials and offering a new perspective on this budding new medium.

After a few discussions with authors and historians, it was clear to me that many still love their printed books. And why not? Who doesn't love his or her books? We all remember growing up with books in our lives. Those memories are invaluable, and the associations we have with books are equally imperishable. For those of us who grew up with books, books will always be better. Any presumption to change that personal association is not only futile, but also unnecessary; we should love our books.

The idea of an e-book as the final product is disappointing to some. This is to be expected, considering the place of importance books have occupied in many of our lives. But keep in mind that the full potential of e-books has not been tapped. Right now they are just trying to replicate their printed equivalent and falling short. But this will be resolved. We will see the day when this technology will match the elegance of print. Eventually, e-books will no longer need to simply look like a book; they will begin to take on a life, appearance, and functionality of their own. E-books offer the promise to add more to the traditional book experience.

Imagine a child reading a book where she can see the footage of Neil Armstrong landing on the Moon. How much more compelling would the tension be if one could hear the transmission “*Houston, we have a problem*” while reading about that Apollo 13 mission for the first time? These standards are already in place, and many e-readers can already take advantage of them.

For some, the idea that a written work may never be professionally bound and mass-distributed as a physical book invokes a lack of closure, as if somehow, the effort fell short of fruition. But the important thing to remember is that the physical book itself is simply the medium for all those stories, information, experiences, and life memories that shaped us into who we are today. For you, those books won't disappear, because you already have them: they are on your bookshelf, and only you can remove them. But the experiences of future generations will not be diminished by a reduction of printed books. It's not the paper with text that we really love, but the context. The future generations' associations will simply be connected to a different proxy. The passionate associations of future generations will be connected to whatever medium provided the content. This will be the case well after the stories have long since been transferred to whatever medium the next technological phase brings us. We cannot perfectly predict what the e-readers and e-books will evolve into, but humans will always try to preserve whatever objects brought them to where they are to date. What's truly important is to make sure that the *stories* are passed to future generations so that *they* have something to pass along. This is the true fruition of a literary work and the closure that we can seek. The sooner we start this process, the better prepared we will be to continue the process. NASA has passed its 50th birthday, and institutions are capable of surpassing human lifespans. The men and woman who contributed to the early history of NASA will eventually pass on. With them, we will lose some of the stories they still have to tell. The nature of the printed book forced an editorial process that

eliminated certain details. Chapters had to be cut and images removed to bring folio counts down. Color images had to be reduced to grayscale to accommodate affordable one-color printing. Transcripts had to stand in for audio recordings. Time-sensitive infographics and statistics are frozen at press time. These are the holes that e-books can gravitate to fill.

Longevity of E-books

Can this new medium withstand the test of time? This is a valid argument to engage in when pitting an electronic file against a time-tested object like a printed book. The advantage of a book is that it is not dependent on another device, as opposed to an eight-track tape, a cassette tape, a floppy disk, a CD, a DVD, a flash drive, etc.—all of which are not accessible to humans without a device to convert the data into sight or sound. Such is the case for e-books. Without a conversion device like a Kindle, Nook, iPad, smartphone, or other computer equipment, an e-book is otherwise not readable. The file formats these e-books are constructed into (EPUB, Mobi, AZW, or PRC, to name just a few) can be susceptible to becoming obsolete. But a closer dissection of what these file formats have in common reveals a construct that offers not only the promise of longevity, but also the opportunity to expand the usefulness of the books themselves in ways that the static nature of printed books could never address.

Regardless of the specific file format of an e-book, the underlying code of each and every e-book file is HTML. This is the exact same HTML that is the underlying structure of the entire World Wide Web! This marked-up text is easily extractable from the open source EPUB file format. As such, it is safe to assume that HTML will be with us for quite some time. So even against an argument that the file formats could join the ranks of other technological antiquations, the accessible data have the structure of a mark-up language that has a strong foundation in the current human condition and has the relevancy to last as long as the World Wide Web exists. Web-based technologies that are formatted in HTML (like e-books) provide, for the first time, a means for which all different media (audio and video, for example) can be combined, organized, and presented in one *computer-searchable*, human-accessible location. Converting NASA's publications into Web-based technology is not a discussion about conversion, but a matter of preservation.

Now consider the current advantages of e-books over printed books. E-books are capable of using text-to-speech software to read aloud to sight-impaired individuals. E-books can be searched and parsed by computers for specific information. The digital e-book *files* carry no environmental footprint and take up no volume of space.

Now consider the future advantages to e-books over printed books. E-book files created today can always be updated later to take advantage of the evolving features that the e-readers will develop. In the same fashion that Web pages can be updated, uploaded, and reexperienced, such is the case with e-books. An old version can be deleted and a new version redownloaded in seconds to offer the public an ever-evolving experience.

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“E”-Prepared for History (continued)

The Nostalgia for Physical Books

There is no denying the intrinsic value of a physical book. The sense of our existence, which is predominantly recorded in books, is the lifeblood of what makes us human, after all. We value the book itself because it is a tangible expression of that collective sense of humankind’s worth. The e-book version, by comparison, only seems less valuable by these standards. This new technology lacks the historical significance we attribute to the printed book. But every new change in medium has gone through this phase. Photographs replaced paintings as the more popular medium to preserve portraits of people and visual records of events. This shift resulted in further elevating painting to a higher art form while increasing photography’s usefulness. In our own lifetimes, we have seen digital photography replace traditional photography as the medium of choice for recording the present. This change resulted in further elevating traditional photography to a higher art form. Audio technology has transformed from wax cylinder, to record, to magnetic tape, to digital compact discs, and now to a digital file. Our society has not diminished the value of music because the medium changed. The point is, if history is a good indication of things to come, the printed book is destined to be elevated to a higher art form, passing its influence and accessibility as a metaphorical baton to e-books.

Get Involved

NASA Centers are encouraged to take advantage of this program by submitting e-book files to NASA Headquarters. The Communications Support Services Center (CSSC) has a full-time e-book specialist on staff to answer questions and provide guidance for other NASA Centers. In addition, the CSSC hosts an e-book knowledge center Web site (<http://cssc.hq.nasa.gov/digitalpublishing/ebookIntro.htm>) accessible to the NASA Centers. To contact the CSSC e-book specialist, e-mail HQ-eBook@mail.nasa.gov.

Other Aerospace History News

National Air and Space Museum (NASM)

By Michael Neufeld

The arrival of the Space Shuttle *Discovery* at the Smithsonian Institution's Steven F. Udvar-Hazy Center by Washington Dulles International Airport on 17 April, as well as the formal ceremony of acceptance two days later, was an enormous success. NASM's Space History Division was extensively involved, notably Chair Paul Ceruzzi and Shuttle curator Valerie Neal, as was almost every other division of the museum. The Space Shuttle *Enterprise* departed Dulles Airport some days later and is now at the Intrepid Sea, Air & Space Museum in New York City.

Roger Launius (Space History Division) has published two peer-reviewed articles thus far this year: "Why Go to the Moon? The Many Faces of Lunar Policy," *Acta Astronautica* 70 (January–February 2012): 165–175; and "Planning the Post-Apollo Space Program: Are There Lessons for the Present?" *Space Policy* 28, no. 1 (February 2012): 38–44. He also presented a paper, "Human Spaceflight as Religion in the Aftermath of the Space Race," at the conference "Envisioning Limits: Outer Space and the End of Utopia," sponsored by the Emmy Noether Research Group at the Freie Universität Berlin in April 2012.

Michael Neufeld (Space History Division) has published three refereed articles this year: "'Smash the Myth of the Fascist Rocket Baron': East German Attacks on Wernher von Braun in the 1960s," in *Imagining Outer Space*, edited by Alexander Geppert (New York: Palgrave Macmillan, 2012): 106–126; "The Nazi Aerospace Exodus: Towards a Global, Transnational History," *History and Technology* 28 (2012): 49–67; and "Was the Rocket Invented or Accidentally Discovered? Some Observations on its Origins," coauthored with Frank H. Winter (first author) and Kerrie Dougherty, *Acta Astronautica* 77 (2012): 131–137. In late March, Neufeld spoke at three events in south Germany and Austria related to the 100th birthday of Wernher von Braun.

Solar System Exploration @ 50 Planned Program

Thursday—25 October 2012

Panel #1: Politics and Policy in the Conduct of Solar System Exploration

Dwayne Day (National Research Council): “The National Research Council’s Role in the American Planetary Exploration Program”

Roger Handberg (University of Central Florida): “The Politics of Pure Space Science, the Essential Tension, Human Spaceflight’s Impact on Scientific Exploration”

Jason W. Callahan (The Tauri Group): “Funding Planetary Science: History and Political Economy”

John M. Logsdon (George Washington University) and Andre Bormanis (Independent Writer/Producer): “The Survival Crisis of the Planetary Program”

Lunch Keynote Speaker—James L. Green (NASA): “NASA’s Solar System Exploration Paradigm: The First 50 Years and a Look at the Next 50”

Panel #2: The Lure of the Red Planet

Richard W. Zurek (JPL): “Mars After 50 Years of Space Exploration: Then, Now, and Beyond”

David Grinspoon (Denver Museum of Nature & Science): “Evolving Concepts of Planetary Habitability in the Age of Planetary Exploration”

Erik M. Conway (JPL): “Dreaming of Mars Sample Return, from Viking to the Mars Science Laboratory”

W. Henry Lambright (Syracuse University): “NASA, Big Science, and Mars Exploration: Critical Decisions from Goldin to Bolden”

Panel #3: Public Perceptions, Priorities, and Solar System Exploration

Linda Billings (George Washington University): “Survivor(?): The Story of *S. Mitis* on the Moon”

William R. Macauley (Freie Universität Berlin): “ ‘Instant Science’: Space Probes, Planetary Exploration and Televisual Media”

Laura Delgado López (Institute for Global Environmental Strategies): “Killer Asteroids: Popular Depictions and Public Policy Influence”

Giny Cheong (George Mason University): “Voyager: Exploring Through the Public Eye”

Friday—26 October 2012

Keynote Speech—Wesley T. Huntress, Jr., and Mikhail Marov: “First on the Moon, Venus and Mars: The Soviet Planetary Exploration Enterprise”

Panel 4: Exploring the Outer Solar System

Torrence V. Johnson (JPL): “Outer Solar System Exploration: An Archetype of the Scientific Method”

Fernando Peralta (JPL): “The Voyagers—Managing Aging Spacecraft During Their Interstellar Mission”

Alexandre Solé (Open University): “The Icy Moons of the Outer Solar System: A Global Perspective”

Robert Pappalardo (JPL): “Revealing Europa’s Ocean”

Panel #5: Institutional Arrangements in Solar System Exploration

J. D. Burke (JPL): “Foundations of Solar System Exploration at JPL: How the First Mariners and Rangers Built Them”

John Sarkissian “Commonwealth Scientific and Industrial Research Organisation (CSIRO): Mariner 2 and the CSIRO Parkes Radio Telescope: 50 Years of International Collaboration”

Michael Neufeld (National Air and Space Museum): “Transforming Solar System Exploration: The Applied Physics Laboratory and the Origins of the Discovery Program, 1989–1993”

Petar Markovski (University of Oklahoma): “International Cooperation in Solar System Exploration: The Cases of Ulysses and Giotto”

Panel #6: Roundtable—From the Past to the Future

Moderator: Andrew Chaikin

Glenn E. Bugos (Ames Research Center): “Precursor Missions: The Science of What Comes Next”

Amy Paige Kaminski (NASA): “Faster, Better, Cheaper: A Sociotechnical Perspective on the Meanings of Success and Failure in NASA’s Solar System Exploration Program”

G. Scott Hubbard (Stanford University): “Exploring Mars: Following the Water”

Chas Beichman (California Institute of Technology): “The Search for and Study of Extra-Solar Planets: Extending Planetary Science into the Realm of Classical Astronomy”

Recent Publications and Online Resources

NASA Publications

In Pursuit of Power: NASA's Propulsion Systems Laboratory No. 1 and 2, Monograph in Aerospace History number 48, by Robert Arrighi (SP-2012-4548).

NASA Historical Data Book, Vol. VIII: NASA Earth Science and Space Applications, Aeronautics, Technology, and Exploration, Tracking and Data Acquisition/Space Operations, Facilities and Resources 1989–1998, by Judy Rumerman (SP-2012-4012). Available only as a two-part PDF on the NASA History Web site at <http://history.nasa.gov/what.html>.

Aeronautics and Astronautics: A Chronology, 2008, compiled by Marieke Lewis (SP-2012-4034). Available only as a PDF on the NASA History Web Site at <http://history.nasa.gov/what.html>.

Aeronautics and Astronautics: A Chronology, 2009, compiled by Marieke Lewis (SP-2012-4035). Available only as a PDF on the NASA History Web Site at <http://history.nasa.gov/what.html>.

Space Shuttle drawings and technical diagrams have been added to the NASA History Web site online at <http://history.nasa.gov/diagrams/shuttle.htm>.

NASA Aeronautics

By Tony Springer

Dressing for Altitude

Flight has long pushed the limits of technology and physical endurance. At the edge of space, keeping humans alive and well is a daunting challenge. *Dressing for Altitude* (SP-2011-595) chronicles the decades-long history of high-altitude pressure suits, from the creation of the earliest models to the refinements leading to today's suits used for modern aviation, as well as those worn during Space Shuttle launch and reentry. As long as people fly high or return to Earth from orbit, pressure suits will be needed for protection. *Dressing for Altitude* is both a vivid reminder that the human body remains



critical to the design of aircraft and spacecraft, and a valuable guide for the next generation of innovators wishing to benefit from the experience and ingenuity of past aerospace pioneers. After 1 September, download the free e-book from http://www.nasa.gov/connect/ebooks/aero_contributions1_detail.html. Starting in October, check for hard copies from the NASA Headquarters Information Center at <http://www.hq.nasa.gov/office/hqlibrary/ic/ic2.htm>.

Breaking the Mishap Chain

Detailing the lessons learned from aerospace accidents, as well as incidents occurring during flight research and flight testing and development, *Breaking the Mishap Chain: Human Factors Lessons Learned from Aerospace Accidents and Incidents in Research, Flight Test, and Development* (SP-2011-594) presents a series of case studies. Each focuses on the human factors associated with a chain of events, the changing of even one element of which could have prevented the disaster. Analyses by the book's three coauthors include a midair collision in 1966 of NASA's XB-70A Valkyrie supersonic test aircraft with an F-104 Starfighter chase plane, as well as the 1967 crash of an X-15 rocket plane whose pilot became confused about readouts from an instrument. The writers point out that the root causes of accidents tend to reoccur and that human factors and human systems integration remain the most challenging components of the systems engineering design process. Download the free e-book at http://www.nasa.gov/connect/ebooks/break_mishap_chain_detail.html, or purchase a hard copy from the NASA Headquarters Information Center at <http://www.hq.nasa.gov/office/hqlibrary/ic/ic2.htm>.



NASA Contributions to Aeronautics

NASA innovations have been widely adopted by aircraft manufacturers and incorporated into the design and operation of virtually every military and civilian craft, large or small. Aviation safety and efficiency have been priorities: practices that continue as NASA works on next-generation concepts for even safer, quieter, and more environmentally friendly vehicles that use less fuel and operate at levels of unprecedented efficiency. NASA continues to study a variety of approaches for future subsonic and supersonic aircraft that may fly in the next 10 to 30 years. A number of products are available that bring NASA's decades of contributions to aeronautics to life. View an interactive site about NASA research on board today's aircraft at http://www.nasa.gov/externalflash/aero_onboard/. Download lithographs from http://www.aeronautics.nasa.gov/onboard_lithos.htm. Download *NASA's Contributions to Aeronautics* (SP-201-570-Vol 1 and SP-201-570-Vol 2) from <http://www.nasa.gov/>

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Recent Publications and Online Resources (continued)

[connect/ebooks/aero_contributions1_detail.html](#), or purchase a hard copy from the NASA Headquarters Information Center at <http://www.hq.nasa.gov/office/hqlibrary/ic/ic2.htm>.

Other Electronic Resources

Between 1976 and 1979, NASA's twin Viking 1 and 2 spacecraft captured 3D imagery of Mars. Dr. Elliott Levinthal, a member of the imaging team, composed a stereoscopic dual-16-millimeter film with a musical soundtrack created at the Center for Computer Research in Music and Acoustics (CCRMA) at Stanford University. The Mars in 3D Project recently restored the film and its soundtrack to modern high-definition digital video and audio. For more details, please visit http://www.aixrecords.com/catalog/bd_3d/mars_in_3d_bd_3d.html.

Commercially Published Works

Compiled by Chris Gamble

Space Shuttle Transportation System Manual, by Rockwell International (Periscope Film LLC, August 2011). Created in 1984 for NASA by prime contractor Rockwell International, this book was intended as a highly readable, easy-to-understand reference for members of the press and corporate clients. It features hundreds of technical diagrams and photographs; an overview of the Shuttle program; and detailed sections on spacecraft structures, spacecraft systems, and payloads.

Apollo CSM News Reference, by North American Rockwell (Periscope Film LLC, September 2011). Originally created in 1968 by prime contractor North American Rockwell for NASA, this Command and Service Module (CSM) reference book was intended to educate members of the media and representatives from the government and private-sector contractors. This reprint is of an edition featuring a mission similar to Apollo 12.

Apollo LEM News Reference, by Grumman (Periscope Film LLC, September 2011). Originally created in 1971 by NASA contractor Grumman, this reference book was intended to educate members of the media and representatives from the government and private-sector contractors about one of history's most ambitious undertakings. General information about the Apollo program and a detailed examination of the Lunar Excursion Module (LEM) and crew extravehicular activity (EVA) procedures and equipment are provided. This reprint is of an edition featuring a mission similar to Apollo 15, 16, or 17, with astronauts performing three 7-hour EVAs using the Lunar Roving Vehicle.

Apollo Lunar Roving Vehicle Operations Handbook, by Boeing (Periscope Film LLC, January 2012). Originally created for the astronauts by prime contractor Boeing, this handbook describes the lunar roving vehicle and its systems and details the deployment and driving procedures.

Space Pharmacology, by Virginia E. Wotring (Springer, March 2012). This book is a review of the current knowledge regarding the use of pharmaceuticals during

spaceflights. It also includes a discussion about the new medical challenges we are likely to face on longer-duration exploration missions.

Law and Regulation of Commercial Mining of Minerals in Outer Space, by Ricky Lee (Springer, March 2012). This book addresses the legal and policy issues relating to the commercial exploitation of natural resources in outer space.

Imagining Outer Space: European Astroculture in the Twentieth Century, edited by Alexander C. T. Geppert (Palgrave Macmillan, March 2012). Bringing together 17 state-of-the-art essays, the volume explores the complexities of Western European astroculture and breaks new ground in the historicization of the Space Age.

Remote Sensing, by Siamak Khorram, Frank H. Koch, Cynthia F. van der Wiele, and Stacy A. C. Nelson (Springer, June 2012). This book provides information on how remote sensing relates to natural resources inventory, management, and monitoring, as well as environmental concerns.

Russian Exploration, from Siberia to Space: A History, by Brian Bonhomme (McFarland, February 2012). This study provides a narrative survey and critical analysis of a rich but overlooked tradition of geographical exploration by Russians and others in Russian service since 1580. Following Russian pioneers across Siberia, Alaska, Brazil, Hawaii and the Pacific, Central Asia, Australasia, and the Arctic and Antarctic, as well as into space, this work introduces Russia into the history of world exploration and connects the Russian experience of exploration to Russian national identity past and present.

The History of the Space Shuttle, by Whitman Publishing (March 2012). The book takes you on a unique journey through the triumphs and tragedies of the Shuttle program, from the earliest design and testing to the historic final launch. In each and every chapter, you will find QR codes that link to more than 70 audio and video clips highlighting the Shuttle's recordbreaking missions and crews; what it takes to eat, sleep, and live aboard the spacecraft; and how the Shuttle has been critical to establishing a human presence in low-Earth orbit.

Securing Outer Space: International Relations Theory and the Politics of Space, edited by Natalie Bormann and Michael Sheehan (Routledge, March 2012). The exploration and utilization of space have generally reflected—but not challenged—the political patterns and impulses that characterized 20th-century politics and international relations. This edited volume analyzes a number of controversial policies, as well as contentious strategies, that have promoted space activities under the rubric of exploration and innovation, militarization and weaponization, and colonization and commercialization.

Destination Mars: New Explorations of the Red Planet, by Rod Pyle (Prometheus Books, April 2012). In this book, the author looks into the history of Mars exploration, past and future, describing in detail what each upcoming mission will involve. The author also describes how scientists on Earth research hostile environments that may be similar to Mars. Finally, he constructs a probable scenario of a crewed expedition to Mars.

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Recent Publications and Online Resources (continued)

Apollo Operations Handbook Extravehicular Mobility Unit, by NASA (Periscope Film LLC, April 2012). Created by NASA in 1968 and revised in 1971 for the Apollo 15, 16, and 17 missions, this handbook explains the extravehicular mobility unit, its subsystems, accessories, and operation, as well as emergency procedures. Originally printed in two volumes by NASA, this version incorporates both in one book.

NASA Skylab News Reference, by NASA (Periscope Films LLC, April 2012). Originally created by NASA in 1973 to inform the press corps about America's first space station, this *Skylab News Reference* contains chapters detailing the station's hardware and systems. It also provides detailed information concerning flight operations, launch facilities, experiments on board, crew training, contractors, and project management. Also included are official press releases for the SL-1, SL-2, SL-3, and SL-4 missions.

US Presidents and the Militarization of Space, 1946–1967, by Sean N. Kalic (Texas A&M University Press, May 2012). In the clash of ideologies represented by the Cold War, even the heavens were not immune to militarization. Satellites and space programs became critical elements among the national security objectives of both the United States and the Soviet Union. According to *US Presidents and the Militarization of Space, 1946–1967*, three American presidents in succession shared a fundamental objective of preserving space as a weapons-free frontier for the benefit of all humanity. Sean N. Kalic's reinterpretation of the development of U.S. space policy, based on documents declassified in the past decade, demonstrates that a single vision for the appropriate uses of space characterized American strategies across parties and administrations during this period. Significantly, Kalic's findings contradict the popular opinion that the United States sought to weaponize space and calls into question the traditional interpretation of the space race as a simple action/reaction paradigm.

The Cosmonaut Who Couldn't Stop Smiling: The Life and Legend of Yuri Gagarin, by Andrew L. Jenks (Northern Illinois University Press, May 2012). The legend of Yuri Gagarin reflected the fantasies, perversions, hopes, and dreams of Gagarin's fellow Russians. With this rich, lively chronicle of Gagarin's life and times, Jenks recreates the elaborately secretive world of Space Age Russia while providing insights into Soviet history that will captivate a range of readers.

The Spacesuit Film: A History, 1918–1969, by Gary Westfahl (McFarland & Co., May 2012). Filmmakers employ various images to suggest the strangeness of outer space, but protective spacesuits most powerfully communicate the dangers of space and the frailty and weakness of humans beyond the cradle of Earth. Many films set in space, however, forgo spacesuits altogether, reluctant to hide famous faces behind bulky helmets and ill-fitting jumpsuits. This critical history comprehensively examines science fiction films that portray space travel realistically by having characters wear spacesuits.

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

Upcoming Meetings

The Langley Research Center will hold an open house in honor of the 95th anniversary of its founding on **22 September 2012** in Hampton, Virginia. Please see <http://www.nasa.gov/centers/langley/home/index.html> for more details.

The 63rd International Astronautical Congress will be held **1–5 October 2012** in Naples, Italy. Please see <http://www.iac2012.org/> for more details.

The Society for the History of Technology will hold its annual meeting **4–7 October 2012** in Copenhagen, Denmark. Please see http://www.historyoftechnology.org/copenhagen/copenhagen_video.html for more details.

The annual meeting of the Oral History Association will be held **10–14 October 2012** in Cleveland, Ohio. Please see <http://www.oralhistory.org/annual-meeting/> for more details.

The Society for Social Studies of Science will hold its annual meeting **17–20 October 2012** in Frederiksberg, Denmark. Please see <http://www.4sonline.org/meeting> for more details.

The NASA History Program Office, the National Air and Space Museum Space History Division, the NASA Science Mission Directorate, and the Jet Propulsion Laboratory will sponsor a symposium entitled “Solar System Exploration @ 50” on **25–26 October 2012** in Washington, DC. Please see [http://history.nasa.gov/Solar System Exploration @ 50 Call for Papers.pdf](http://history.nasa.gov/Solar%20System%20Exploration%20@%2050%20Planned%20program.pdf) and <http://history.nasa.gov/Solar%20System%20Exploration%20@%2050%20Planned%20program.pdf> for more details. The overall symposium Web site will be at <http://solarsystem.nasa.gov/50th/>.

The History of Science Society will hold its annual meeting **15–18 November 2012** in San Diego, California. Please see <http://www.hssonline.org/Meeting/> for more details.

The 45th fall meeting of the American Geophysical Union will be held **3–7 December 2012** in San Francisco, California. Please see <http://fallmeeting.agu.org/2012/> for more details.

The 127th annual meeting of the American Historical Association will be held **3–6 January 2013** in New Orleans, Louisiana. Please see <http://www.historians.org/annual/2013/index.cfm> for more details.

The 221st meeting of the American Astronomical Society will be held **6–10 January 2013** in Long Beach, California. Please see <http://aas.org/meetings> for more details.

The midwinter meeting of the American Library Association will be held **25–29 January 2013** in Seattle, Washington. Please see <http://www.ala.org/ala/conferencesevents/upcoming/index.cfm> for more details.

Image in Aerospace History



Launched on 27 August 1962, Mariner 2 became the world's first successful interplanetary spacecraft and flew within 35,000 kilometers (22,000 miles) of Venus. Dr. William H. Pickering (center), Jet Propulsion Laboratory Director, presents the Mariner spacecraft model to President John F. Kennedy (right). NASA Administrator James Webb stands directly behind the Mariner model. (<http://grin.hq.nasa.gov/IMAGES/SMALL/GPN-2000-000475.jpg>)

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



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NASA Headquarters History Program Office Staff Contact Information:

William Barry, Chief Historian	bill.barry@nasa.gov 202-358-0383
Nadine Andreassen, Program Support Specialist	nadine.j.andreassen@nasa.gov 202-358-0087
Colin Fries, Archivist	cfries@mail.hq.nasa.gov 202-358-0388
Stephen Garber, Historian	stephen.j.garber@nasa.gov 202-358-0385
John Hargenrader, Archivist	jhargenr@mail.hq.nasa.gov 202-358-0387
Jane Odom, Chief Archivist	jane.h.odom@nasa.gov 202-358-0386
Elizabeth Suckow, Archivist	elizabeth.suckow-1@nasa.gov 202-358-0375

Created and produced by the following:

Giny Cheong, Newsletter Editor
 Bill Wallack, Editor, NASA Headquarters Communications Support Services Center (CSSC)
 Vicky More, Publication Specialist/Graphic Designer, NASA Headquarters CSSC
 Tun Hla, Printing Specialist, NASA Headquarters CSSC
 Trenita Williams, Mail Coordinator, NASA Headquarters Mail Room
 Carl Paul, Distribution, NASA Headquarters CSSC



National Aeronautics and Space Administration

NASA Headquarters
300 E Street SW
Washington, DC 20546

www.nasa.gov