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Chapter 17

Apollo at 25: A Retrospective

Frederick I. Ordway III[†]

Introduction

The American response to the 25th anniversary of the first landing of man on the Moon was subdued. While most citizens felt a sense of pride in having witnessed one of history's greatest accomplishments, some expressed disappointment that the sensation of unity created by the Apollo program proved only temporary and that the divisions and problems existing before the event were neither mitigated nor improved.

The achievement was, of course, stunning and demonstrated to an awed world what a combined government-industrial-academic effort can produce when an entire society is pulling together. Apollo created something like the social cohesion experienced by the United States during World War II. To those directly involved in the lunar exploration effort, the years leading up to July 1969 were glorious—and never likely to be repeated. In spite of the pride that accompanied Neil Armstrong's "... one small step for man, one giant leap for mankind," no national outcry was heard urging a major post-Apollo thrust into space.

According to polls taken back in 1969, less than half of Americans—48 percent to be exact—thought the Moon landing was worth the cost; 46 percent felt it wasn't, and the remaining 6 percent were undecided. Twenty-five years

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later, in a poll conducted in June 1994, 66 percent thought the program was worth the cost, 31 percent said it wasn't, and 3 percent were undecided. Despite this seeming change of hearts many people interviewed during Apollo's silver anniversary seemed ambivalent about the epochal event.

One woman reminisced, "Sadly, it turns out that what everybody thought would be a new epoch after the Moon walk didn't last much longer than the Moon walk itself. I have always been shocked by how little the moment carried forward." Apollo was "just another part of that race with the enemy instead of being meaningful of its own accord," ventured one person, while a third lamented that "We were capable of doing so much out there and incapable of doing that here. We're in the same place today." Still others observed that difficult social problems will always exist and "to wait [to undertake further space exploration] is to limit ourselves," and "to me, the space program represents everything that was great in America: determination, sacrifice, hard work and a dream. Now this country drifts in a sea of apathy and confusion."

How did the Apollo 25th anniversary play out in the United States? Press coverage was widespread, and coincidentally, found itself sharing the spotlight with another space event: the spectacular impact of Comet Shoemaker-Levy on the planet Jupiter. There were some relatively low-key celebrations culminating in a white House ceremony for the Apollo 11 astronauts, a few parades, the usual speeches, exhibits in space centers and science museums, and the release of a number of publications and videos. Some of these events and activities are reviewed herein.

Newspaper Coverage

Apollo anniversary coverage was, as expected, widespread in the United States. Also as expected, press reactions to the event varied considerably. Some of these are sampled in the paragraphs that follow.

On the East Coast, *The New York Times* anticipated the anniversary with a series entitled "To the Moon: 25 Years After Apollo." Leads revealed the mood of the times: "25 Years Later, Moon Race in Eclipse," "Wistful Pride and Cynicism Color American's Memories of Apollo 11," and "NASA's New Play: Meld with Moscow". On the anniversary day itself, the *Times* offered a front-page feature "Earthly Worries Supplant Euphoria of Moon Shots," a summary of the post-Apollo lives of a number of astronauts that focused on Neil Armstrong, and an editorial entitled "Lunar Legacy". ²

"When Neil Armstrong set foot on the moon 25 years ago today," the *Times* editorialized, "the nation responded ecstatically. It was not just that the American astronauts had beaten Soviet cosmonauts to the moon in the cold war's most visible symbolic struggle. Their feat implied that the same combina-

tion of heroism, determination, technical wizardry and managerial genius would soon conquer other worlds and a host of earthly ills as well."

Predictably, the editorial laid bare some of the misfortunes that unfolded in the years after the Apollo triumph:

But how fast the dream dissipated! The space agency that put astronauts on the moon later blew up the shuttle Challenger and gained a reputation for incompetence rather than omnipotence. Space budgets shriveled. NASA lowered its sights. Instead of venturing onward to Mars, astronauts now cling close to home, working only in low earth orbit. It is as if, critics say, Columbus's epic voyage to the New World had been followed with boat trips around the harbor."

The Washington Post opted for the word "melancholy" in its lead: "Quest for Other Worlds Now Many Steps Away—25 Years After Moon Landing: Melancholy." Wrote staff writer Kathy Sawyer, "Exactly 25 years ago today, a man first landed on the moon. With alarms sounding and fuel running out, Neil A. Armstrong gunned his small craft over a lunar boulder field to a safe landing ... as humanity united in an instant of relief and awe. Today," she continued, "a crew of seven astronauts is circling Earth [in a shuttle] with a laboratory array of fish, newts, and slime mold."

Northwest of the U.S. Capital in Ohio, *The Cleveland Plain-Dealer* looked at the event in a somewhat different light. "A world then tortured by war on three continents—a world that still seems destined never to muster even the briefest unity of purpose—achieved at least a unity of interest." When Armstrong stepped down on the Moon, "Throngs around the world celebrated. In Trafalgar Square, Britons shouted. In Santiago, Chileans danced. Arab radio reports of the landing brushed aside broadcasts about a major air battle between Egyptians and Israelis. Pope Paul VI praised the 'conquerors of the moon' for opening 'the expanse of endless space and a new destiny' to mankind. Even a Muscovite, whose official media worked hard to ignore the event, let slip to an Associated Press reporter that it was a "great day." The *Plain-Dealer* editorial ended on this uplifting note:

But as Americans look back on that breathless day in July 1969, when the heavens seemed wide-open and beckoning, they would do well to remember that the narrowing of this nation's horizons amounted to a conscious decision. Americans chose to put off reaching the stars, but the option remains ours to exercise.⁴

In Texas, home of the astronauts, *The Houston Post* was enthusiastic. In a lead "Lunar Love Affair: We Should Still Take Pride in Apollo Program," the paper reminded readers of the many space successes that followed the manned lunar expeditions—probes sent throughout the Solar System; except for a single failure, the successes of the shuttle fleet; the orbiting of the space telescope; and progress made towards establishing an international space station. "The impor-

tant thing," the Post suggested, "is the United States clearly made putting a man on the moon its top national priority, and then set out to do it. More important—unlike the Soviets, who also wanted to and also tried—we did it. That is still something to be proud of."⁵

Newspapers close to the other NASA centers most associated with Apollo—Marshall in Alabama and Kennedy in Florida—were equally positive about the achievement. *The Huntsville Times* ran a "Footsteps on the Moon" feature from the 10th to the 20th of July.⁶ In central Florida, both Brevard County's *Florida Today* and *The Orlando Sentinel* carried regular features. "... [T]he Apollo missions underscored the fact that this planet is a global village and that people on every continent share common beliefs, hopes and dreams," observed *Florida Today*. "In striving to reach the moon, humanity changed forever the way it lives on Earth. That's the enduring legacy of Apollo 11."⁷

On the West Coast, the Los Angeles Times recalled that it took a century after Columbus reached the New World before large-scale colonization began. "We are in a pause," the Times argued in "Without Vision, People Perish: Mankind's Manifest Destiny in Space," "distracted by earthly problems that are all too apparent here in Southern California ... A fundamental biological reality is that life spreads as far as it can. That is perhaps our manifest destiny in space. And it is what keeps us looking skyward."

Magazine Coverage

Magazine coverage, like that in many newspapers, was thoughtful and comprehensive. Selected editorial and other comments gleaned from a few mass-circulation, general interest magazines are given along with a look at a couple of leading science-oriented monthlies. Those chosen for this sampling are American Heritage, Newsweek, Time, and U.S. News and World Report followed by Discover and Omni.

American Heritage, published by Forbes and sponsored by the American Association for State and Local History and the Society of American Historians, featured "First Step to the Moon" by Alan B. Shepard, Jr. In a separate, introductory "letter from the editor," Richard F. Shaw asked:

Can this most modern of human events [the Apollo 11 lunar landing] really be just as far away from us now as the Normandy landings were when we watched it happen? The Sunday *Times* that lay in wreckage about my feet as I watched Aldrin inch down the ladder from the lunar module carried news of a world that seems distant now: *I am Curious (yellow)* and *Easy Rider* at the movies; *The Valley of the Dolls* clinging lubriciously at the top of the best-seller list; sunny, high-ceiling three-bedroom apartments on West End Avenue [in New York City] up for grabs at \$325 a month; the war in Vietnam in a lull; skirts shorter than I imagine they will ever be again; and in all the close-packed visual jabber of electronics advertising, not a VCR or a PC

to be seen; just 8-mm cameras and projectors, most of them made in U.S.A.9

In its approach to the Apollo 25th, *Newsweek* looked into the feasibility of a future journey to the red planet. The response to its lead "To Walk on Mars: Scientists Can Get Us There, But Do We Dare?" seemed to be that the rationale is rather easy to express, but "Mustering the will is tougher. What really fueled Apollo was not liquid oxygen but the cold war." To *Newsweek*, the motivation for reaching out to Mars "... if it comes at all," will be from "a desire to seek out our destiny in the stars, to allow our vision and intellect to find inspiration in the next frontier rather than in cold wars." 10

Time, with the largest circulation of the news weeklies, chose Hugh Sidey, its correspondent at the Kennedy White House, to recall how the quest began. He wound up his recollections by asking "Maybe on this anniversary our task is to question again. Where's our new moon? And who are the men and women to take us there?"

The third major American weekly, U.S. News & World Report, provided the most comprehensive coverage of the anniversary. In a special section "When America Went to the Moon," the magazine's editor neatly summed up the Apollo experience: "The cold war inspired it, big bucks backed it and Yankee ingenuity made it happen; 25 years later, the footprints in the lunar dust still inspire awe." Apollo 11 astronaut Buzz Aldrin was invited to express his considerably more inspiring thoughts:

The space program stands with the cathedrals and pyramids among the great projects of history. It embodies the dreams of the child in man, arising less from the ethic of work than from the spirit of play, rooted less in means than in meaning itself.¹²

Passing on to some comments in the science-oriented monthlies, David H. Freedman, writing in *Discover*, reasoned that if NASA had not in fact deteriorated in its post-Apollo years, "... it has at least squandered its dash and verve." Instead [Freedman continues] of coming across like the forerunner of Captain Kirk's Star Fleet [from the *Star Trek* television and movie series], busy opening up the last and greatest frontier, NASA has come to appear more and more like the sort of bloated, stumble-prone organization that the Postal Service might put together if it were charged with delivering mail to a low-orbit address. ¹³

Piers Bizony, an observer from the UK, discussed the "Politics of Apollo" in *Omni*'s anniversary issue, Convinced that the lunar exploration program was "one of the most investment-effective social programs of all time," he stressed that Kennedy had more than just the Moon in his sights. The young president looked to something beyond "just rockets;" he wanted "to boost standards of education and industrial excellence in general, using space as a lever." 14

Space-Oriented Journals

The professional periodicals serving the aerospace community all took stock of the Apollo silver anniversary, some to a lesser extent, some to a greater. *Aerospace America*, published by the American Institute of Aeronautics and Astronautics, turned over its "Commentary" column to guest Charles Force, NASA Associate Administrator for Space Communications. His subject: "Why the Moon."

Goals provide focus, direction, and urgency. Most technological advances have derived from pursuit of specific goals, often military. Humankind has proven much more adept at recognizing broader applications after the fact. And key to setting goals is instilling a sense of urgency. ¹⁵

The National Space Society's Ad Astra celebrated the Apollo 25th anniversary all year long, devoting articles by Jim Banke in each of its bimonthly issues to the six Apollo landing missions. ¹⁶ It was the May/June issue that was devoted almost exclusively to the Moon, with articles on the Moon Treaty, mining helium-3, lunar telescopes, and producing propellants from indigenous lunar resources. ¹⁷ Spectrum, published by the Institute of Electrical and Electronic Engineers, also provided a first-rate retrospective of Apollo, but in a single issue. By Dave Dooling, the feature article was entitled "L + 25: A Quarter Century After the Apollo Landing." ¹⁸

James R. Asker prepared a special report in Aviation Week & Space Technology in which he outlined some of the ideas and technologies expected to influence future lunar missions. In a "Back to the Moon?" editorial, AvWeek reasoned that "The lesson NASA should take from this Apollo silver anniversary is that the U.S. probably will never again commit the resources to human space flight that it did in the 1960s."

"Plans must become more expansive [the editorial went on to assert], not just less expensive. Overnight trips, large numbers of people, commercial endeavors, obvious spinoff technologies on Earth—these are the sort of things that will return humans to the Moon." 19

Virtually the entire July/August issue of *Final Frontier* was devoted to the Moon, and included a special supplement, "Apollo at 25." An article on lunar tourism and another on the Soviet reach for the Moon provided depth to the issue. In an interview, the bimonthly's editors invited NASA Administrator Daniel Goldin to express his thoughts on the anniversary. "Space," he said, "has all the possibilities for the people of this planet to learn how to work together." It can also inspire young people and do much more. "So as we sit here in 1994, celebrating Apollo, we don't just have to look back and say, 'This was the high-water mark for America.' We could say, 'That was a reference point,' and we could step off from what we did on Apollo to take the next step."²⁰

"The 25th anniversary of the Apollo 11 moon landing gives U.S. President Bill Clinton his turn in the space spotlight and a chance to do something none of his predecessors—including John F. Kennedy—ever accomplished. On July 20, Mr. Clinton should lay the groundwork for a rational and affordable program that will gradually expand the human exploration and settlement of space." Thus began an editorial entitled "The Right Step" in the Apollo 25th anniversary issue of *Space News*. Noting that "... the American space effort has always suffered from the ebb and flow of political support that puts NASA and the aerospace industry through tortuous boom and bust cycles," the weekly's editors recommended that the President take the initiative and "... set the space program on a smooth course that gradually and effectively expands humanity's reach beyond planet Earth... The need is for stability and slow, steady growth"— not crash programs.²¹

There were, of course, other approaches to the Apollo 25th. For example, both S. Jeffrey Taylor's "The Scientific Legacy of Apollo" in *Scientific American*²² and Billy Goodman's "Apollo's Geology Lesson" in *Air & Space*²³ looked at the scientific harvest of Apollo while Marsha Freeman's "Recapturing the Promise of Apollo" in *21st Century Science Technology*²⁴ examined the political past of the event and some philosophical underpinnings expressed principally by the late Wernher von Braun and Krafft Ehricke. Space limitations prevent a more thorough look into approaches, attitudes and feelings about Apollo expressed in leading periodicals during the summer of 1994. But at least we have a base selection against which future generations can compare their view of man's first exploration of another world.

Books and Publications

A number of books and publications were released on the occasion of the Apollo 25th anniversary. Some of the more prominent of these are summarized.

Books

Without question the most thorough anniversary treatment of the Apollo experience was Andrew Chaikin's *A Man on the Moon: The Voyages of the Apollo Astronauts*. ²⁵ Ten years in preparation, enriched by interviews of the astronauts who voyaged to the Moon, and accompanied by copious source notes and anecdotes, the book will unquestionably remain a standard against which future works will be measured.

Two books reached best-seller status, Alan Shepard's and Deke Slayton's *Moon Shot: The Inside Story of America's Race to the Moon*²⁶ and Jim Lovell's and Jeffrey Kluger's *Lost Moon: The Perilous Voyage of Apollo 13.*²⁷ Authored by participating astronauts, they have the authoritative ring of those who were

actually there. The sales of both were boosted by documentary films; and, in the case of *Lost Moon*, also by the hit 1995 movie *Apollo 13*.

Several biographies of key figures in the Apollo drama have appeared in recent years but only one during the anniversary year 1994: Ernst Stuhlinger's and Frederick I. Ordway III's two-volume study of Wernher von Braun. Because of the large number of photographs accumulated for the biography, which itself took over a decade to prepare, the publisher decided to release it in two volumes: Wernher von Braun Crusader for Space: A Biographical Memoir and Wernher von Braun Crusader for Space: An Illustrated Memoir.²⁸ Also appearing during the year was an autobiography by Robert C. Seamans, Jr., Aiming at Targets.²⁹ From September 1960 NASA associate administrator and general manager and from December 1965 to October 1967 deputy administrator, Seamans played a crucial role in the success of Apollo. He reflected on his NASA years from the 1994 perspective:

I can't help but look at the moon today and think it's amazing that we were there twenty-five years ago. I believe we will return there someday, but mounting that kind of an effort is not something that's going to happen, in my view, for a long time, because there's not enough reason for doing it. As for [former Vice President] Spiro Agnew's prediction that America would fly to Mars, I learned a long time ago that if you say something will never happen, you'll eventually be proven wrong.

Publications

I'm using the term "publications" to refer to those released during the Apollo 25th that fall neither under the "book" category nor under what is commonly understood to be a "report." Two were released by the NASA History Office, one by chief historian Roger D. Launius entitled *Apollo: A Retrospective Analysis*³⁰ and the other *An Annotated Bibliography of the Apollo Program* by Launius and fellow NASA historian J. D. Hunley.³¹

The former is divided into four main sections that examine Apollo in retrospective, the program's missions, statistics, and key historical documents, plus an index. Copies of many original working papers are found, including President Kennedy's historic 20 April 1961 memo to Vice President Johnson asking that a survey be made "of where we stand in space." The *Annotated Bibliography* lists, and briefly describes, books, articles, and other literature organized according to a number of categories: general works, the space race, the decision, Apollo technology, operations, popular culture and promotion, science, the astronauts, management of the Apollo program, and juvenile literature. An index is provided.

To round out the publications subcategory, two titles deserve mention: *The Flight of Apollo Eleven*³² and *One Giant Leap for Mankind*.³³ The former is crammed with facts and statistics on the mission and contains drawings, photographs and tables. Other than the expected technical data, all manner of trivia are discovered here and there. For example, at the Apollo 11 launch site 7,000

people were placed on the VIP list, including 69 ambassadors, 100 foreign science ministers, 19 state governors and 40 city mayors. And coverage was assured by 3,497 members of the press from 57 countries, including 2,685 from the United States, 118 from Japan, 132 from England, 81 from Italy, and 53 from France. The second publication, *One Giant Leap for Mankind*, profiles the NASA centers, reviews Apollo's precursors Mercury and Gemini and then Apollo itself, and moves on to the later Skylab missions. Interviews with eleven Apollo astronauts and a variety of other subjects follow.

Video and Film Productions

Just as the newspapers; the weekly, monthly and bimonthly magazines; books; and other publications covered the Apollo 25th anniversary, so too did video and film producers. To mark the occasion, the weekly *TV Guide*³⁴ offered a dual feature celebrating the fifth anniversary of station MTV's "House of Style" program and the 25th anniversary of the Moon landing. Of the two events, the focus was clearly on the former and its supermodel hostess Cindy Crawford. In his article "Moon Struck," Jeff Jarvis commented:

You don't have to ask people where they were on July 20, 1969, when man took his first step on the Moon. We were all watching TV. We were watching our last great moment of wonder, the end of a spectacular, suspenseful, and daring race that changed this nation for generations to come.

The Apollo 11 anniversary week provided some interesting fare as the sampling suggests. For All Mankind, aired on the Disney Channel, was an award-winning documentary featuring footage filmed by astronauts on all the Apollo missions. The single ill-fated flight was the subject of Public Broadcasting's Apollo 13: To the Edge and Back while the Arts & Entertainment channel showed Investigative Reports: Can We Still Trust NASA? It incorporated comments from many of the principal actors of the Apollo saga including Chris Kraft, Rocco Petrone, Julian Scheer, Buzz Aldrin, Frank Borman, Jim Lovell, Gene Kranz, Steve Bales, Guenther Wendt and Max Faget.

CNN starred Buzz Aldrin in A Walk Through History. The former astronaut also hosted The Sci-Fi Channel's Trip to the Moon and the Discovery Channel's One Giant Leap. Ted Turner's TBS SuperStation aired the Moon Shot seen through the eyes of Alan Shepard and Deke Slayton, authors of the book of the same title. Connie Chung hosted CBS Reports "Space—Last Frontier or Lost Frontier" with comments by Apollo participants and knowledgeable observers. Available for home video during the Apollo celebrations, but not aired until 1995, was "Threshold of the Stars: The Life of Dr. Wernher von Braun" narrated by William Shatner and built in part around an interview by Hugh Downs conducted towards the end of von Braun's life.

Celebrations and Exhibits

For the most part, celebrations and exhibits commemorating the Apollo experience were centered in and around the cities most closely associated with the manned spaceflight program: Washington, D.C.; Cape Canaveral, Houston, Huntsville, and Los Angeles. The highlight was the appearance at the White House on 20 July of all three Apollo 11 astronauts, Neil A. Armstrong, Buzz Aldrin, and Michael Collins, and more than twenty fellow lunar explorers. Also on hand were youngsters representing the Young Astronaut science program and members of the House Science, Space, and Technology Committee that had earlier in the day approved a bill authorizing international space station construction.

"These men and other astronauts," remarked President Clinton, "helped us step into another world. They taught us that nothing is impossible if we set out sights high enough." The normally reclusive Armstrong responded by recalling, "Wilbur Wright once noted that the only bird that could talk was the parrot, and he didn't fly very well. So I'll be brief." The landings on the Moon, he philosophized, were by no means the end. "There are great ideas undiscovered, breakthroughs available. There are places to go beyond belief." He was joined by Aldrin who added, "The past quarter-century has seen a withered capacity for wonder and a growing retreat to delusions of a risk-free society."

Armstrong, incidentally, had planned to attend that very evening a celebration in Los Angeles organized by the American Institute of Aeronautics and Astronautics in honor of Apollo's industrial contractors. But the man who walked on the Moon found himself stuck in Washington when his United Airlines flight was grounded because of mechanical problems.

Meanwhile, up in orbit, space shuttle *Columbia* astronauts marked the anniversary by flying with samples of lunar soil and rocks from the various lunar missions along with an Apollo 11 plaque from the launch control center at Cape Canaveral. From the Russian space station Mir came a call to the shuttle crew: "We congratulate you on the first lunar landing. We applaud your feat and wish you best luck." And *Columbia* had already broadcast a message to the Smithsonian's National Air and Space Museum in Washington where Postmaster Marvin Runyon, NASA Administrator Daniel Goldin, and Museum Director Martin Harwit were presiding over the release of U.S. Postal Service 29-cent and \$9.95 commemorative stamps.

The museum marked the anniversary by premiering its future-oriented film *Destiny in Space*, restoring Apollo 11's command module, and hosting a one-man play "Apollo to the Moon" performed by actor Kevin Reese. Also, the museum was the starting point for the National Space Society's 1-kilometer and 5-kilometer "Race for Space" on Sunday, 24 July.

The SpaceWeek group based in Houston organized dinners in Boston and New York, a National Youth Space Conference at Epcot in Orlando, an International Space Art Exhibit at Houston's Space Center, and other activities. Working with SpaceWeek, the Association of Space Explorers, and Women in Aerospace, the National Space Society coordinated a very successful congressional breakfast in Washington on 20 July; and, in cooperation with the Planetary Society, hosted a "Pioneering the Space Frontier" dinner that evening at the Mayflower Hotel. On hand were Vice President Al Gore, fifteen astronauts, Eugene and Carolyn Shoemaker and David Levy of Comet Shoemaker-Levy 9 fame, and other dignitaries. That night, NASA Administrator Daniel Goldin and NASA-Ames research scientist Christopher P. McKay received the first Thomas O. Paine Memorial Award.

Four days earlier, at the Beverly Hilton Hotel in Beverly Hills, California, an "Apollo 11 Silver Anniversary Celebration" had taken place with Gore, assorted astronauts and others present. Coordinated by The Southern California Organizing Committee, the proceeds from the affair benefited the NSS. And back in Washington, on 18-19 July, the National Geographic Society hosted a symposium entitled "What is the Value of Space Exploration?" co-sponsored with the University of Maryland and NASA. Robert McC. Adams, secretary of the Smithsonian Institution, opened the proceedings.

And so it went. Along Florida's "Space Coast," museums and planetariums put on exhibits and shows and a few miles from Apollo 11's actual liftoff four model Saturn Vs were launched accompanied by a replay of the quarter-century-old countdown.

In Huntsville, events ranged from a student-built "Moonbuggy" race to a special Apollo exhibit at the U.S. Space & Rocket Center to a Moon balloon parade to the unveiling at NASA's Marshall Center of a bust of its first director Wernher von Braun. Neil Armstrong made a surprise visit to New Knoxville, Ohio to help celebrate the anniversary; he grew up in nearby Wapakoneta. When asked about his famous Moonwalk, he replied that "Pilots take no special joy in walking. Pilots like flying." And at the Neil Armstrong Museum in Wapakoneta itself, a 20-day celebration ended with a concert and a laser/fireworks spectacle.

As for future Apollo celebrations, Buzz Aldrin summed up the thoughts of many. "I think we ought to remember [all of them] though its not that easy to keep saying the same things over and over again."

Concluding Remarks

Well, perhaps not all of them. But quite likely the 50th, 75th and 100th anniversaries will be remembered. Who knows whether, in Buzz Aldrin's words, we'll "keep saying the same things over and over again;" one thing is certain, there won't be many participants and witnesses to utter them in 2019 on the occasion of the 50th.

Think of the toll taken of Apollo management personalities by the time of the 25th anniversary: NASA administrators James E. Webb, Thomas O. Paine, and James C. Fletcher; George M. Low, NASA deputy administrator; Wernher von Braun, director of the NASA-Marshall Space Flight Center; Kurt Debus, director of the NASA-Kennedy Space Center; General Samuel C. Phillips, Apollo program director; and Donald K. ("Deke") Slayton, director of flight crew operations at the NASA-Manned Spacecraft Center. Those no longer with us from the Apollo astronaut corps in July 1969 were Virgil I. ("Gus") Grissom, Edward H. White II, and Roger B. Chaffee who died in the Apollo 1 capsule 021 fire at Cape Canaveral in late January 1967; Apollo 13's John L. Swigert, Jr., 1982; Apollo 7's Donn F. Eisele, 1987; Apollo 17's Ronald E. Evans, 1990; and Apollo 15's James B. Irwin, 1991.

The 75th anniversary will occur in 2044 and will share the stage with the centennial of the World War II Normandy landings. When Apollo's own centennial occurs in 2069, hopefully humanity will long since have colonized the Moon and established a solid presence on Mars. Perhaps then people will recognize Apollo as the crowning technological achievement of the 20th century.

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