

Air and Space this Week

Item of the Week

ANNIVERSARIES: THE GOOD, THE BAD, AND THE UGLY

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The next three weeks have a number of red-letter anniversaries of significant events in aviation and Space history. Some are of good things, some are of (really) bad things, and one is weirdly tragic.

THE GOOD

Launch of *Explorer 1*

The Space Age for the United States began 67 years ago on **1/31/1958** with the launch of our first satellite, [Explorer 1](#). It was a small spacecraft, but it made Low-Earth Orbit and carried aboard an instrument that made the first detection of the Van Allen radiation belts. The PI, James Van Allen, had learned how to build electrical circuitry that could survive the g-forces of the mission; he had a key role in development of the radar proximity fuse for anti-aircraft artillery that proved very effective in WWII. For more about the mission, see this [piece](#) about Al Hibbs, and this past Item about *Explorer 1*:

<https://www.airandspacethisweek.com/assets/pdfs/20220130 Explorer 1.pdf>.

And didja know that *Explorer 1* launched on the very same day that [Leave It To Beaver](#) premiered?

AIAA: The American Institute of Aeronautics and Astronautics was founded 62 years ago on **2/1/1963**. It is a “professional society for aerospace engineering, founded in 1963. It serves over 30,000 members worldwide by promoting collaboration, publishing technical journals, and hosting conferences in the aerospace field.” Its website, <https://www.aiaa.org>, has sections on aerospace technology, engineering, and science content; a section that facilitates communications between aerospace professionals; and a Foundation that supports a variety of education and professional development programs.

President Coolidge signed the Kelly Act, allowing private companies to carry airmail **100 years ago**, on **2/2/1925**! Mail had been transported by airplane since 1918, using Army pilots flying Curtiss JN-4H “Jenny” aircraft. The Army liked having the job, as it provided pilot training flying

under a variety of difficult conditions. Once the Kelly Act was signed, a number of private companies sought contracts, greatly boosting the dawn of commercial aviation in the U.S. For more information about the early days of air mail, see: <https://about.usps.com/who-we-are/postal-history/airmail.pdf>.

Apollo 14 landed safely on the Moon, restoring the Apollo Program, 54 years ago, on **2/5/1971**. The first two lunar landings had been successful, but the third, *Apollo 13*, suffered an oxygen tank explosion in the Service Module after the spacecraft had started to the Moon (Accident Report is [here](#)). Amazing work by the astronauts aboard and by the team at Mission Control, led by NASA Flight Director Gene “Failure is NOT an option” Kranz, saved the day, with all three astronauts returning home safely.

Apollo 14 was planned to get the Apollo program back on track. The landing site remained the same as Apollo 13, and “First American in Space” Alan Shepard was picked to command the mission. The Lunar Module *Antares* touched down on February 5, and its astronauts were able to accomplish many of the pre-flight objectives; Edgar Mitchell even tried to [throw a “javelin”](#) and Al Shepard [hit a couple of golf shots](#). This was the last Moon landing without a Lunar Roving Vehicle, which proved valuable on subsequent missions (Shepard and Mitchell had considerable difficulty navigating the lunar surface, and Shepard got overexerted forcing some curtailment of the distance they could walk). But the Apollo 14 did get good samples and pictures, and got the Apollo program going again. For more on the Apollo 14 mission, see: <https://www.nasa.gov/history/alsj/a14/a14.html>.

First use of the Manned Maneuvering Unit: Old-style science fiction often had astronauts with jet packs zooming around their spacecraft, a space station, etc., independently of tethers, becoming their own personal spacecraft. *Gemini 4* spacewalker had a small, hand-held thruster he could use to move around a bit, but it wasn’t until NASA developed the MMU in the early 1980s that the dream of independent spaceflight could be achieved. Forty-one years ago, on **2/7/1984**, astronaut Bruce McCandless II made the [first use of an MMU in an untethered EVA](#). Three other astronauts enjoyed the independent experience, but it saw very limited use, a total of 6.5 hours. The one Bruce used is in NASM’s Udvar-Hazy Center, exhibited flying over the Space Shuttle *Discovery* with a mannikin in an EVA suit attached, representing Bruce the astronaut. The Education also has a high-fidelity Spacesuit, used for teaching. The staff, rather than calling it “The Teaching Spacesuit,” decided to name it “Bruce” instead (everyone likes the real Bruce). A few years ago, NASM conducted a public event, which the real Bruce attended. We had him give a talk about his MMU and other career experiences, from a stage set up by the nose of Space Shuttle *Discovery*. We arranged for a photograph of Bruce the Astronaut, standing with the arm of Bruce the Suit around his shoulder, with Bruce the MMU Mannikin looking over one of their shoulders, and *Discovery* looking over the other. We call it “The Three Bruces!” Check it out in the Archive: Other Stuff here: <https://www.airandspacethisweek.com/assets/pdfs/The Three Bruces.jpg>.

First public performance by the *California Guitar Trio*: OK, this isn't an aviation or Space anniversary, but hey, I'm writing this Item and I've been following these guys for almost 20 years; they are good friends of mine and they make amazing music. Besides, there actually is a Space connection – the Trio's rendition of *Walk, Don't Run* was one of the pieces used wake-up music on STS-99! The initial members of the CGT were all disciples of King Crimson's leader, Robert Fripp, in the [League of Crafty Guitarists](#), and still open for KC when they tour. Their first public performance together was 34 years ago, on **2/7/1991**. Check them out [here](#), as they cover Pink Floyd's *Echoes*! And if you want a really deep dive on NASA wake-up music, see: <https://www.nasa.gov/wp-content/uploads/2023/07/wakeup-calls.pdf>!

Fall of the Allende meteor: Planetary scientists can glean a lot of information from the chemical analysis of meteorites. Some are more important than others, and one of the most important to date fell near Pueblito de Allende fifty-six years ago on **2/8/1969** (meteorites are named for towns or landmarks near their landing site). Allende was a large mass of the rare type of meteorite known as a "carbonaceous chondrite," comprising material left over from the formation of the Solar System whose chemistry is that of the stuff from which the planets condensed. It's no surprise that Allende is one of the most studied rocks in history, second perhaps only to the lunar samples.

Skylab program ends successfully: *Skylab* was America's first real Space Station, the next step during the conclusion of the Apollo program. Built around a Saturn V upper stage, it provided a large work and living space for three three-astronaut crews, each of which spent several months aboard. The third and final crew returned to Earth fifty-one years ago, on **2/8/1974**. *Skylab* suffered an uncontrolled reentry that caused some concern at the time, but the overall program was a success and it paved the way to the *International Space Station*. For more information on the Skylab program, see: https://www.airandspacethisweek.com/assets/pdfs/20230410_Skylab.pdf.

Launch of the *Solar Dynamics Observatory*: The Sun is very important in everyday life, and its role in the creation of Space weather is important to predict, so there have been a number of spacecraft sent to study it. Several are presently in service, including *SOHO*, covered in a [recent Item](#), and *SDO*, the *Solar Dynamics Observatory*, which was launched 15 years ago on **2/11/2010**. The *SDO* in particular provides data used for Space weather prediction (solar storms can induce strong currents in satellites in orbit and electrical transmission equipment on Earth), which can allow the time necessary for operators to take action to minimize damage. The image *SDO* produces really show the level of activity of the Sun; check them out on the *SDO* website here: <https://sdo.gsfc.nasa.gov>.

Action at Apache Pass and the Tucson Ring: Bernard Irwin was an Army doctor assigned to Fort Buchanan, Arizona Territory, in 1856. Hostilities arose between the Army and the local Chiricahua Apache Indians, led by Cochise. The Army captured a few Chiricahuas, they captured a few soldiers, hostages were killed on both sides. The Chiricahuas headed to their canyon-iferous home in the mountains nearby, with soldiers in inept pursuit. The soldiers were

surrounded, but Dr. Irwin led the few soldiers remaining at the Fort, and saved the day 164 years ago (**2/13/1861**) without further losses. This action would become the earliest action to be recognized by the Congressional Medal of Honor. A number of MoHs had been awarded during and immediately after the Civil War, but the Army decided to review actions prior to the War that might merit the Nation's highest award, and Dr. Irwin's riding in on donkey-back to rescue hostages was the earliest date of the retroactive award.

Before the action at Apache Pass, Irwin had been collecting samples of flora and fauna for the Smithsonian Institution. His exploration took him to Tucson, where he found a huge ring-shaped meteorite that had been earlier used as a stand-up anvil. The "Tucson Ring" is [now on display](#) at the Smithsonian National Museum of Natural History, in the same room as the Hope Diamond. Find out more about this interesting person and connections here: [https://www.airandspacethisweek.com/assets/pdfs/20210208 Two Little-Known, but Significant, Military Events.pdf](https://www.airandspacethisweek.com/assets/pdfs/20210208%20Two%20Little-Known,%20but%20Significant,%20Military%20Events.pdf).

Chuck Yeager's 102nd birthday is 2/13/1923: Yeager was an excellent military pilot with several adventures in WWII, then a famous test pilot who was the first pilot to exceed the so-called "Sound Barrier." He certainly had the "Right Stuff!" Find out more about him and his amazing career here: [https://www.airandspacethisweek.com/assets/pdfs/20230213 Chuck Yeager - Breaker of Barriers.pdf](https://www.airandspacethisweek.com/assets/pdfs/20230213%20Chuck%20Yeager%20-%20Breaker%20of%20Barriers.pdf).

Voyager 1 takes "Solar System Family Portrait": *Voyager 1* conducted successful fly-bys of Jupiter and Saturn and is now past the heliopause, the "edge" of the Solar System. We are still in contact with it and its twin, *Voyager 2*, and they are still returning some useful data to Earth. The main imaging system of both was shut down long ago – there's not many objects to look at out there, and there would be little light to illuminate them if there were because the spacecraft is now so far from the Sun. However, a final set of images was acquired by *Voyager 1* thirty-five years ago, on **2/14/1990**. The set is now called the "Solar System Family Portrait," because it captures the Sun and six of the (then) nine planets (Mercury and Mars were lost in the glare of the Sun and Pluto was too faint to see). The idea to close the imaging part of the Voyager mission with such a mosaic was the brainchild of Carl Sagan, then a member of the Voyager imaging team. The portrait was impressive, and sobering, for showing the vastness of Space and the tiny-ness of the planets, including the "Pale Blue Dot" that is our collective home. For more about the Portrait, see: <https://photojournal.jpl.nasa.gov/catalog/PIA00451> and here: https://nssdc.gsfc.nasa.gov/photo_gallery/photogallery-solarsystem.html.

What a wonderful collection of the anniversaries of good things associated with aviation, Spaceflight, and Solar System exploration!

THE BAD

The next three weeks have anniversaries of aviation and Space-related Bad Things. There are only six, but sadly, four were really awful!

Apollo 1 Fire: By the end of 1966, NASA had successfully completed Projects Mercury and Gemini in its quest to land astronauts on the Moon. There had been some glitches and setbacks, the worst being the [early termination](#) of *Gemini 8*, but by and large, there had been no disasters even though putting humans in Space was a difficult and dangerous proposition. Alas, that all changed 58 years ago, on **1/27/1967**. A flash fire inside an Apollo capsule occurred during a test, killing astronauts Gus Grissom, Ed White, and Roger Chaffee. I was 11 years old at the time, and I still clearly remember the horrible shock of seeing the news flash on TV. These guys were my heroes! Much has been written about this tragic event, including the “And Then Disaster Struck” section in [this Item of the Week](#). NASA rallied, the Apollo capsule design was altered, and everyone soldiered on, but.... See NASA’s summary of the event from three years ago [here](#) and the full Review Board Final Report [here](#). [The capsule in the test was number 204. The name Apollo 1 was given to the accident later.]

Space Shuttle *Challenger* Explodes: The Apollo 1 fire was terrible enough, but the loss of *Challenger*, IMHO, was more of a body-blow to the public perception of Spaceflight. Thirty-nine years ago, on **1/28/1986**, the Space Shuttle *Challenger* was lost with all hands when one or more O-ring joints on the Shuttle’s Solid Rocket Booster failed, igniting the external fuel tank. As described in the “It was 40 years ago today” segment in the NASA News section above, the O-ring problem, stiffness and poor sealing when cold, was known from a previous mission, but *Challenger* was launched on a very cold day anyway.

The reason that this particular tragedy hurt NASA so much was so many young children were watching in real time, because the “First Teacher in Space,” Christa McAuliffe, was aboard, set to beam lessons from Earth orbit during the mission. Space travel had become commonplace by the mid-1980s, long past the point where schools had an assembly to watch astronaut launches like they did in the mid-1960s. [The networks got blasé so quickly that they wouldn’t even pre-empt the soaps to show live coverage of astronauts on the Moon by 1970!] But having an actual teacher going up generated so much administrator/teacher/student interest that many, many thousands of impressionable minds ended up watching her death on live TV. President Reagan was even slated to communicate with the *Challenger* crew the night of the launch, during his State of the Union Address. Some concern had been raised prior to launch about the cold weather being enough to postpone the launch; some suspect that there may have been pressure to launch regardless because of the SotU coverage...

Space Shuttle *Columbia* Crashes on Re-entry: The external fuel tank used for Space Shuttle missions carried a lot of cryogenic liquid (liquid hydrogen at -427 °F and liquid oxygen at -297 °F). Keeping them liquid was a difficult proposition, requiring the tank to be insulated. A one-inch-thick layer of polyurethane foam sprayed on the tank’s outside was used. The foam could be penetrated by water, especially in areas where supporting structures attached to the tank. Pieces of foam could break off of the tank under aerodynamic pressure, but testing showed that the foam was so light that it would break up rather than damage the Shuttle itself. Every Shuttle mission prior STS-107 was found to have some minor damage from foam impact.

Space Shuttle *Columbia* was launched on its 28th trip into Space on January 16, 2003, after a week of heavy rains. Routine videos of the take-off and climb were acquired, and showed a piece of foam striking the left wing of *Columbia* and disappearing in a puff of foam 80 seconds after launch. There was some concern about potential damage, and a Debris Assessment Team was formed, but there was little that could be done to further assess the situation, and there wasn't a whole lot NASA could do even if they knew how bad the wing was damaged. The mission lasted more than two weeks, with all of the planned experiments on board being concluded successfully. Procedures for re-entry on **2/1/2003**, twenty-one years ago, went OK, but as the *Columbia* entered the atmosphere, the damaged leading edge of the left wing allowed hot gases to penetrate and weaken/melt important structures, causing the breakup and loss of the Shuttle along with its entire crew of seven. It was over Texas at the time, on its way to land at KSC. Many Texans saw the streak of the Shuttle, and the pieces it was shedding, scattering debris over a large part of south-central Texas.

An investigation followed, of course. In June 2003, "NASA investigators reported that they found the smoking gun—proof that a piece of foam insulation did, in fact, damage a heat shield. At the Southwest Research Institute in San Antonio, Texas, NASA tested a 1 2/3-pound piece of foam by firing it with an air cannon at a panel taken from another shuttle's wing. At speeds up to 530 mph, the foam blew a 16-inch square hole into the wing panel. A hole of only 10 inches across would have been enough to lead to the disintegration of the space shuttle upon re-entry. A year and a half later, NASA officials reported that super-cooled chemicals inside the tank caused ice to form outside as the shuttle prepared to launch and confirmed that the use of 1-inch foam insulation merely reduced the amount of ice formed (rather than prevent ice formation)." Quote is from here: <https://insulation.org/io/articles/grounding-the-space-shuttle-nasas-foam-insulation-problem>. Small holes and cracks in the foam had likely allowed the rainwater from the week prior to launch to infiltrate the foam and then freeze when the tank was filled with cryogenic fuels. Foam at high speed could cause damage; foam laced with ice moving at high speeds could, and did, cause fatal damage.

For more about STS-107, see: <https://en.wikipedia.org/wiki/STS-107>; for an overview of the disaster, see: https://en.wikipedia.org/wiki/Space_Shuttle_Columbia_disaster; and for the final report by the Columbia Accident Investigation Board, see: <https://ntrs.nasa.gov/api/citations/20030066167/downloads/20030066167.pdf>. CNN aired a four-part program, [*Space Shuttle Columbia: The Final Flight*](#), in April, 2024.

Buddy Holly Plane Crash: Those of us of a certain age remember well the Don McLean song, *American Pie*, from back in 1971. It was a #1 hit for four weeks, with interest drawn in part from the obscurity of the references in the lyrics. One phrase was more-interpretable than most of the others, referring to "The Day the Music Died."

Things were a lot more difficult for music acts in the late 1950's. There were few TV shows that would showcase them, and there was no MTV, music videos, or Internet. Musical groups made money from record sales, and from live appearances.

Buddy Holly had a number of hits in the late 1950s with his band, The Crickets, but they had parted ways after the Crickets manager absconded with much of their money. Holly put together a touring act, with J.D. “The Big Bopper” Richardson (who had just released “Chantilly Lace,” Ritchie Valens (who had just released “La Bamba”), Waylon Jennings, and a few others. Their management company had arranged a number of gigs across the upper Midwest, but the planning was poor, requiring a lot of back-and-forth bus travel between performances. The guys were tired and cold, and Buddy wanted to get to Moorhead, Minnesota, without a long, cold bus ride, so he contracted with a local flight company to take him, Richardson, and Valens ahead of the others. The took off just after midnight, on **2/3/1959**. Long story short, the pilot was a rookie and it was a dark and stormy night. The airplane crashed not long after take-off, killing all aboard. It was, indeed, the “Day the Music Died” for rock-and-roll fans.

Buddy’s wife found about his death on the radio, and suffered greatly from the shock. Her’s was the last such experience; a “pending notification of next-of-kin” SOP was introduced immediately thereafter. Find out more about the crash, and a couple of other aviation losses that day, here: [https://www.airandspaceweek.com/assets/pdfs/20240129 Two Bad Air Days - Fifty Years Apart.pdf](https://www.airandspaceweek.com/assets/pdfs/20240129%20Two%20Bad%20Air%20Days%20-%20Fifty%20Years%20Apart.pdf).

Operation Colossus Fails: Winston Churchill was greatly taken aback by the disastrous defeat at Dunkirk, and he wanted the creation of a group of special forces, “commandos” to take the war to German-occupied Europe. Such units were being set up when the Germans used Blitzkrieg tactics, including paratroops, against the Low Countries and Poland. A few Commando units were in training, but nobody in the RAF and British Army had ever conducted a paratroop assault. The brass decided a small-scale trial run was the best to assess the Commandos’ progress, so they laid on plans for a small aerial assault in southern Italy. Their plan was code-named “Operation Colossus,” a bit of a misnomer because only 38 commandos were involved. The operation, launched 84 years ago on **2/10/1941**, was a fiasco. All 38 were captured and all but one (who was the second in command of the commando team, and escaped and later played an in future paratroop operations) were POWs for the duration. A local Italian, who served the team as an interpreter, was executed by the Black Shirts.

“While this mission was a mess, it provided invaluable experience in all aspects of the use of paratroopers in the manner Churchill and others anticipated. The first step in any new endeavor usually has a steep learning curve, but can provide input on how to make that endeavor effective.” And it did; paratroopers were used to good effect later in the War. For more on Operation Colossus, see here (also the source of the quote): [https://www.airandspaceweek.com/assets/pdfs/20210208 Two Little-Known, but Significant, Military Events.pdf](https://www.airandspaceweek.com/assets/pdfs/20210208%20Two%20Little-Known,%20but%20Significant,%20Military%20Events.pdf).

Crash of the *USS Macon*: Admiral William A. Moffett was an early advocate of naval aviation. He established the first flight training program at the Great Lakes Naval Training Station, and served as the Director of Aviation under the Chief of Naval Operations in the between-wars era. Some consider him the “Father of U.S. Naval Aviation,” and he disagreed fervently with Billy Mitchell’s idea of an Air Force as a separate military service. He was also enamored with the

idea of lighter-than-air aviation, and oversaw the development of “flying aircraft carriers,” gigantic zeppelins that could actually carry a small force of fighter aircraft. He was a “hands-on” type of manager, very interested in the technological infrastructure of military aviation. His expertise was not confined to aviation; he captained the light cruiser *USS Chester* (CL-1) during a daring night landing in 1914 at Veracruz, which earned him a Medal of Honor.

Three huge zeppelins were built: the *Shenandoah*, the *Akron*, and the *Macon*. They were planned for coastal patrol duty, but Zeppelins do not perform well in stormy weather, and all three would be lost. The *Shenandoah* crashed during a storm over Ohio on September 3, 1925, killing 14 of the 43 aboard. It was huge, and not designed to carry aircraft. The next two were capable of carrying five small Sparrowhawk fighter planes, and launching and recovering them while in flight.

Admiral Moffett died aboard the *Akron* when it crashed during a storm off the coast of New Jersey on April 4, 1933. Six of the survivors of the *Shenandoah* aboard were killed, along with 67 others; only three survived. The *Akron* carried no life preservers, and had only a single small raft; most of the men who died drowned or froze to death in the cold sea.

The *USS Macon* was the last of the three to go. It crashed into Monterrey Bay 90 years ago, on **2/12/1935**. Eighty-three were aboard, and only two were killed, there being plenty of life preservers this time around. Being close to the California shore also helped. This ended the aerial aircraft carrier experiment. The remains of the *Macon* were found and is now listed on the National Register of Historic Places, protected as part of the Monterrey Bay National Marine Sanctuary.

For more information on these zeppelins, see: <https://www.airships.net>. The National Air and Space Museum has one of the Sparrowhawk fighters that the *Akron* and *Macon* carried, see here: https://airandspace.si.edu/collection-objects/curtiss-f9c-2-sparrowhawk/nasm_A19410007000

AND THE TRAGICALLY UGLY

Many of you have no doubt heard about the famous Halloween, 1938, broadcast of *War of the Worlds* by Orson Welles that panicked many people. But did you know that the same hoax was tried two other times? Little is known about the first rerun and its effect in 1944. It was broadcast in Santiago, Chile on 11/12/1944, caused some panic, and one person is said to have died of a heart attack in the excitement, but I could find out little else about it.

The other rerun, a radio program in Quito, Ecuador, aired 76 years ago on **2/12/1949**, has a different, more tragic, story. Radio Quito’s Drama Director dreamed up a scheme to boost listenership. The station planted a few genuine fake news stories about UFOs being seen in the area a few weeks prior to the broadcast. At 9PM that night, a newscaster broke into the normal music program and announced that an attack from aliens was underway near the small town of Cotacollao, near Quito. The newscast was more convincing than was the case in 1938, due to the prior publicity and the public not being able receive other radio stations

broadcasting normally. The police and military were dispatched, and **ten people** died in the panic! When the station realized that the situation was quite out of hand, they owned up to the hoax on the air, but it was too late. People attacked the radio station, setting it afire. The fire department was out chasing Martians, so the radio station burned to the ground. When the Army arrived, they had to use tear gas to disperse the angry mob. The Drama Director and the voice actor on the show were arrested, but neither served time. The Director had to jump from the burning studio, evade the mob, and then go on the lam for six years before leaving Chile forever. His girlfriend and his uncle had died in the fire. For more information about this unfortunate event, see: [https://www.airandspacesthisweek.com/assets/pdfs/20231023 The War of the Worlds - 1938 \(And 1944 and 1949\).pdf](https://www.airandspacesthisweek.com/assets/pdfs/20231023%20The%20War%20of%20the%20Worlds%20-%201938%20(And%201944%20and%201949).pdf).

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