ULA’s Vulcan rocket is set to return to flight on Friday the 13th

United Launch Alliance announced Wednesday it plans to return its Vulcan rocket to service on November 13, nine months after a solid rocket booster anomaly threw the company’s 2026 launch schedule into oblivion.

The return-to-flight mission will launch 40 satellites for the Amazon Leo broadband constellation, the first of 38 Vulcan flights Amazon has booked to deploy the bulk of its network. The mission will lift off from Cape Canaveral Space Force Station, Florida, and ULA said the launch date is pending range approval.

The launch is critical for ULA after its new flagship rocket suffered nozzle failures on its solid rocket boosters on two of its first four missions, most recently during a flight in February. In both cases, the rocket overcame the nozzle failure and completed its mission, but officials at the US Space Force, ULA’s primary customer, lost confidence in Vulcan.

Space Force officials will closely scrutinize Vulcan’s return-to-flight mission. The Pentagon has entrusted ULA’s Vulcan rocket for roughly half of its major launches through the early 2030s. The Space Force certified the Vulcan rocket for national security launches in 2025, then flew two missions on Vulcan before its grounding after the February booster incident.

Making strides

In a statement, United Launch Alliance said engineers “made great strides” in understanding the booster anomaly that occurred in February. Engineers “have identified several potential contributors, which have been mitigated through design and process improvements to the nozzle,” ULA said.

“To support our customers, this upcoming launch will utilize the improved nozzle design, and additional testing and analysis will continue in parallel with the mission,” ULA said. “By flying the improved design, ULA gains valuable flight data that validates these improvements and is the most beneficial path in support of all our customers.”

https://arstechnica.com/space/2026/10/ulas-vulcan-rocket-is-set-to-return-to-flight-on-friday-the-13th/

Meet the real-life Scottish surgeon who inspired Sherlock Holmes

Sir Arthur Conan Doyle created one of the most beloved fictional detectives of all time in Sherlock Holmes, spawning countless novels, films, TV series, and so forth featuring the sleuth. Far fewer people know about the real-life inspiration for Holmes: a renowned surgeon at Scotland’s University of Edinburgh named Joseph Bell, who taught Doyle when the author was still a young medical student. Bell is the subject of a

new, eminently readable biography, *Sleuth-Hound: The Case of the Real Sherlock Holmes*, by medical historian Lindsey Fitzharris.

A noted science communicator with a fondness for the medically macabre, Fitzharris published a biography of Scottish surgical pioneer Joseph Lister, *The Butchering Art*, in 2017—a great, if occasionally grisly, read. She followed up with 2022's *The Facemaker: A Visionary Surgeon's Battle to Mend the Disfigured Soldiers of World War I*, about a WWI surgeon named Harold Gillies who rebuilt the faces of injured soldiers.

In 2020, Fitzharris hosted a documentary for the Smithsonian Channel, *The Curious Life and Death Of…*, exploring famous deaths, ranging from drug lord Pablo Escobar to magician Harry Houdini. Fitzharris performed virtual autopsies, experimented with blood samples, interviewed witnesses, and conducted real-time demonstrations in hopes of gleaning fresh insights. And last year she and her husband, caricaturist Adrian Teal, collaborated on an illustrated children's book, *Dead Ends! Flukes, Flops, and Failures that Sparked Medical Marvels*.

With *Sleuth-Hound*, Fitzharris returns to the Edinburgh of *The Butchering Art*, of body snatchers and surgeons' discovery of ether, which was also the Edinburgh of Arthur Conan Doyle and Joseph Bell. Bell was notorious for his peculiar method of diagnosis: he was able to infer a patient's occupation and personal habits, as well as any ailments, just by looking at them. For instance, Bell once figured out the route a patient had taken walking to the infirmary by identifying the type of clay on the patient's boots—an incident Doyle used in *The Sign of the Four*. Bell was also something of a medical detective, working with a local police surgeon on some of the most famous murder cases of his day.

Ars caught up with Fitzharris to learn more.

Ars Technica: What drew you to writing an entire book about

Joseph Bell?

Lindsey Fitzharris: I've known about Bell because I'm a medical historian and I knew that he was an inspiration for this character, but nobody had written a big commercial book on him. There was a book in 1982 by a guy named Ely Liebow. So people in the Sherlockian world, they know a bit about Bell through him, but I really wanted to bring a medical history lens to it.

https://arstechnica.com/science/2026/10/meet-the-real-life-scottish-surgeon-who-inspired-sherlock-holmes/

Inside the Pentagon, the pressure is on to find a home for a new spaceport

Public, private, or both?

But there's no firm plan yet for when the military might get moving on actually setting up a new launch base. "It's going to take a strong partnership with local and state governments," Garrant said. "As far as decision timelines, we don't have anything yet."

There were 175 orbital launch attempts last year from Cape Canaveral Space Force Station and Kennedy Space Center in Florida and Vandenberg Space Force Base in California. Space

Force officials project the country’s established spaceports will need to support 700 launches per year by 2036.

A third launch site would offload some of the launch demand from limited real estate at Cape Canaveral and Vandenberg. It would also provide what Space Force leaders call “geographic resiliency” to mitigate the risk of a natural disaster or military attack knocking the Cape or Vandenberg offline.

The federal government already owns a third spaceport at NASA’s Wallops Flight Facility in Virginia, used for suborbital rocket tests and small- and medium-class satellite launches. Small rockets can also launch from Pacific Spaceport Complex, owned by the state of Alaska.

There are also commercial options that might be available for a new military spaceport. Ars asked Garrant if the Space Force might consider leasing property from a privately owned launch base, such as the expansive spaceport SpaceX plans to build in southern Louisiana.

“We’ve discussed that we need to consider all of those opportunities: public-private partnership, new federal installation, state land, leveraging commercial land—all of those are possibilities. They all have pros and cons. We haven’t made that decision yet, but we’re not discounting any of those options.”

https://arstechnica.com/space/2026/10/senior-commander-says-space-force-needs-new-spaceport-by-2030/

Crows can evaluate visual info twice as fast as mammals

The first is simply size. Flight imposes strict weight limits, so birds pack enormous numbers of very small neurons into very small brains. Their axons, the long cable-like fibers that transmit electrical and chemical signals between cells, are shorter.

“Long lines take time. Short lines speed everything up,” Nieder said.

The second factor is temperature. Humans’ body temperature is about 36.6° Celsius, while birds go up to 41, or even 42°. This higher body temperature speeds up all chemical processes in birds’ bodies.

“Every ion channel would open and close faster. Every transmitter would move through the synaptic cleft faster,” Nieder explained. “Evolution really took their bodies to the limit. This is life in the fast lane, not only in the brain, but also respiration, the cardiovascular system—everything is going toward the limit in birds.”

But calling crows (or birds in general) decision-making speed demons comes with a few caveats.

Picking the smartest

First, the study included only two birds, a rather small sample. “On the one hand, that’s a valid constraint,” Nieder said. “On the other hand, when you look at monkey studies, that’s the standard number of animals that we have for these very complex types of studies, combining behavior and

electrophysiology.”

Also, the decision-making time of 235 milliseconds in crows and above 400 milliseconds in primates is not an absolute limit. These times apply to the random dot-motion task, which inherently requires waiting to see which way things are drifting.

Finally, it might be hard to learn whether the results extend beyond corvids or crows specifically. “The problem with many other birds is that they are not as smart as corvids and crows and you need a smart bird in order to train it to do exactly this task,” Nieder said.

So far, he admitted, we can’t be sure whether excellent decision-making skills of crows in his lab are due to birds’ brains being speedy in general or to crows simply being smarter than other avians. “Among birds, the corvids are renowned to be extremely intelligent, so maybe there’s something special about them,” Nieder said.

Science, 2026. DOI: 10.1126/science.aed6459

https://arstechnica.com/science/2026/10/crows-can-evaluate-visual-info-twice-as-fast-as-mammals/

Ink droplets in motion snag top prize in Nikon Small World contest

A 25-year-old German experimental photographer has won the 2026 Nikon Small World photomicrography competition with a striking image of droplets of ink being deposited on paper by

an inkjet printer. Ole Bielfeldt beat out 1,802 other entries hailing from 69 different countries.

Bielfeldt became interested in photomicrography during the COVID-19 lockdown after discovering an old microscope in his parents' attic. He figured out how to build an adaptor out of a tube and some wood to connect the microscope to his father's camera and taught himself the art through trial and error, building custom tools as needed. He documents how he captures transformative images of everyday objects with behind-the-scenes videos posted to macrofying, his photography and videography brand.

It was Bielfeldt's curiosity about the inner workings of inkjet printers that inspired his winning entry, but capturing the action of ink drops being deposited on paper was a challenge, given that the process happens so quickly. The droplets, for instance, moved faster than the camera's shutter speed. Bielfeldt's solution was to deconstruct the printer so that the paper moved under a stationary (rather than moving) printhead, and then take the image in a dark room, using a flash to serve as the shutter, thereby freezing the ink drops mid-air. There was no need for pricey equipment. Bielfeldt does not use AI in his images, preferring to rely on traditional techniques.

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https://arstechnica.com/science/2026/10/meet-the-2026-winner-of-nikons-small-world-photomicrography-contest/

Science says your boss should talk less in meetings

To tap meetings for study, researchers typically use two approaches. The first is a classic survey in which researchers retroactively ask people about their real or simulated meeting experiences and analyze the responses. The second method is to analyze specific behaviors and trends extracted from audio and video recordings of meetings. Such precise content is “where the music is,” says industrial and organizational psychologist Nale Lehmann-Willenbrock, director of the Center for Better Work at the University of Hamburg, Germany.

In one experiment, Lehmann-Willenbrock and colleagues extracted data from video-recorded meetings to study how leader communication affects team interaction during decision-making. The researchers found that respectful, attentive inquiry by meeting leaders enhanced team performance, in contrast to when leaders asked questions but didn’t attentively listen to responses.

Leading with listening

As with many meeting science studies, their findings about what improves meetings’ effectiveness often seem obvious, but meeting researchers note that meetings often stray far from these ideals.

Such research also consistently reveals the importance of active listening, says Lehmann-Willenbrock: not just passive acknowledgement by the listener but actively providing thoughtful feedback. In virtual meetings, because “we’ve all learned to mute ourselves if we’re not talking, very often,

active listening is killed completely.”

The balance of listening and speaking also can influence how well a meeting goes. Meeting leaders and participants may retain very different views of whether a meeting was successful, notes Lehmann-Willenbrock. “Often, leaders talk the most, which is also why they often think their meetings are pretty good,” she says. Kreamer also emphasizes that it’s important that meeting leaders lead but not dominate the discussion. Leaders should monitor the proportion of time they are speaking to allow for inclusion of many voices.

Research supports a checklist of additional things that leaders can do before, during, and after a meeting to make it a success, says Lehmann-Willenbrock. To set the stage, leaders should choose appropriate rooms, refreshments, and lighting, invite only those who need to be there, plan to start and end on time, prepare an agenda, set and communicate clear goals, and allow time for pre-meeting conversation.

https://arstechnica.com/science/2026/10/science-says-your-boss-should-talk-less-in-meetings/

What did the Liberty Bell sound like? Science is on the case.

The Liberty Bell, with its famous crack, hasn’t been rung in 180 years, but that hasn’t stopped scientists from pondering what the bell might have sounded like when tolling. In honor of the nation’s 250th anniversary, researchers at Penn State University have modeled its acoustic properties, drawing on

data collected from one of the bell's replicas. The work was first presented at a meeting of the Acoustical Society of America in Philadelphia earlier this year, followed by an article in Physics Today.

Historians aren't sure exactly when the Liberty Bell acquired its distinctive crack, just that it occurred sometime between 1817 and 1846. An 1846 account in the Public Ledger described the ringing of the bell on February 23 that year and mentioned that the bell had developed a crack, which someone had attempted to fix by filing the sides down. But it didn't work: The February 23 ringing extended the crack even more, so much so that "the old Independence Bell … now hangs in the great steeple irreparably cracked and forever dumb." Nobody has heard it ring since.

This wasn't the first time the bell had cracked; the rim cracked shortly after it arrived in Philadelphia in 1752, the first time the clapper struck while testing the sound. It was recast by two local foundry workers, John Pass and John Stow, not once but twice, because the first recast produced a sound that one bystander likened to coal scuttles banging together.

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https://arstechnica.com/science/2026/10/what-did-the-liberty-bell-sound-like-science-is-on-the-case/

Microplastics in water aren't

inert and make damaging chemicals on their own

One reason plastics are used so often is that they're chemically inert, meaning bags, food containers, and cups don't react with what we put in them. Yet they can still break down into microplastics, which turn up in drinking water, human blood, arteries, and brains. The consequences of that are uncertain.

"Whether microplastics can directly cause human disease is still being researched," said Wei Min, a chemist at Columbia University. In a new Nature study, Min's team took a step toward answering this question by demonstrating that microplastics are likely not as chemically inert as we might expect.

Microdroplet chemistry

Min's lab has spent years working on microdroplet chemistry, studying how water broken into tiny droplets behaves at its boundary with air. These droplets have been reported to generate reactive oxygen species, or ROS, a family of harmful, oxygen-containing molecules. "ROS will essentially bump into proteins, lipids, DNA, and cause damage," Min said. "You could break a DNA strand into segments. You could mutate DNA; you could misfold proteins."

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https://arstechnica.com/science/2026/10/microplastics-in-water-arent-inert-and-make-damaging-chemicals-on-their-own/

Neutron’s first launch slips again amid trouble with carbon composites

Rocket Lab announced Wednesday that its Neutron launch vehicle won’t fly until 2027, citing an issue discovered during manufacturing of the rocket’s carbon composite structures.

The announcement was public confirmation of what nearly everyone inside Rocket Lab and the wider space industry already knew. The most recent official update from Rocket Lab in August suggested the company still held hope of delivering the first Neutron rocket to its launch pad at Wallops Island, Virginia, before the end of this year, a schedule that would have almost certainly pushed the first flight into 2027.

But Rocket Lab’s statement Wednesday about Neutron’s schedule suggests the company is still struggling with manufacturing the rocket’s large booster stage. Neutron’s reusable first stage is made of carbon composite structures, which offer low weight, high strength, and corrosion resistance. But carbon composites in aerospace are generally harder to manufacture than metallic structures.

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https://arstechnica.com/space/2026/10/rocket-lab-announces-another-delay-for-its-medium-lift-neutron-rocket/

They war-gamed dimming the Sun. It went even worse than you think.

When it comes to deciding the fate of the planet, Colleen Golja always thought science and reason would have a seat at the table. That was until one morning last September in London, when the climate researcher took part in the first in a series of war games. The goal: to prevent an uncontrolled global race to develop a technology aimed at cooling the planet but that comes with vast, unknown risks that could reshape life on Earth.

“I thought that would be such an easy thing. Like, we can all agree to do ethical research and make sure it’s for the better of all humans,” she told WIRED. “And boy, was I wrong.”

The simulation, titled Exploring Geopolitical Tipping Points and Climate Cooling Strategies, saw a couple dozen foreign-relations experts, scientists, military personnel, and former government officials from across the world convene in a meeting room at Queen Mary University of London. After making introductions over coffee and little yogurts, they sat at tables arranged in a square with the name of the country or organization each person was playing: national governments, climate NGOs and nonprofits, indigenous groups, and tech companies. Golja was assigned to provide technical advice to help participants make scientifically literate decisions.

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https://arstechnica.com/science/2026/10/they-war-gamed-dimming-the-sun-it-went-even-worse-than-you-think/