

TODAY

It's Sunday, April 11, the 101st day of 2021. There are 264 days left in the year.

Today's Highlight in History:

In **1945**, during World War II, American soldiers liberated the Nazi concentration camp Buchenwald in Germany.

In **1814**, Napoleon Bonaparte abdicated as Emperor of the French and was banished to the island of Elba. Napoleon later escaped from Elba and returned to power in March 1815, until his downfall in the Battle of Waterloo in June 1815.

In **1865**, President Abraham Lincoln spoke to a crowd outside the White House, saying, "We meet this evening, not in sorrow, but in gladness of heart." It was the last public address Lincoln would deliver.

In **1899**, the treaty ending the Spanish-American War was declared in effect.

In **1921**, Iowa became the first state to impose a cigarette tax, at 2 cents a package.

In **1947**, Jackie Robinson of the Brooklyn Dodgers played in an exhibition against the New York Yankees at Ebbets Field, four days before his regular-season debut that broke baseball's color line. The Dodgers won, 14-6.

In **1953**, Oveta Culp Hobby became the first Secretary of Health, Education and Welfare.

In **1961**, former SS officer Adolf Eichmann went on trial in Israel, charged with crimes against humanity for his role in the Nazi Holocaust. Eichmann was convicted and executed.

In **1965**, dozens of tornadoes raked six Midwestern states on Palm Sunday, killing 271 people.

In **1968**, President Lyndon B. Johnson signed into law the Civil Rights Act of 1968, which included the Fair Housing Act, a week after the assassination of Martin Luther King Jr.

In **1970**, Apollo 13, with astronauts James A. Lovell, Fred W. Haise and Jack Swigert, blasted off on its ill-fated mission to the moon. The mission was aborted when an oxygen tank exploded April 13. The crew splashed down safely four days after the explosion.

In **1980**, the Equal Employment Opportunity Commission issued regulations specifically prohibiting sexual harassment of workers by supervisors.

In **1996**, 7-year-old Jessica Dubroff, who hoped to become the youngest person to fly cross-country, was killed along with her father and flight instructor when their plane crashed after takeoff from Cheyenne, Wyoming.

Ten years ago: A bloody, four-month standoff in the West African nation of Ivory Coast ended when troops loyal to the elected president, Alassane Ouattara, routed and captured his rival, Laurent Gbagbo, the longtime strongman who'd lost the vote but refused to give up power. A subway bombing in Minsk, Belarus, claimed 15 lives.

Five years ago: Secretary of State John Kerry visited the memorial to Hiroshima's atomic bombing, delivering a message of peace and hope for a nuclear-free world.

One year ago: The number of U.S. deaths from the coronavirus eclipsed Italy's for the highest in the world, topping 20,000. On the day before Easter, the Kansas Supreme Court allowed an executive order from Democratic Gov. Laura Kelly to remain in effect; it banned religious and funeral services of more than 10 people during the pandemic. A federal judge in Kentucky ruled that the city of Louisville could not halt a church's drive-in service planned for Easter. Saturday Night Live made its return on NBC after being sidelined for more than a month by the coronavirus; the all-quarantine version, hosted by coronavirus survivor Tom Hanks, featured stars delivering taped material from their homes.

Today's Birthdays: Ethel Kennedy is 93. Actor Joel Grey is 89. Actor Louise Lasser is 82. Pulitzer Prize-winning columnist Ellen Goodman is 80. Movie writer-director John Milius is 77. Actor Peter Riegert is 74. Movie director Carl Franklin is 72. Actor Bill Irwin is 71. Country singer-songwriter Jim Lauderdale is 64. Songwriter-producer Daryl Simmons is 64. Rock musician Nigel Pulsford is 60. Actor Lucky Vanous is 60. Singer Lisa Stansfield is 55. Actor Johnny Messner is 52. Rock musician Dylan Keefe is 51. Rapper David Banner is 47. Actor Tricia Helfer is 47. Rock musician Chris Gaylor (The All-American Rejects) is 42. Actor Kelli Garner is 37. Singer Joss Stone is 34. Actor-dancer Kaitlyn Jenkins is 29.

— Associated Press

SPACE | Flying an aircraft on Mars

NASA prepares to fly Ingenuity on Mars

BY CHRISTIAN DAVENPORT

The Washington Post

They landed a car-size rover on Mars, and the brilliant, if cheeky, engineers at NASA's Jet Propulsion Laboratory even snuck a coded message into the parachute used to slow it down for a soft landing that read, "Dare Mighty Things."

Now comes what the space agency says will be a "Wright brothers" moment on Mars: the first powered flight of an aircraft on another planet.

It won't fly far, just to the height of a basketball rim and down, a short hop that should take about 40 seconds. But the autonomous flight of a tiny helicopter called Ingenuity — at first scheduled for Sunday, then delayed to later this month — would mark a first in interplanetary travel, demonstrate a new technology and pave the way for scientists and explorers to more quickly traverse the surface of the Red Planet.

It's a technology demonstration add-on to the main feature of the mission — the Perseverance rover, a four-wheeled vehicle designed to explore the landscape of a crater that once held water and could yield clues about the possibility of ancient life there.

The rover is outfitted with all sorts of cameras and sensors that can zoom in on rock formations and collect data about the planet's landscape and climate. "Reading the geological history embedded in its rocks will give scientists a richer



NASA/JPL-Caltech via AP

This illustration depicts the Ingenuity helicopter on Mars. It was attached to the bottom of the Perseverance rover, shown in the background. It will be the first aircraft to attempt controlled flight on another planet.

sense of what the planet was like in its distant past," NASA said.

Perseverance carried Ingenuity with it, a tiny offspring clinging to the undercarriage of the rover during the seven-month, 300-million-mile journey, the white knuckled landing through Mars's atmosphere and the frigid Martian nights since.

Now it's ready for its first flight.

"It could be an amazing day," Tim Canham, NASA's Ingenuity operations lead, told reporters Friday. "We're all nervous,

but we have confidence that we put in the work and the time and we have the right people to do the job."

Given the distance between Mars and Earth, NASA won't get word of the success or failure of the mission until the wee hours of Monday morning.

Ingenuity is a sprite of a helicopter, just 4 pounds, with four pointy legs, two rotor blades that whirl at blinding speed in opposite directions, a solar panel and a fuselage packed with avionics designed to help it navigate the thin Martian atmosphere — another marvel to

emerge from the labs at NASA's Jet Propulsion Laboratory.

It's no easy feat, flying a helicopter on Mars. The reduced gravity — about one-third of Earth's — will help it take off and stay aloft. But the paucity of the Martian atmosphere, just 1% of the density of Earth's, doesn't give the blades much to chew on as they try to gain purchase for liftoff.

"That's the equivalent of about 100,000 feet of altitude on Earth, or three times the height of Mount Everest," said MiMi Aung, NASA's Ingenuity project manager. "We don't

generally fly things that high."

Commercial airliners fly at about 35,000 feet above the Earth, she noted, adding: "There were some people who doubted we could generate enough lift to fly in that thin Martian atmosphere."

If successful, Ingenuity's flight would come nearly 120 years after the Wright brothers' first flight of a plane above the beach in North Carolina. Ingenuity's airfield is nothing like Kitty Hawk, a dusty, rock-strewn, barren strip of land that is flat enough, NASA hopes, for takeoff and landing.

Designed as a test vehicle, Ingenuity is "in the long tradition of experimental aircraft that started with the Wright brothers, who were able to bring aerial mobility as a dimension for us to be able to travel here on Earth," NASA's Bob Balaram, the chief engineer of the Mars helicopter project, said in a news briefing last month. "In the same way, we are hoping that Ingenuity also allows us to expand and open up aerial mobility on Mars."

As a tribute to the Wright brothers, Ingenuity has a postage-stamp-size bit of fabric from the brothers' aircraft attached to a cable under the solar panel.

In 1903, the Wright brothers' first flight went about 120 feet. Ingenuity's first flight won't go that far. Initially it plans to lift off, rise to about 10 feet, hover for some 30 seconds and come back down.

ABOVE THE OREGON COAST

Before Mars helicopter, prototype 'Orville' took flight

BY JES BURNS

Oregon Public Broadcasting

Decades of planning and prototype testing have led up to this moment. And a piece of that history happened on the Oregon Coast.

"The problem on any planet is the same as Earth. If you want to go around a bunch, you have to go in orbit. To be in orbit, your altitudes are significantly higher than if you could fly," said Kevin Tucker, president of aerospace engineering company Near Space Corp. "If you really want to get sensors in close proximity where you can get more measurements on both the ground and the atmosphere, you have to go lower."

In the years leading up to the Ingenuity launch, scientists with NASA have been trying to figure out if it's possible to fly an aircraft in the low gravity and thin atmosphere of Mars. And before there was the Ingenuity helicopter, there was the NASA 731 glider, nicknamed "Orville."

This is where Tillamook-based Near Space Corp. came in. It was contracted to do the flight tests for the glider at the Tillamook Airport.

On a Thursday in August 2001, the sky was blue and clear and the winds calm. A crew of about a dozen started filling a giant helium balloon more than 100 feet tall.

"The Martian atmosphere is ex-



NASA via OPB, file

NASA 731, Orville, is prepared for a low-altitude hop — 1,000 feet — at Ames Research Center on Moffett Field in California to check out aircraft and data systems. The prototype to the Ingenuity helicopter on Mars disintegrated soon after initial testing in the early 2000s.

remely less dense than Earth. So to fly — to simulate the atmosphere of Mars on Earth — you have to go a lot higher where the density of the atmosphere is much, much lower," Tucker said.

As the balloon rose into the sky, what started out as a "loose, floppy-looking

bag" started to fill up as the helium inside expanded. The balloon eventually carried the glider more than 19 miles up into the stratosphere, before releasing it.

As the glider drifted back to Earth, engineers monitored its progress.

But Orville's success in Tillamook would not be repeated. A year later, the glider was fitted with a high-speed propeller to test if propulsion was possible. Orville disintegrated 20 miles above the Earth.

"The tests did what (they were) supposed to do. The thing flew," Tucker said.

NASA later explained, "The aerodynamic lift on the wings first exceeded the weight of the aircraft at an altitude of 29.9 (kilometers), thereby proving that flight at Mars-like conditions is both aerodynamically possible and predictable."

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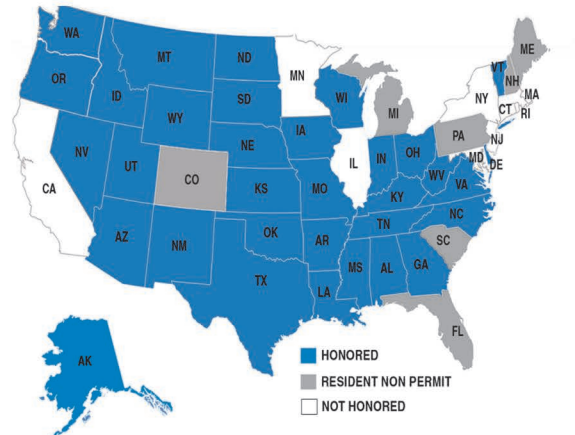
Still, the legacy of lessons learned in Tillamook carries through and helped shape the design of the Ingenuity helicopter, which was scheduled to begin a series of test flights on Mars this weekend.

"It's built on technology efforts that go back decades," said Dave Lavery, NASA's program executive for solar system exploration.



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