

70 Years of Flight: Kitty Hawk to the Moon

At the dawn of the 20th Century controlled powered flight was impossible. Seventy years later the first explorations of the moon were over. Orville Wright lived to see Chuck Yeager break the sound barrier. Benjamin Foulois, the first military pilot, who learned to fly by correspondence from the Wright's in 1910, lived to pin medals on the Mercury astronauts. Edwin Aldrin, a friend of the Wright brothers, watched his son and Neil Armstrong make the first landing on the moon.



This 1949 stamp was issued to commemorate the return of the Wright Flyer to America from England. It pictures the world's first airplane.



The die for this 1969 stamp was taken to the surface of the moon. The stamp shows the world's first spaceship – the Lunar Excursion Module (LEM).

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When the Wright brothers built their first experimental kite in 1899, the idea of a man in a flying machine seemed as fantastic as a man in the moon.

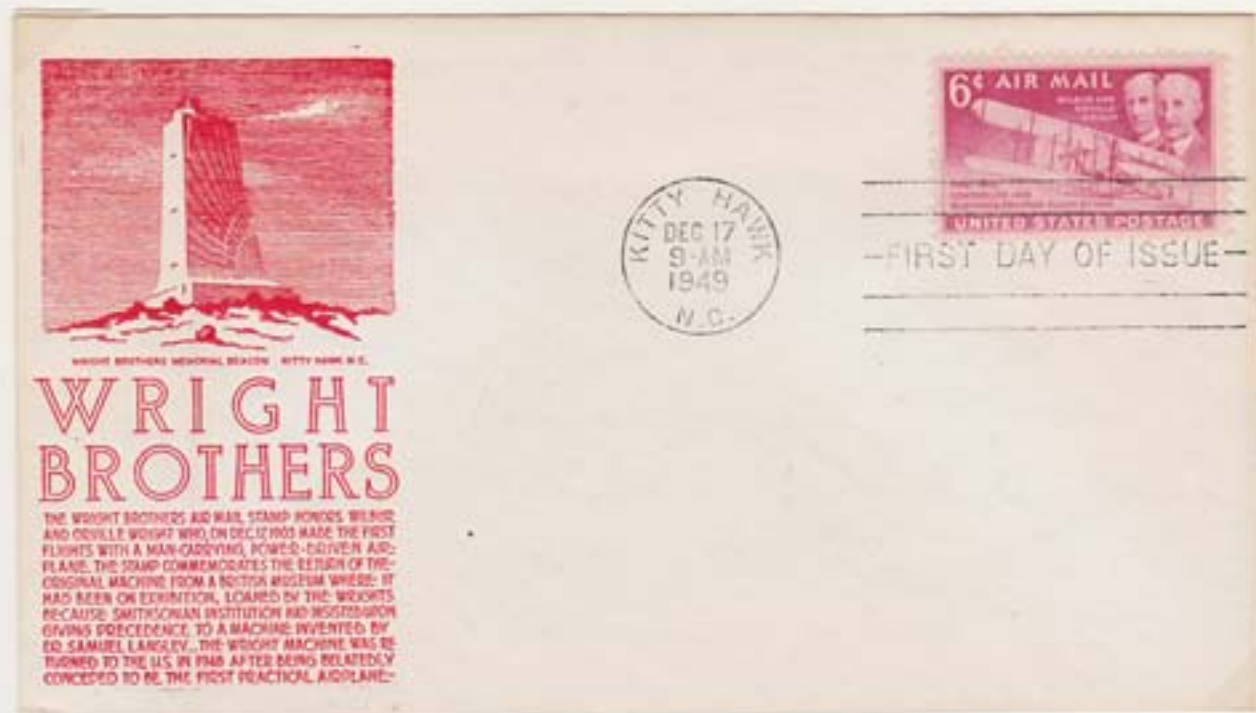


By all rights the inventor of the powered flying machine should have been Dr. Samuel Langley, a distinguished scientist and head of the Smithsonian Institution. Working for a decade and more than \$73,000 his *aerodrome* failed. The Wright brothers dropped out of high school and built the first aeroplane for less than \$1000.

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"I got more thrill out of flying before I had ever been in the air at all – while lying in bed thinking how exciting it would be to fly." Orville Wright



George Cayley pioneer of the internal combustion engine worked in aeronautical studies for 60 years. William Henson was granted a British patent in 1843 for an "Aerial Steam Engine". Hiram Maxim built a 3 ½ ton craft with two steam engines and a wingspan of 104 feet. Thomas Edison and Alexander Graham Bell also tackled powered flight without success.

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Pioneers in aviation struggled with problems of aerial locomotion in other nations as well. M. Santos Dumont flew a machine with two box wings, each measuring 18 by 11 feet. This resulted in a vehicle with a sustaining area of 861 square feet. A successful flight was achieved on November 12, 1906.



While interest in America was decidedly cool to aviation those across the Atlantic could not get enough. By 1911, American aircraft were no longer competitive in races. The first long-distance race from Paris through Belgium, Holland, to London and back to Paris had 43 contestants flying 12 different kinds of aircraft. The only American flew a French Nieuport.

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William Randolph Hearst offered \$50,000 to the first person to fly coast to coast in 30 days. Cal Rodgers, a motorcycle racing daredevil with 60 hours of flight time, obtained backing from the Armour Company to make the attempt. Armour paid \$5.00 for every mile he flew with Vin Fiz (The Ideal Grape Drink) on the wings. After 49 days, 4231 miles (he got lost a lot), and 19 crash landings Rodgers arrived in California with only the rudder and two struts from the original plane. The prize went unclaimed.



Earl Ovington was sworn in by Postmaster General Frank Hitchcock as the first airmail pilot. He carried America's first official airmail from Garden City to Mineola, New York during the International Aviation Tournament held September 23 thru October 1, 1911.

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Walter Boyne wrote that between 1914 and 1918, war's furious pace forced aviation through a hothouse period of change never again to be matched. During the era, virtually all possibilities for the development and deployment of air power were explored – strategic bombing, guided missiles, reconnaissance and surveillance and even jet propulsion.



The airplane had become a significant wartime weapon. By the end of the Great War (before we had the wisdom to number them) the British Royal Air Force numbered 20,000 aircraft. 15,000 airmen had lost their lives during the war.

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In May 1919 the United States Navy new Curtiss flying boat NC-4 successfully flew from Newfoundland via the Azores and Portugal to England. The crew included Lieutenant Walter Hinton.



In the 1920's the Post Office began establishing Contract Air Mail (CAM) routes. While technically a bisect the cover illustrated was obviously stamped for philatelic effect.

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There are plenty of top pilots vying for the \$25,000 Orteig Prize for the first non-stop flight between Paris and New York. They include WWI French ace Rene Fonck, polar explorer Adm. Richard Byrd, and US Navy pilots Davis & Wooster. Charles Lindbergh, a 24-year-old airmail pilot with \$2000 in savings is a late entry long shot.



Rene Fonck is killed on take off from Paris. Byrd has mechanical failure in New York. The French war heroes Nungesser and Coli make the flight but disappear without a trace. They are believed to have made it to St. John's Newfoundland. Some believe their plane is in the mountains of Maine.

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Reportedly only one flight of mail (approximately 700 pieces) was ever carried in the *Spirit of St. Louis*.



By the time Lindbergh lands at Le Bourget he had become the first world celebrity and would remain so for the rest of his life. He receives the first Distinguished Flying Cross, the first peacetime Congressional Medal of Honor and all the entire world can think to give him. This includes cars, an airplane, homes, a \$5,000,000 movie deal, and hundreds of marriage proposals. Seen here compared with George Washington.

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"I never flew in a craft that traveled through the air as easily. Even in breaking up, Hindenburg was gentle to its passengers—those that lived."

James O'Laughlin, Hindenburg survivor



Months before the Great Depression the German dirigible Graf Zeppelin flew around the world.

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Wiley Post carried this cover on his attempted coast to coast stratospheric flight. First around the world alone in 1933, Post discovered the jet stream and pioneered the full pressure suits worn later by astronauts.



During this period airlines were connecting far flung reaches with passenger and freight service. Spanning the Pacific Ocean the China Clipper connected San Francisco to Hong Kong and Macao.

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RUDOLF NEBEL UND WERNHER VON BRAUN
AUF DEM „RAKETENFLUGPLATZ BERLIN“



R. Nebel

Rudolf Nebel (with Werner von Braun) names a deserted government ammunition depot in the summer of 1930 "Rocket Proving Ground Berlin". They would work again for the Nazis on the A-4 (V2) long range rocket.



Author of *The Rocket into Planetary Space* published in 1923 Hermann Oberth joined the migration of German rocket talent (Operation Paperclip) at the end of WWII.

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Expanding on the work of Robert Goddard small groups of rocket enthusiasts pressed to expand the capability of reaction powered engines. Similar efforts were underway in Germany.



Sample produced for June 1959 Missile Mail launch

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"THE MIGHTY EIGHTH" 8TH AIR FORCE



Activated Sunday, 1 February 1942
as
EIGHTH BOMBER COMMAND
Maj. Gen. IRA C. EAKER, Commanding

40th Anniversary

Leuterio L. May

Christmas USA 1981



The Bloody Eighth Air Force took the battle of World War II to the heart of Germany.



COMMEMORATING THE
ATOMS

FOR PEACE
PROGRAM
FIRST DAY COVER



FIRST DAY OF ISSUE

Charles W. Sweeney
Paul Tibbets

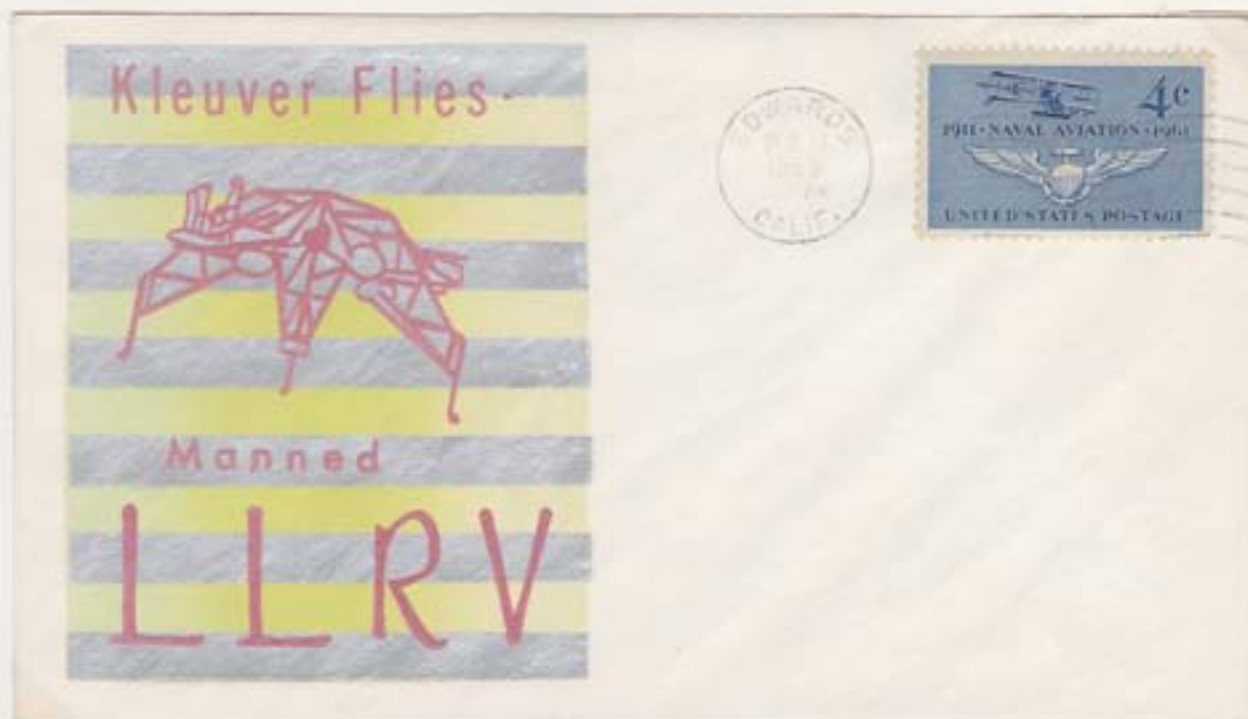
PILOT OF THE ENOLA GAY
Hiroshima, Japan 6 Aug. 1945

Charles Sweeney (*Bock's Car*) and Paul Tibbets (*Enola Gay*) are the only two pilots to use atomic weapons in combat. Ironically they autographed an Atoms for Peace first day cover.

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In 1910 Effie and Clifford Corum (and his brother Ralph) took up farming in the Mojave Desert. When the Post Office declined to name the town Corum because of an existing *Coram* township the family settled on Muroc, Corum spelled backwards. The dry lakebeds made for the perfect runways for experimental aircraft.



In 1950 Muroc was renamed to honor Capt. Glen Edwards. Army test pilot Jack Kleuver was first to fly the Lunar Lander Research Vehicle (LLRV) with an enclosed cockpit like the Lunar Module. A later version, the Lunar Lander Training Vehicle (LLTV) was flown at Ellington AFB, Texas by Apollo lunar crews.

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SMITHSONIAN INSTITUTION
NATIONAL AIR AND SPACE MUSEUM
Milestones of Flight Commemorative Series
Number 1



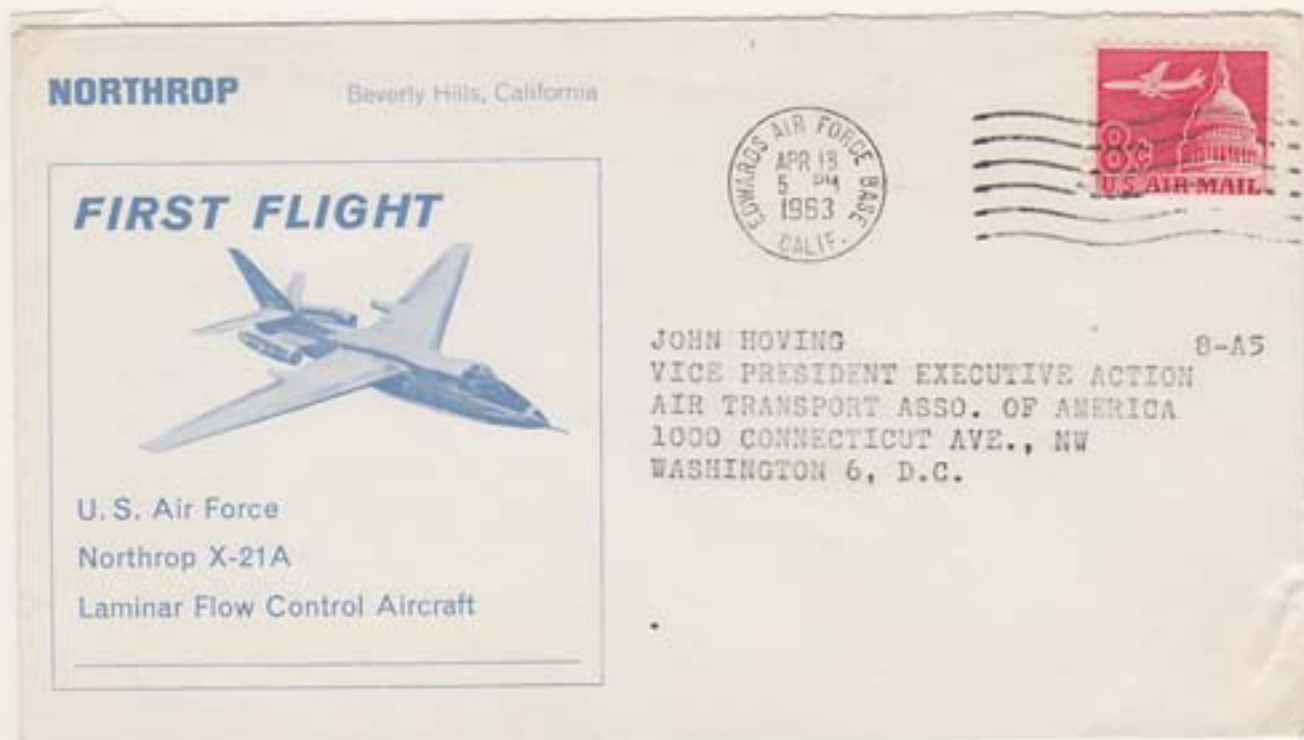
Stephen Zeiba, Jr.
P. O. Box 4046
Colesville, Md. 20904

A major advance in flight research as the X-1 breaks the sound barrier. The cover illustrated was FLOWN at supersonic speed to commemorate the event. On the 50th anniversary Chuck Yeager flew covers when he flew supersonic in his last Air Force jet.



Reunion of wingless aircraft pilots at a meeting of the American Air Mail Society.

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FLOWN cover on first flight of Northrop X-21A. The wings "inhale" air through thin, span-wise slots, thus preventing turbulence in the boundary layer. This reduces friction drag by 80% and may lead to 50% increases in range or payload of large aircraft.



Designed to replace the B-52 the Valkyrie boasted an intercontinental range and could cruise at 2000mph (Mach 3). Only two prototypes were build. Utilized compression lift.

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The North American Project 240 was arguably the greatest experimental aircraft ever flown. In it's first powered flight the plane idled along at above mach 2. It would eventually reach 6.7.



Flown by 12 great test pilots including Joe Walker and Neil Armstrong the X-15 flew so high (67 miles) that several pilots received astronaut wings for their flights.

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First Day of Issue

WILEY POST
1898-1935

Aviation Pioneer

His pressurized suit for high altitudes

First day of issue ceremony: Wiley Post Memorial Building Oklahoma City

Arborea Cachin

FIRST DAY OF ISSUE

USAirmail 125c

Jeanne Gragge Voyager
Dick Ruten

F-4 pilot Richard Ruten and his girlfriend flew *Voyager* around the world unrefueled in an aircraft designed by his brother Burt. The flight lasted from December 14 to 23, 1986.

INTERNATIONAL AIRMAIL
FIRST DAY OF ISSUE

OCTAVE CHANUTE
1832-1910

BIPLANE
GLIDER
PLAN AND
FRONT VIEW

In 1894, Octave Chanute published his classic book, *Progress in Flying Machines*, the first authoritative account of aeroplane history. It informed early aviation pioneers of problems solved and those to be solved. Chanute introduced his highly successful biplane glider in 1896. His lecture at the Aéro Club in Paris in 1903 was a turning point in the development of European aviation.

Arborea Cachin

FIRST DAY OF ISSUE

USAirmail 91c

Bryan J. Allen
Pilot & Engine

Paul Bruce Cready

The *Gossamer Albatross*, an experimental composite aircraft became the first human powered aircraft to cross the English Channel. Designed by Paul MacCready and flown by Bryan Allen, a cyclist, who was both pilot and engine.

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A 3 ½ degree error prevented Pioneer 1 from reaching its lunar goal. It did attain a speed of 23,450 mph and confirmed scientific theory about earth's magnetic field.



Using the Air Force Thor ballistic missile designed to deliver nuclear warheads Pioneer 2 also failed to reach its mark. First U.S. missile with extremely accurate inertial guidance.

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NASA ECHO SATELLITE Orbits Aug. 12, 1960

PRESIDENT EISENHOWER TELLS THE WORLD:

"This is one more significant step in the United States' program of space research and exploration being carried forward for peaceful purposes. The satellite balloon, which has reflected these words, may be used freely by any nation for similar experiments in its own interest."

WASHINGTON
DEC 15
9-AM
1960
D.C.

COMMUNICATIONS FOR PEACE
ECHO I
U.S. POSTAGE 4c

FIRST DAY OF ISSUE

WORLD-WIDE
COMMUNICATIONS
THROUGH
SPACE

Echo, an inflatable sphere from which to bounce radar signal as a communications relay, was also found useful as a plot of variations in air density at the top of the atmosphere.

ECHO I

WASHINGTON
DEC 15
9-AM
1960
D.C.

COMMUNICATIONS FOR PEACE
ECHO I
U.S. POSTAGE 4c

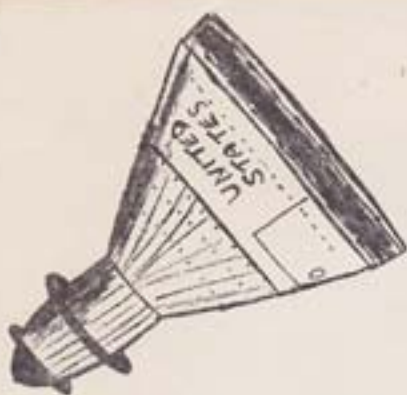
FIRST DAY OF ISSUE

WORLD-WIDE
COMMUNICATIONS
THROUGH
SPACE

COMMUNICATIONS FOR PEACE

By 1960 the American Telephone and Telegraph Company (AT&T) was asking NASA to launch its low-level, active communications satellite, Telstar.

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AUSTRONAUTS VIEW SPACE CAPSULE SUCCESSFUL FIRING FEB. 21, 1961

Unmanned Space
Capsule Launched
In Difficult Test...



The Seven Astronauts were
on hand to view the re-entry
of the 2400 Pound Space
Cabin. Flown from Canaveral
Florida to a spot 400 Miles
Northeast of Antigua Island.

CLYDE J. SARZIN
PORT WASHINGTON, L. I.
NEW YORK, U. S. A.

Sporting an 8 inch stainless steel "belly band" to reinforce the weak joint where a thin skinned Atlas joins the Mercury capsule MA-2 flew brilliantly.



With the loss of "Goliath" in the explosion of an Atlas missile many were concerned about astronauts riding the rocket. The Air Force said that the Mercury program used proven "D" models and not the "E" model lost in the test.

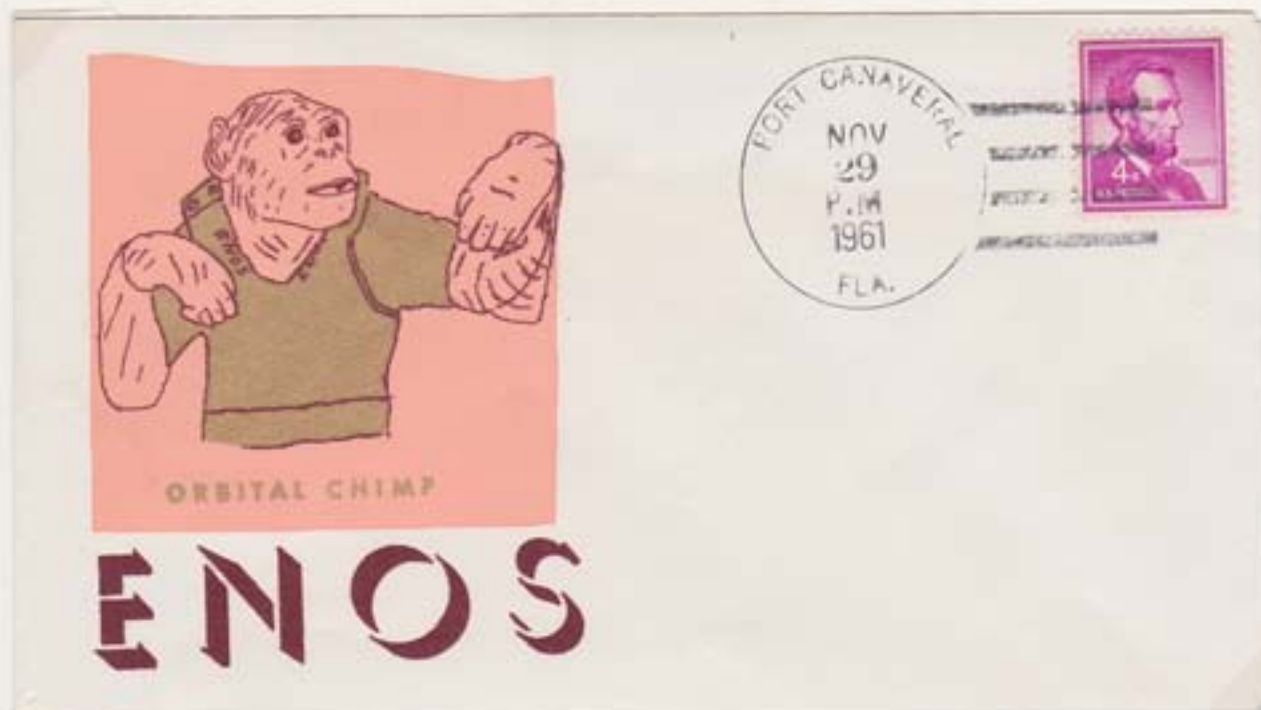
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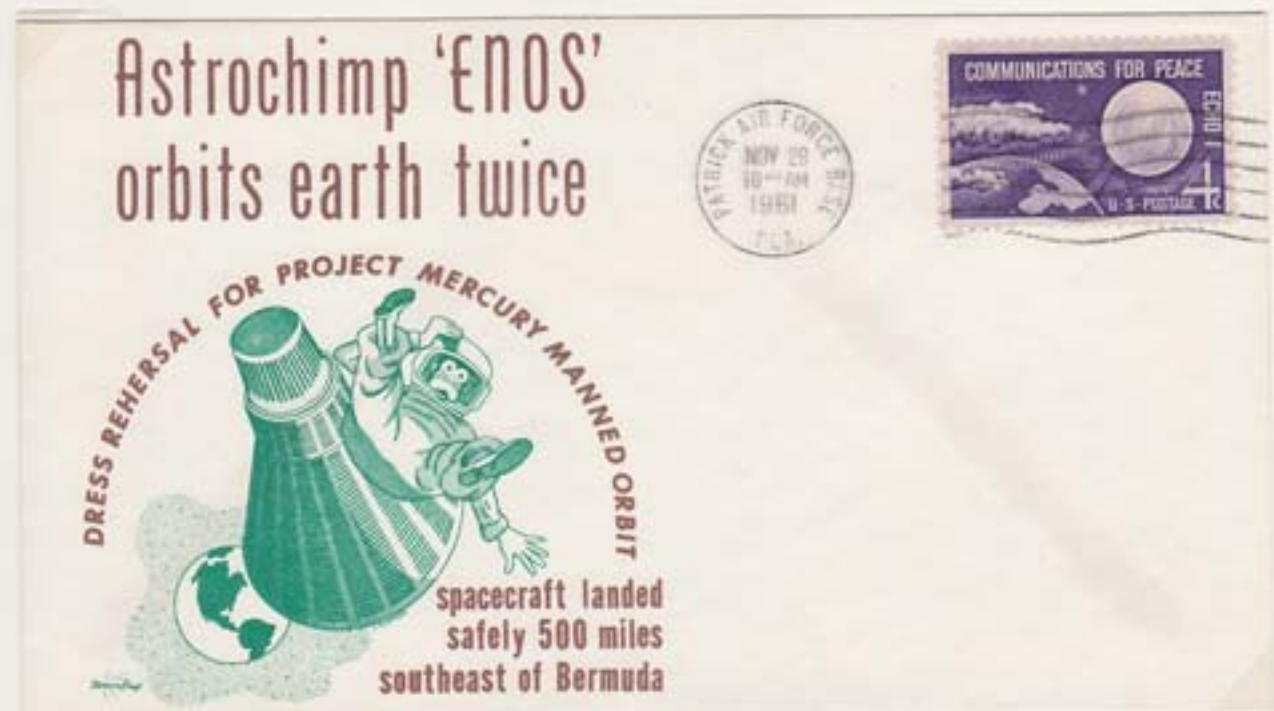
Instrumentation would provide data from every conceivable point about the capsule. Noise levels, excess vibration, and radiation levels would be recorded along with 20,000 frames of film of the control panel, 600 out the window, and 10,000 out the periscope.



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Enos (Greek for "man") scored highest in training in New Mexico. Capt. Jerry Fineg described Enos as "quite a cool guy and not the performing type at all."



Enos handled four problems. First, pull right and left levers to turn off lights. Second, pull a lever 20 seconds after green light for a drink of water. Third, pull a lever exactly 50 times to get a banana pellet. Lastly, three symbols-circles, triangles, and squares-would appear in two-of-a-kind. Pull the lever under the odd symbol to avoid a shock.

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More than just scientific prowess was at stake when Russia orbited Sputnik in October 1957. The military significance was not lost. The Soviets displayed heavy lift and precise navigation in 1959 by hitting the moon with a missile.



In April 1961 Soviet Air Force pilot Yuri Gagarin became the first man in space. Circling the earth he landed by leaping from his capsule and deploying his parachute. He was declared a Hero of the Soviet Union.

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NASA examined service records of military jet pilots who had completed a test pilot school. 108 were invited to interview for a temporary transfer to the space agency. In the end 7 men were selected. The question then became who would be first in space. Life magazine identified the top three contenders as the "Gold Team".



Beat by the Russians by a few weeks the first American in space was Alan Shepard, a Navy carrier pilot. His 15-minute ballistic flight, according to Hugh Dryden, "had the technical merit of a circus human cannonball". After battling an inner ear imbalance that grounded him for years he returned to walk on the moon in 1971.

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First U. S. Orbital Flight
Lt. Col. John H. Glenn, Jr., USMC
SPACE CRAFT "FRIENDSHIP 7"

February 20th, 1962
Lift Off Time 9:47 - Splash 14:43
Pickup by U.S.S. "NOA" at 15:01

Originally an alternate, John Glenn was selected as a Mercury astronaut when a candidate was dropped for health reasons. Wildly popular with the public, Glenn was the first American to orbit the earth. The US Postal Service sent the stamp shown to offices sealed with orders to open after the pilot was down and safe. The stamp was not available on the Prime Recovery Ship (USS Noa). The cover was backdated on February 23.



Caroline Kennedy Meeting John H. Glenn, Jr.



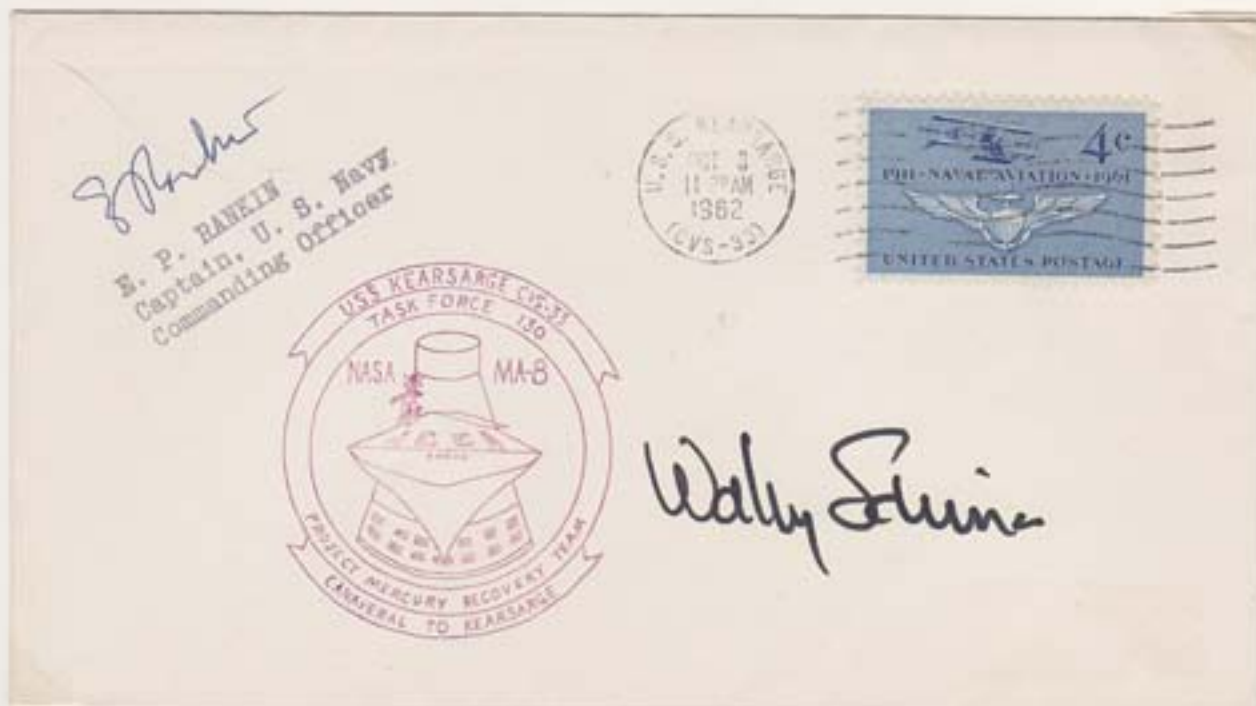
FIRST DAY OF ISSUE

Glenn became friends with the Kennedy family. He was encouraged to enter politics and was elected to the Senate from Ohio in 1964. He ran unsuccessfully for President in 1984. Forty years later he flew in the space shuttle at an age longer than the time it took to travel from Kitty Hawk to the Moon.

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One of only two astronaut candidates ever selected without a college degree Scott Carpenter followed Glenn into orbit. "I was more interested in evaluating where I was than how I got there" he later remarked about his flight. Equipment malfunction and pilot error resulted in good use of his water survival training.



The flight of Sigma 7 stood in sharp contrast. Normally seen as the class clown Wally Schirra proved he could be all business. Crisp spacecraft movements and minimal use of onboard consumables lead to a textbook flight. After the near disaster of Carpenter's flight Mercury was back on track. Schirra flew in Mercury, Gemini and Apollo. Carpenter never flew in space again.

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Project Mercury showed that America could orbit a pilot for more than a day. To reach the moon, however, required long duration flights (up to two weeks), space walks, and rendezvous of two spacecraft in orbit. Enter Project Gemini, the space twins. A up rated two man capsule with consumables (water, oxygen, propellant and electrical power) for extended missions is placed on top of an Air Force Titan II rocket.



During their 4 day mission Ed White became the first American to walk in space. In addition to the physical difficulty in getting his tall, suit inflated frame and umbilical lines back into his seat was his reluctance to end the breathtaking experience. "Getting back in the capsule", he remarked, "was the saddest moment of my life".

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While docked with the Agena target astronauts Dave Scott and Neil Armstrong experienced a stuck thruster that put them in an uncontrolled roll. As test pilots both had dealt with in-flight aircraft emergencies. Instead of being recovered by the USS Boxer in the Atlantic they were taken to Okinawa after recovery in the Pacific.



Having accomplished all program objectives in 1965 and 1966 Project Gemini came to a close. Both Lovell and Aldrin would fly in Apollo. This envelope is a "Captain's Cover" given out to crew and dignitaries.

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During a "plugs out" test of the Apollo spacecraft an electrical short causes a spark. Nearby Velcro and other materials burn furiously in the pressurized 100% oxygen environment. Dead are Gus Grissom (veteran of Mercury and Gemini), Ed White (first American to walk in space), and Roger Chaffee (a U2 pilot during the Cuban missile crisis). Future flights would have a redesigned hatch the crew could open themselves.



With time running out and the LEM behind schedule NASA management makes the bold decision to test long range tracking and navigation by sending the second Apollo crew to fly around the moon. They arrived in lunar orbit on Christmas Eve, 1968. During a live TV feed the crew read from the book of Genesis.

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"I believe this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the earth. No single space project in this period will be more impressive to mankind, or more important for the long-range exploration of space." President John F. Kennedy



A crewmember onboard the USS Hornet photographed the recovery helicopter just prior to touchdown as it returns the first crew to walk on the moon. Five autographed copies of this picture are believed to exist.