



*"That's one small step for a man -
one giant leap for mankind"*



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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 Earth.

No single space project in this period will be more impressive to mankind or more important for the long-range exploration of space. And none will be so difficult or expensive to accomplish."

President John F. Kennedy
Special Message to Congress

May 25, 1961

On the afternoon of July 20, 1969, man landed on the moon. This extraordinary event in history redeemed the pledge of President Kennedy and fulfilled a dream of mankind. It opened a new era in the history of space travel and man's eternal quest for the new and unknown.



December 21, 1968, Apollo 8 launched from Cape Kennedy.

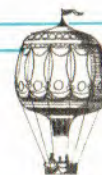
OFFICIAL N.A.S.A. PICTURE No. 1

UNITED STATES IN OUTER SPACE Commemorative picture No. 1

On December 21, 1968, the first manned flight in the Apollo series was launched from Cape Kennedy. With a lift-off thrust of $7\frac{1}{2}$ million pounds, the huge Saturn V rocket hurled the Apollo 8 astronauts into space thousands of miles beyond the gravitational grasp of the earth. Trailing a flame twice as long as the rocket itself, the mighty Saturn picked up speed rapidly. In less than three minutes, Apollo 8 was forty-two miles above the earth and already sixty miles down-range.

The sound and the fury shattered the distance between the earth and the moon as man raced toward the conquest of space.

MOON FACTS



What makes a rocket go? The principle was stated in a law of physics founded more than 300 years ago by Sir Isaac Newton. It is the law of action and reaction which states that anything pushed will push back. You've seen this work in a rubber balloon filled with air. In trying to escape, the air pushes against the rubber skin in all directions. But if you release the mouth of the balloon, the air gushes out in one direction and the balloon skitters away in the opposite direction.

In the Saturn rocket, there is similar build-up of gases. The speed of the rocket depends upon how much greater the thrust compared to its weight. The Saturn moon rocket and its Apollo spacecraft weigh six million pounds. The thrust of the rocket's engines is seven and one half million pounds, so the engines win the tug-of-war and the whole system lifts off. As more weight is consumed through burning fuel, the thrust gains even more advantage and the rocket picks up speed.



Astronaut Lovell, "It looks like plaster of paris".

OFFICIAL N.A.S.A. PICTURE No. 2

UNITED STATES IN OUTER SPACE Commemorative picture No. 2

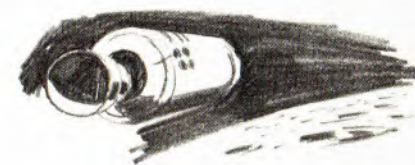
Journeying where no man had traveled before, the Apollo 8 astronauts became the first in history to see the moon from only 70 miles above its arid surface.

Astronaut James Lovell described the moon to the people on the blue and white marbled earth shown here:

"The moon is essentially gray, no color. It looks like plaster of paris or a sort of grayish beach sand . . . The craters are all rounded off. Many look like they were hit by meteorites or projectiles of some sort."

The actual lunar surface has less color than indicated by this picture.

MOON FACTS



The flight of Apollo 8 marked the first time man escaped gravitational capture of the Earth and entered the gravitational influence of another cosmic body.

To escape Earth's control required accelerating the spacecraft to a speed of 24,500 miles an hour, faster than any vehicle had ever traveled before.

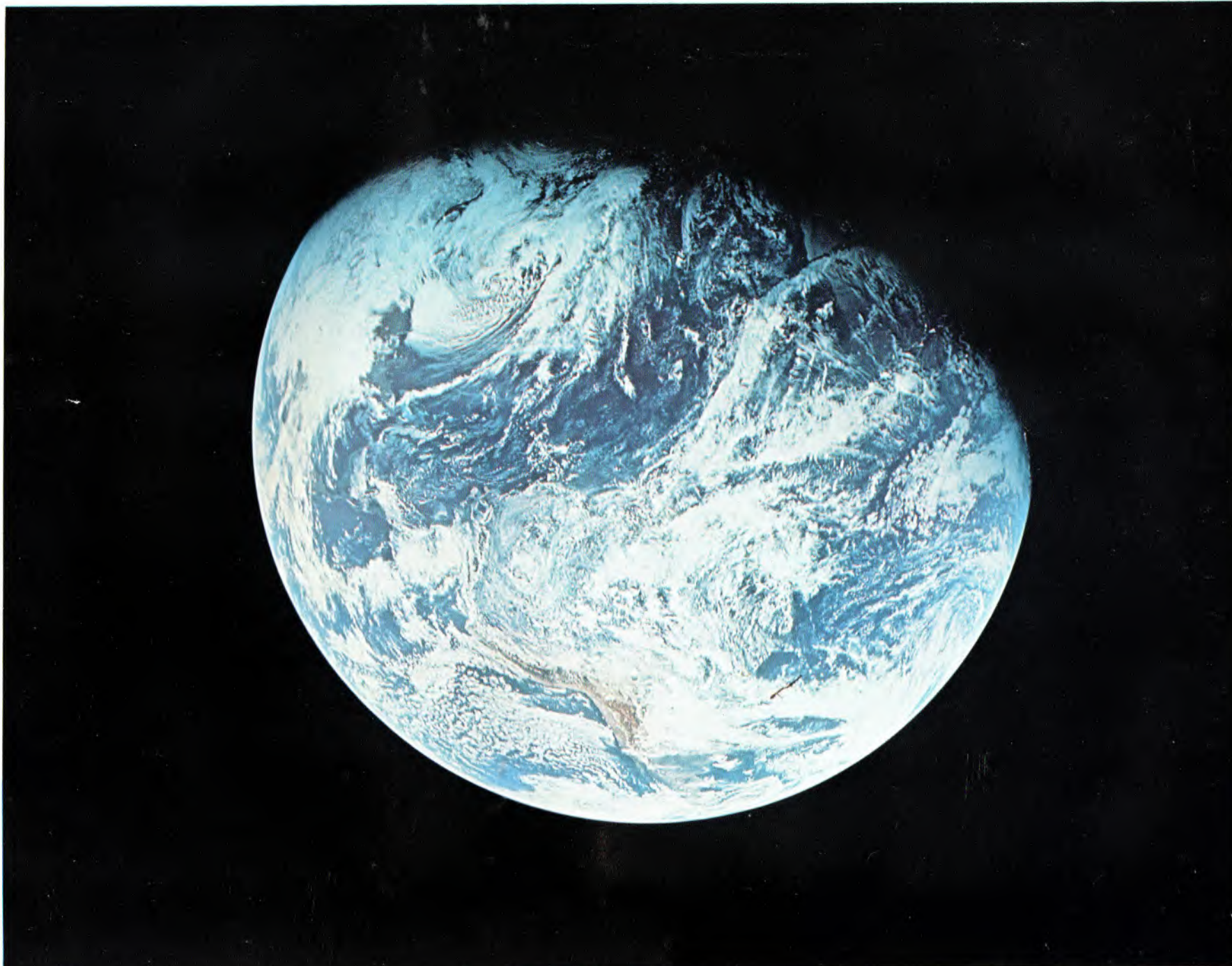
After leaving Earth and coasting for three days, Astronauts Frank Borman, James Lovell and William Anders shot behind the leading edge of the moon and out of communication with flight controllers on Earth.

The last words from Mission Control were: "Apollo 8, you are riding the best bird we can find. Good luck."

"Thanks a lot, troops," was the reply. "We'll see you on the other side."

For 34 suspenseful minutes, during which there was total silence, everyone on Earth waited for the first word that Apollo 8 had successfully achieved moon orbit and had not crashed on the moon's dark side.

Astronaut Lovell was the first to speak: "Burn complete," he said. "Be advised there is a Santa Claus."



Apollo 8 crew view "the good old earth."

OFFICIAL N.A.S.A. PICTURE No. 3

UNITED STATES IN OUTER SPACE Commemorative picture No. 3

This striking picture taken by the Apollo 8 crew shows what they described as "the good old Earth" in her full majestic colors of blues, whites and browns. Almost the entire Western Hemisphere can be seen, from the mouth of the St. Lawrence River to Tierra de Fuego at the southern tip of South America. Nearly all of South America is covered by clouds except the high Andes Mountain chain along the west coast. The clouds may be seen in swirling white, the oceans are blue and the land masses, particularly the deserts, appear in brown.

MOON FACTS



On Christmas Eve, 1968, as Apollo 8 astronauts orbited the drab, desolate and forbidding moon, they directed their television antenna to the most beautiful object in the sky—Mother Earth—which they described as "a grand oasis in the vastness of space."

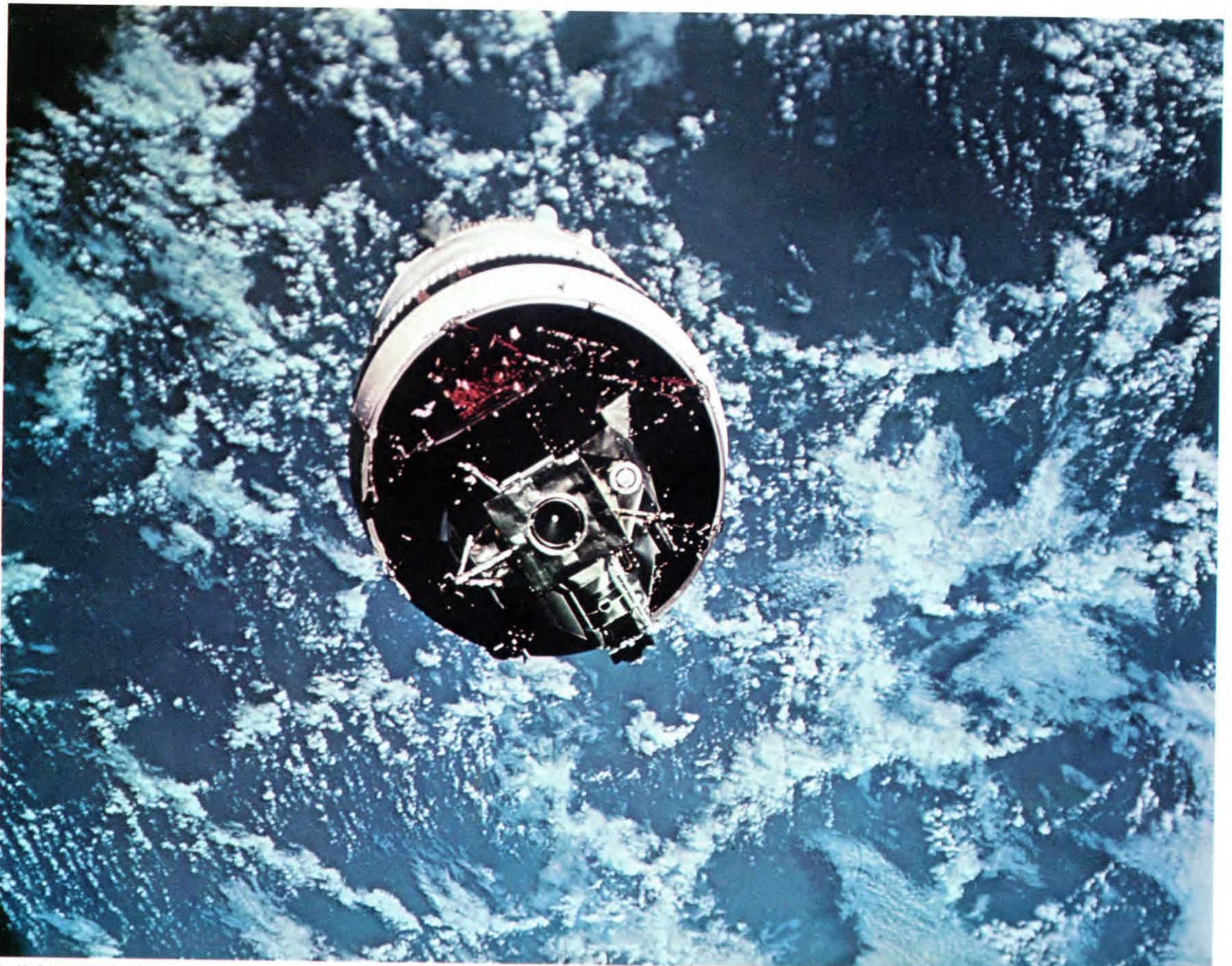
Astronaut William Anders began reading from the Bible as millions around the world listened on the solemn occasion:

"In the beginning God created the heaven and Earth. And the Earth was without form, and void; and darkness was on the face of the deep . . ."

Astronaut Jim Lovell continued: ". . . And God called the light Day and the darkness Night. . ."

Astronaut Frank Borman concluded the reading from Genesis, beginning with the verse: "And God called the dry land Earth; and the gathering together of the waters he called Seas; and God saw that it was good."

He concluded the moving experience with the words: "Good Night. Merry Christmas. God bless all of you, all of you on the good Earth."



Apollo 9 tests lunar module.

OFFICIAL N.A.S.A. PICTURE No. 5

UNITED STATES IN OUTER SPACE Commemorative picture No. 4

For poets, song writers and lovers, the moon has represented romance. It has been an object of worship for the Greeks, a calendar for the Indians, a weather predictor for farmers and a source of nursery rhymes for children.

This closeup photograph taken by Apollo 8 astronauts shows the moon as a desolate area, pock-marked with millions of craters. Between these are flat lands, called mare or "seas", the first name given them by Galileo when he peered through the first telescope and thought they looked like oceans. The mare Crisium, Nectaris, Tranquility and Fertility are pictured here.

A third feature of the moon is the mountains, some as tall as our own 30,000-foot Mount Everest.

MOON FACTS



Origin of the moon has been a mystery. It is believed to have been formed about the same time as Earth—4½ billion years ago—but no one is certain how it was formed. There are three theories. One view is that the moon was pulled out of the Earth in its formative years by the Sun, or perhaps the moon was formed at the same time as Earth and the two have remained together since. The third view is the moon was formed elsewhere and captured by the Earth's gravitational pull.

As the Earth's satellite, the moon is the much smaller body. It is 2,160 miles in diameter and 6,790 miles in circumference, or about a fourth the Earth's size. Its mass is 1/100th of Earth and its surface gravity, only one-sixth.

Surface temperature ranges from 243 degrees F. at the height of lunar day and minus 279 degrees F. at night. The lunar day and night are each 14 Earth days.

The moon contains 14,650,000 square miles. Its period of rotation around the Earth is 27 days, 7 hours, 43 minutes.



The mare Crisium, Nectaris, Tranquility and Fertility pictured here.

OFFICIAL N.A.S.A. PICTURE No. 4

UNITED STATES IN OUTER SPACE Commemorative picture No. 5

About one hundred miles above the clouds of Earth and the Pacific Ocean below, one of the critical maneuvers of the Apollo 9 mission took place. The moon-landing ferry, called the lunar module, had to be tested for alignment with the Apollo command module. The Apollo space ship was separated from the stack of hardware, turned around and moved back to unite nose first with the docking collar of the lunar module shown here encased in its metal cocoon to protect it during launch. The link-up proved to be firm, showing that the lunar module could ride securely on the nose of the Apollo command ship during the three day coast to the moon.

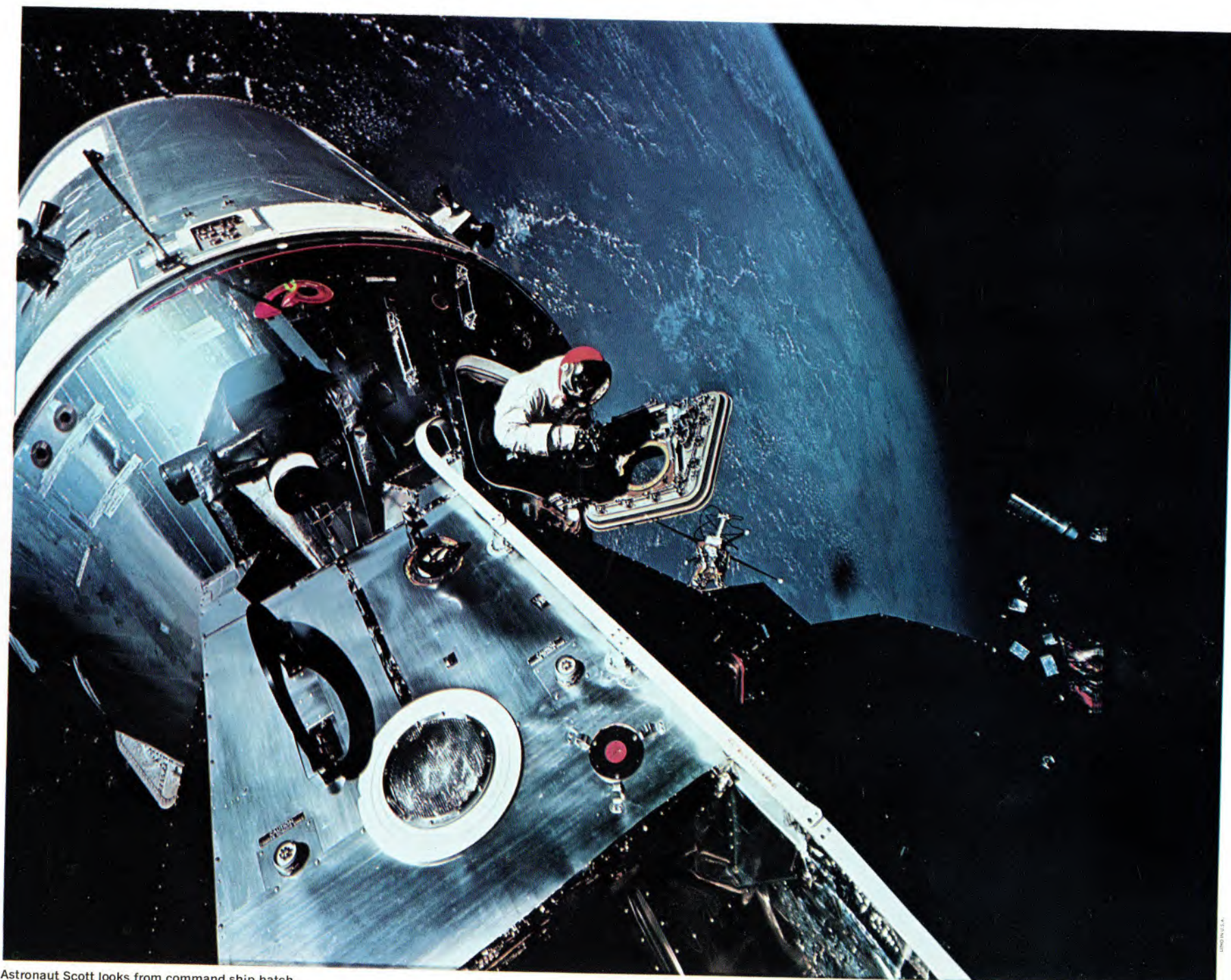
MOON FACTS



Apollo 9 was the first flight that put together all the major components for the moon landing mission. It also tested for the first time the lunar module, the ferry that would take the astronauts down to the moon on the Apollo 11 odyssey.

Astronauts James McDivitt and Russell Schweickart entered the lunar module, code-named the "Spider", and powered 119 miles from David Scott in the mother ship, "Gum Drop", then tried to find their way back. This rendezvous and docking procedure was vital to the moon landing program, for unless the lunar module could return to the mother ship, two astronauts would be stranded in space. The lunar module was not equipped to withstand the rigors of re-entry into the Earth's atmosphere.

The ten day Apollo flight was the first transfer by American astronauts from one space ship to another, the first link-up of two manned American spaceships and the first exposure of three men to the perils of space, for at one time the hatches on both vehicles were opened.



Astronaut Scott looks from command ship hatch.

OFFICIAL N.A.S.A. PICTURE No. 6

UNITED STATES IN OUTER SPACE Commemorative picture No. 7

This photograph shows the top stage of the lunar module as seen from the command spacecraft. It had just returned Astronauts James McDivitt and Russell Schweickart to the mother ship after their six hour independent flight. Later it was separated to remain a space wanderer until it burned up in the atmosphere.

The lunar module was the first ship to be flown only in the void of space. It does not have a shield to enable it to return astronauts safely through the searing heat of the Earth's atmosphere.

Clearly seen are the brown, gold and silver insulation and the bell-shaped skirt of the engine that lifts the astronauts off the moon.

MOON FACTS



Since there is no way astronauts can be rescued from the surface of the moon, the lift-off by the top stage of the lunar module must work the first time. If it fails, the astronauts would be marooned on an alien planet with only a 48 hour supply of oxygen. Death would be slow, but painless. A merciful unconscious state would ensue as the oxygen-deprived brain lost function.

Because of its importance, the ascent stage, shown here, was one of the most tested pieces of equipment before the Apollo mission.

The descent propulsion engine, which takes the astronauts down to the moon, is unique because it has a throttle which operates much like the accelerator of an automobile. This permits the astronauts to move faster or slower, as the occasion demands, and even to hover like a helicopter before landing to permit the pilots to pick a flat surface and insure a soft touchdown.



Testing lunar module.

OFFICIAL N.A.S.A. PICTURE No. 7

UNITED STATES IN OUTER SPACE Commemorative picture No. 6

Standing on the "front porch" of the lunar module, Astronaut Russell Schweickart took this picture of Astronaut David R. Scott as he poked his head out of the command ship hatch while the joined space ships orbited over the Mississippi River Valley.

Later the space ships separated for six hours to demonstrate that the men who would land on the moon in the lunar module would have no trouble in rejoining the mother ship to return home again.

When the bug-like lunar module came into view again after the separation, Scott said: "You are the biggest, friendliest, funniest-looking "spider" I have ever seen."

MOON FACTS

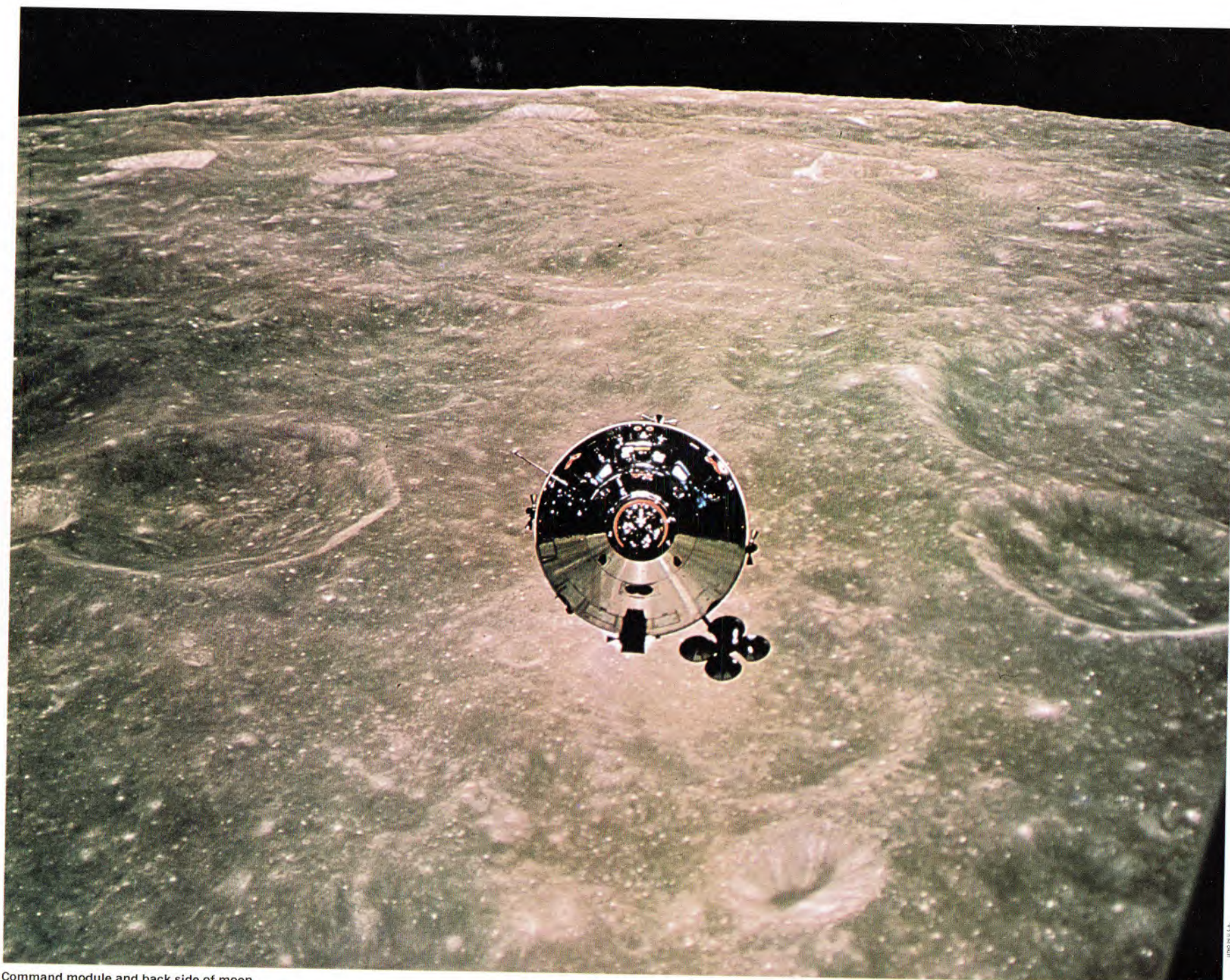


Astronaut Russell Schweickart was America's first space-walking crewman in more than two years. He emerged from the lunar module "Spider" to spend almost forty minutes on the platform at the head of the ladder that leads to the landing footpad at the Spider's base.

"You might call this the view from the top of the stairs," said the boyish-looking 33 year old red-head who was code-named "Red Rover."

While he stood outside the spacecraft, Schweickart was protected by a \$2 million space suit and portable life support system. It supplied oxygen, absorbed carbon dioxide and controlled the humidity inside the suit. The life-support system was later to be used on the moon.

Schweickart's exposure began over the Pacific Ocean, continued over the United States and ended over the Atlantic Ocean. His only tie to the spacecraft was a rope, but throughout, his heart beat never exceeded 72 beats per minute!



Command module and back side of moon.

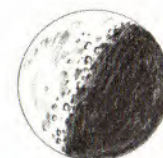
OFFICIAL N.A.S.A. PICTURE No. 8

UNITED STATES IN OUTER SPACE Commemorative picture No. 8

Taken from the lunar module, this photograph shows the command module after the two vehicles had separated on the back side of the moon. Like the front, the moon's back side is rough and forbidding and contains several craters and highlands. The far side of the moon is never seen from Earth because as the moon moves around the Earth like a satellite, it also turns on its axis, hence the moon always presents the same face.

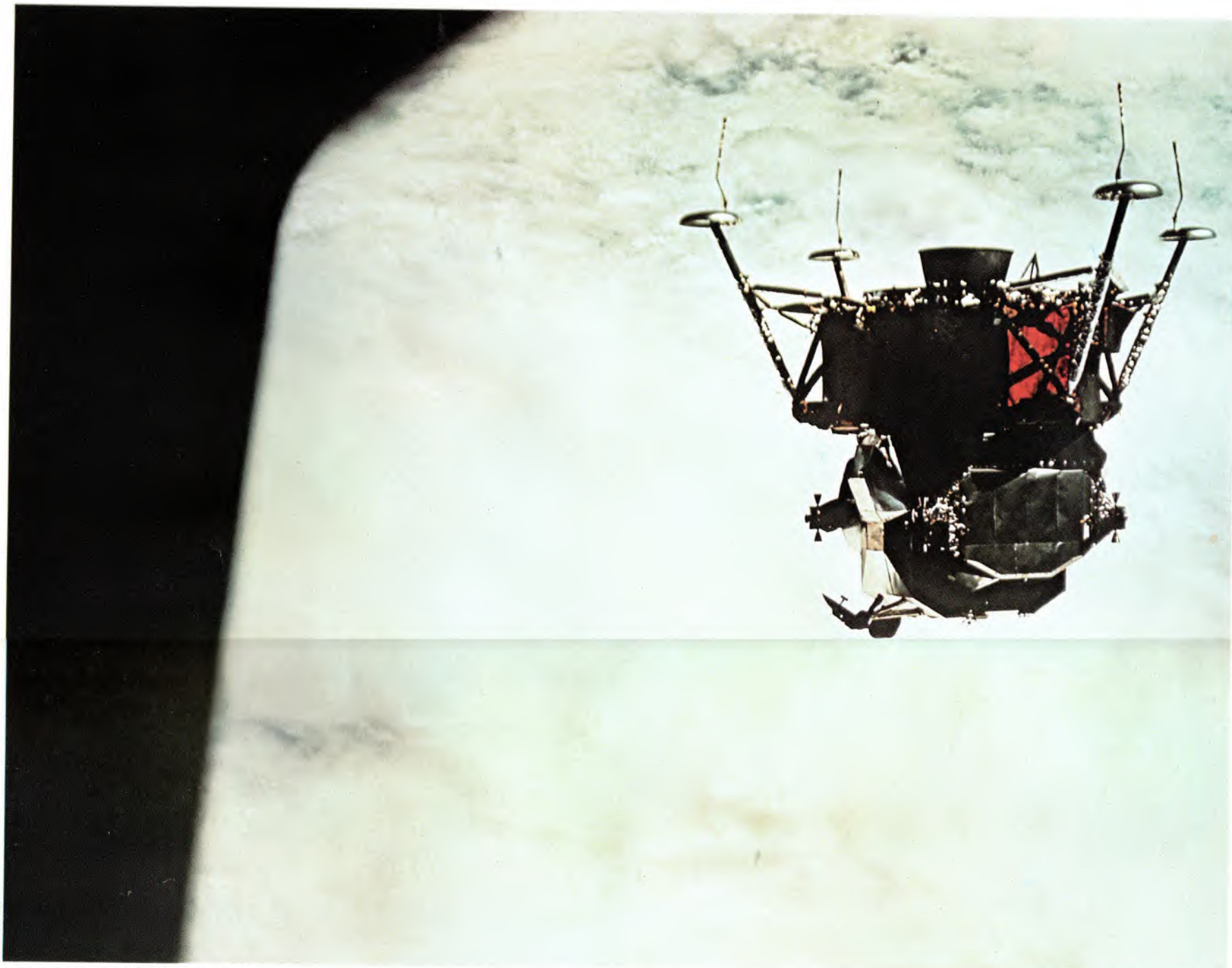
The petal-like antenna of the command module can be seen extending at the lower left. The absence of shadows indicates the sun is almost directly overhead. The horizon is 375 miles away.

MOON FACTS



The far side of the moon is completely covered with craters. The dark mare of the front side are seldom seen. The craters are circular in shape with few exceptions. They range in diameter from five to eight miles. Frequently small craters can be found inside of larger ones. Some craters have mountains in their center, called a central peak. In standing in some of the deeper craters, an astronaut would not be able to see the walls. The reason is the walls would be out of sight beyond the abrupt lunar horizon.

The moon is of interest to scientists because it may contain the archives of the Earth's early history. All such records have been obliterated from Earth by the weathering process. Having no atmosphere or no turbulent waters or winds, the moon has remained undisturbed for billions of years and thus has preserved the records that began soon after the solar system was created.



Lunar module, "Spider" on Apollo 9 test.

OFFICIAL N.A.S.A. PICTURE No. 9

UNITED STATES IN OUTER SPACE Commemorative picture No. 9

Upside down, as if hanging from a web, the lunar module looks like the "Spider" whose code-name it carried during the Apollo 9 flight. This photograph was taken by Astronaut David R. Scott on the fifth day after Astronaut James McDivitt and Russell Schweickart entered the lunar module and separated from the command ship.

The two stages of the lunar module can be seen here. The astronauts lived and worked in the upper stage. The lower stage with the spider-like legs was used to land on the moon then serve as a launching pad for the upper stage. The thin probes on the four landing pads told the pilot he had touched the moon.

MOON FACTS



The lunar module isn't much to look at. The spindle-legged, plug-ugly spacecraft lacks the symmetry and flowing lines of its mother ship. It has small triangular window slits for eyes and a round hatch for a snout. It has been called a spider, a bug, a daddy long legs.

Aerodynamic design is of no importance to the lunar module since it is designed to fly only where there is no air resistance. It was built specifically to take two astronauts down from lunar orbit to the surface of the moon, lift them off and return them to the mother ship.

The lunar module stands 23 feet high and is 31 feet wide across the landing gear. Of its 32,000 pounds of weight, 23,000 pounds is fuel. Unlike the command module it has no seats or couches. The astronauts stand during their entire flight.

The spacecraft is wrapped in heat insulating material made of layers of plastic. It protects them from the incredible cold of darkness and the broiling heat of day. The interior remains at a comfortable 75 degrees. Covering the skin is a meteoroid bumper not much thicker than a sheet of household wrapping foil.



The back side of moon taken from Apollo 10.

OFFICIAL N.A.S.A. PICTURE No. 11

UNITED STATES IN OUTER SPACE Commemorative picture No. 10

The first two stages of the Saturn rocket are jettisoned before the Apollo spacecraft is placed into orbit, but the third stage, known as the S4B, remains with the Apollo because it must later inject the astronauts into a lunar trajectory. The second firing of the S4B raises the speed from 17,500 miles an hour to 24,500 miles an hour, enabling the spacecraft to escape Earth gravity.

This photograph of the S4B was taken from the Apollo 8 spacecraft after the booster had successfully carried out its assignment and now could be jettisoned.

Sunlight reflected from small particles reveals the "firefly" phenomenon in space first reported by Astronaut John Glenn.

MOON FACTS

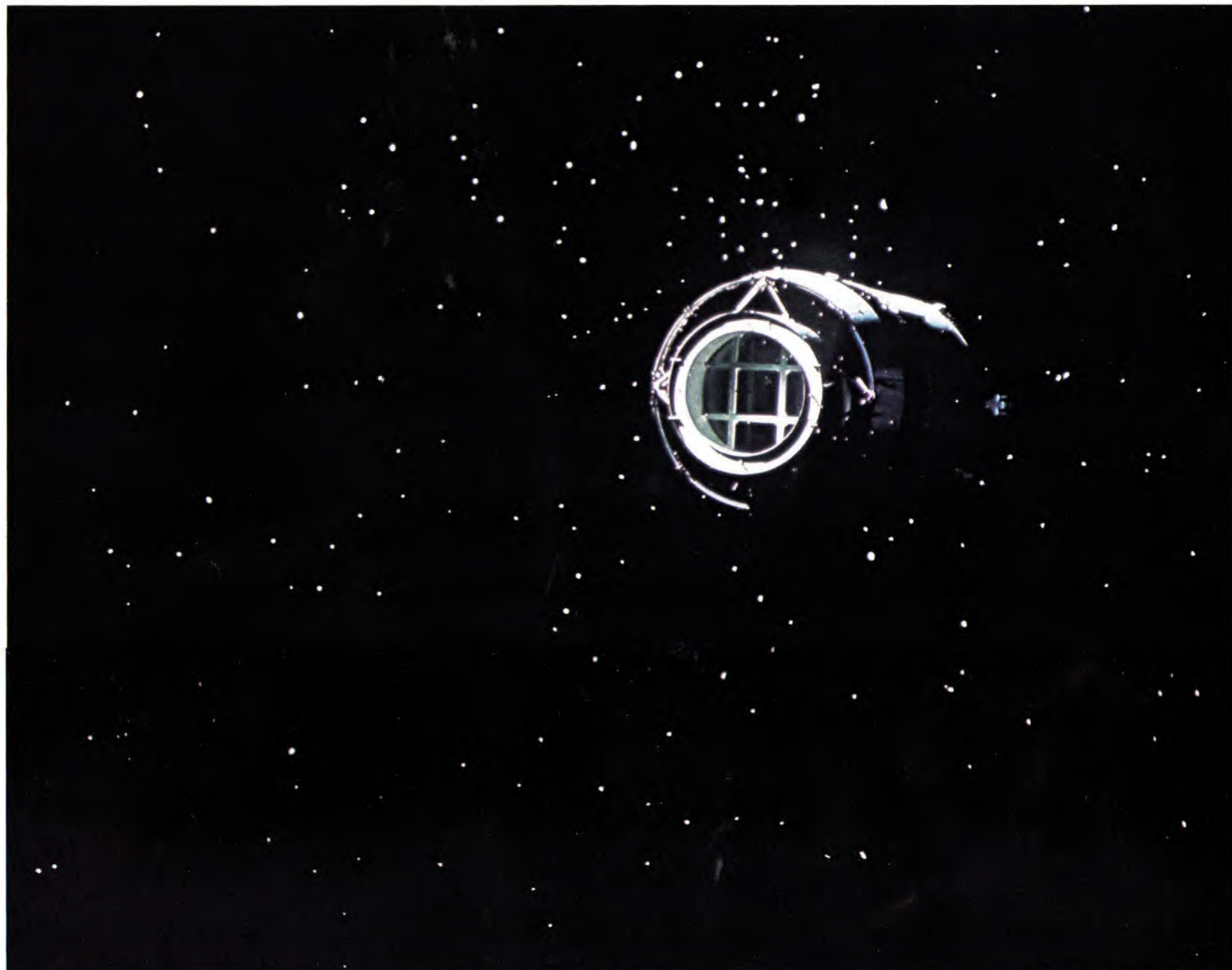


The Saturn 5, the muscular rocket that launches the astronauts into orbit and then inserts them into trajectory to the moon is the world's most powerful. As tall as a 36-story building, its fuel tanks each could accommodate three large vans side by side.

The five engines of the first stage alone generate the energy equivalent to 85 Hoover Dams. They can put into Earth orbit a payload equal to the weight of the largest transcontinental airliner fully loaded.

In the first two and a half minutes of flight, the first stage will burn 2,150 tons of fuel as it lifts the vehicle into rarified atmosphere. When the first stage of fuel is empty, it is jettisoned and five more engines come to life in the second stage. They burn for six more minutes before the third stage takes over to make the final orbital insertion.

The Saturn 5 was built by a team headed by Wernher Von Braun, the German rocket expert who was captured by the allies at the end of World War II. He and several other captured German Scientists were responsible for the development of the V-2 Rocket bomb which was used against England during the late surges of the war.



The S4B taken from Apollo 8.

OFFICIAL N.A.S.A. PICTURE No. 10

UNITED STATES IN OUTER SPACE Commemorative picture No. 11

Another striking view of the moon's back side, taken from the command module orbiting 70 miles above during the flight of Apollo 10, shows a 20-mile wide rounded crater and a chain of mountains known as a central peak, in its center.

Craters within craters can be seen. Also visible are the terraces, the series of steps that lead to the crater's bottom.

These same features are visible on the near side, although the farside appears to have fewer mare and more craters per square mile.

MOON FACTS



The Apollo 10 Flight was the last step before the moon landing attempt. In this critical final rehearsal, the crew performed a complete simulation of the Apollo 11 mission except that Astronauts Thomas Stafford and Eugene Cernan took the lunar module, "Snoopy" to only within 9 miles of the moon and then returned to their mother ship, "Charley Brown." Astronaut John Young maintained a close vigil in the mother ship orbiting above.

The eight-day flight was the fourth in the Apollo manned series. In coming the closest man had ever been to the moon, Stafford and Cernan were able to achieve a valuable view of the landing site for Apollo 11 and pick up many more details on boulders, small craters and deep cracks not visible from a higher altitude.

In the words of Stafford, "Apollo 10 was designed to tie together all the knots, to sort out all the unknown and pave the way for a landing mission."



Diamond Back rille from Apollo 10.

OFFICIAL N.A.S.A. PICTURE No. 12

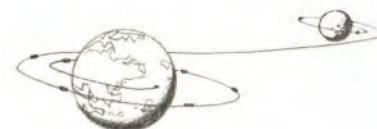
UNITED STATES IN OUTER SPACE Commemorative picture No. 12

The Apollo 10 astronauts spent 6½ hours in lunar orbit, made two passes over the moon at nine-mile altitude and photographed the lunar features from close-in.

This photograph taken as they approached the Sea of Tranquility landing site showed the large crater Moltke at the bottom, and the snake-like valley, called Diamond Back rille, which connects to an elongated crater.

The vicinity near the landing site was covered with craters and boulders. This caused Astronaut Thomas Stafford to comment that it would take a good pilot to find a landing place.

MOON FACTS

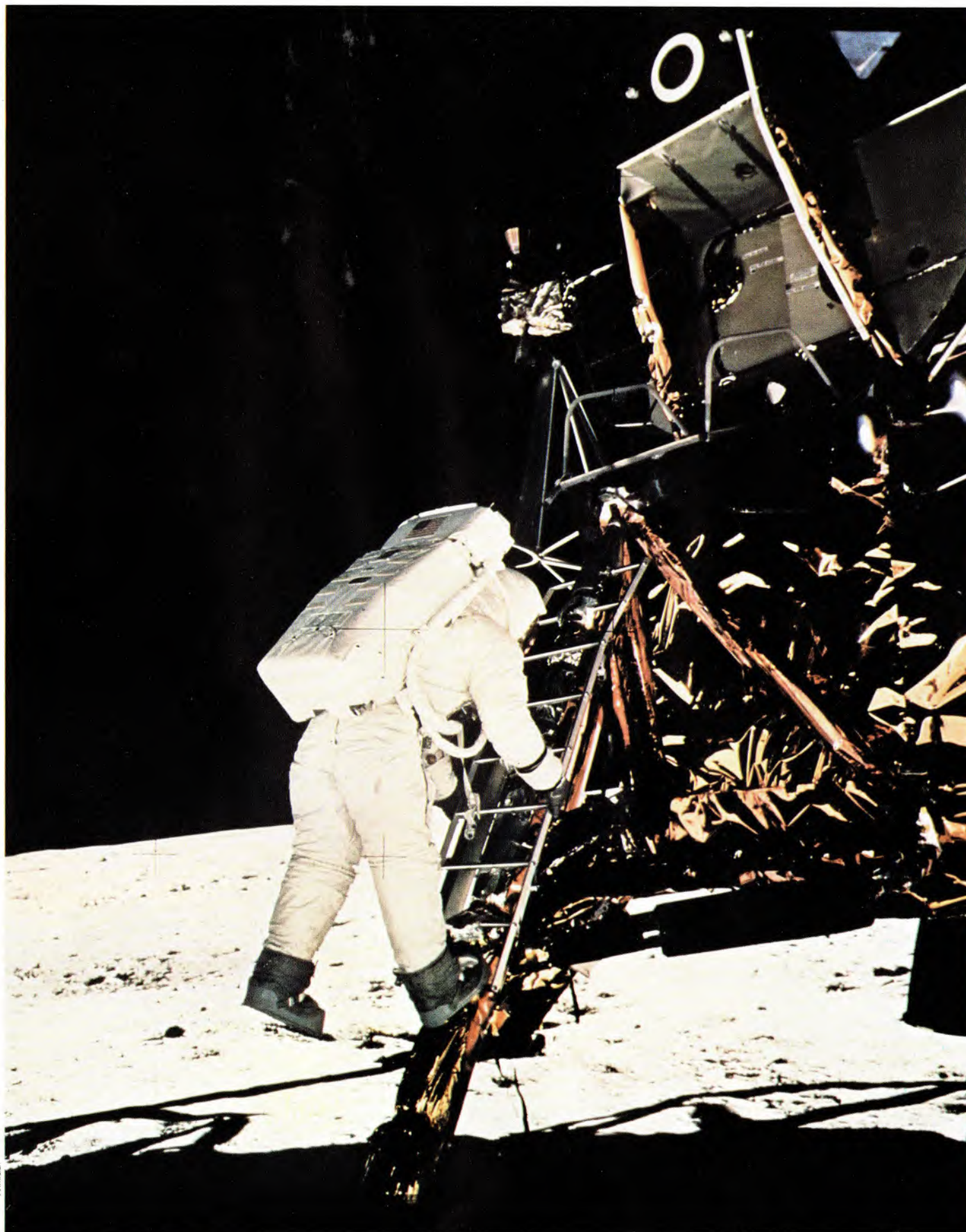


An electronic road map aids Apollo astronauts in making their three-day journey across 230,000 miles of void to the moon. But it is up to the men to follow the map without benefit of road signs, well-marked intersections, or friendly filling station attendants to question.

The road map is built into the computer in the form of an ideal trajectory based on complicated mathematics, concerned with the rotations of the moon and Earth, their speeds, gravitational forces, the orbits desired and several other factors.

Steering is done by the astronauts with help from the ground. The computer is there to warn them if they stray from the course. Changes in direction are accomplished by firing the thruster engines.

Ideal velocity is the goal sought throughout the trip. A bit too much speed and the astronauts would soar beyond the moon. Too little speed would put them in an elliptical path short of the moon. The secret of navigation is to determine when and where to burn the engines and how long a burn to make.



Astronaut Aldrin descends ladder to moon.

OFFICIAL N.A.S.A. PICTURE No. 13

UNITED STATES IN OUTER SPACE Commemorative picture No. 13

Astronaut Neil Armstrong, already on the moon, snaps a picture of his crew mate Edwin Aldrin as Aldrin carefully descends from the Lunar Module.

After his first steps on the moon surface, Aldrin spoke to Mission Control on Earth.

"Beautiful views . . . A magnificent desolation" Aldrin noted as he first gazed on the barren lunar wasteland starkly outlined by the deep black sky.

Wearing a space suit and life support pack weighing a total of 183 Earth pounds, Aldrin said he found it easy to move about. His equipment weighed only 30 pounds on the moon, since the lunar gravitational pull is only 1/6 that of Earth.

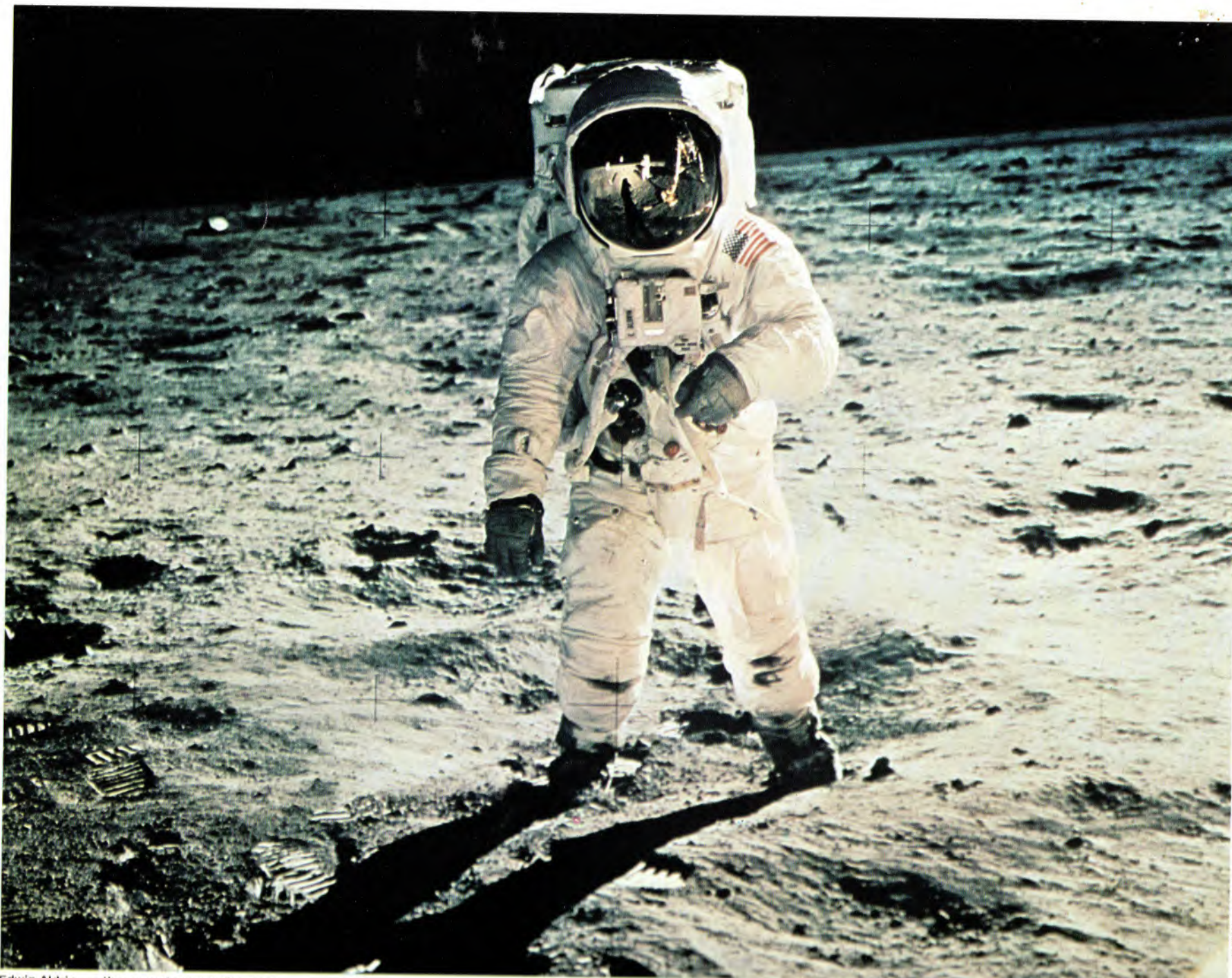
MOON FACTS



On July 20, 1969 man accomplished the 'impossible' by stepping on the moon. Astronauts Armstrong and Aldrin climbed into the Lunar Module "Eagle", separated from the Command ship "Columbia" and descended from a 70-mile high orbit to the lunar surface.

The journey was perilous. Armstrong took over manual control, shifting to a new landing site when Eagle's steering system pointed the LEM toward a 300-foot crater strewn with boulders. Then a warning light flashed on to signal a rapidly diminishing fuel supply. Moon landing came with only 44 seconds of fuel left.

Eager to take that first step, Astronauts eliminated a four-hour rest period and Armstrong backed out of the hatch on his hands and knees to cautiously maneuver down the nine-rung ladder. Aldrin followed a few minutes later.



Edwin Aldrin . . . the second man on the moon.

OFFICIAL N.A.S.A. PICTURE No. 14

UNITED STATES IN OUTER SPACE Commemorative picture No. 14

The American flag, a television camera, the lunar module Eagle and Commander Neil Armstrong—who took this picture—are mirrored in Edwin Aldrin's visor in this dramatic view of men on the moon.

Shortly after this picture was taken, Aldrin demonstrated his agility as he walked, hopped, romped, and loped about the lunar landscape. He even displayed a football type of 'open field' running as he stopped and cut sharply in another direction.

The only adjustment the Astronauts found necessary for walking on the moon's surface was to shift their center of gravity by leaning slightly forward. This motion overcame the backward pull exerted by the weight of their life-support back packs.

MOON FACTS

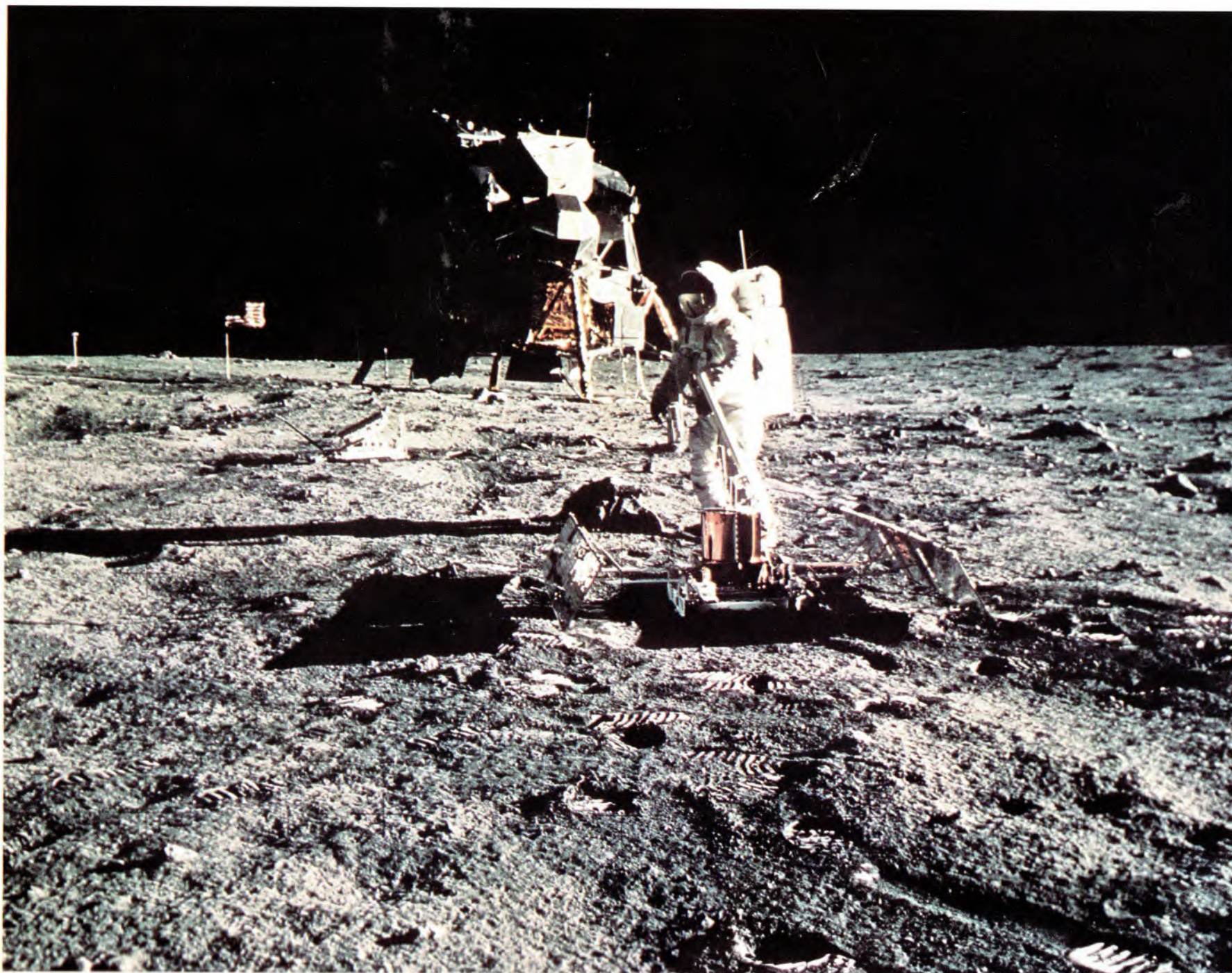


The men of Apollo 11:

NEIL ARMSTRONG: 38, Commander of the flight. First man to walk on the moon. Lifelong interest in flying. Won a private pilot's license at 16. Fought at age 19 in the Korean War, flying 78 combat missions off the Carrier Essex. Flew the X-15 rocket, becoming one of the world's best test pilots. Commander of Gemini 8, the first U. S. attempt to link two manned spacecraft. Graduate in Aeronautical Engineering at Purdue University. Father of two sons.

EDWIN E. ALDRIN, Jr.: 39 year old Air Force Colonel. Lunar Module pilot. Second man to walk on the moon. Graduated 3rd in his class at West Point. Awarded PhD from Massachusetts Institute of Technology. Wrote a graduate thesis on orbital rendezvous. Flew 66 missions in Korea as an F-86 sabrejet pilot. Space-walked on Gemini 12 flight. Father of three children.

MICHAEL COLLINS: 38 year old Air Force Lt. Colonel. Command Module pilot, he steered the mother ship "Columbia" that brought Armstrong and Aldrin to the moon and returned them to earth. West Point Graduate. Test Pilot. Space-walked twice in Gemini 10 mission. Father of three children.



Aldrin sets up seismograph.

OFFICIAL N.A.S.A. PICTURE No. 15

UNITED STATES IN OUTER SPACE Commemorative picture No. 15

Astronaut Edwin Aldrin has just completed setting up a seismograph which immediately began recording "moonquakes." The panels contain solar cells that convert the sun's rays into energy required to power the experiment.

Immediately behind the seismic device is a reflector, intended to catch laser signals sent out from Earth. When the reflector bounces back these light beams, scientists will be able to measure the exact distance between Earth and Moon to within a few inches.

In the center of the picture the lunar module, or LEM, stands ready. Near it is the American Flag planted by Aldrin and Armstrong. In the far left background we can see the TV camera that sent a pictorial account of the moon-landing to millions of viewers on Earth. This picture was taken by Astronaut Armstrong.

MOON FACTS



Quotations from Commander Armstrong on the moon-landing:
(When the LEM first touched the moon's surface)

"Houston . . . Tranquility Base here. The Eagle has landed."

(When man first stepped on the moon)

"That's one small step for a man—one giant leap for mankind."

(Reading the plaque left on the moon)

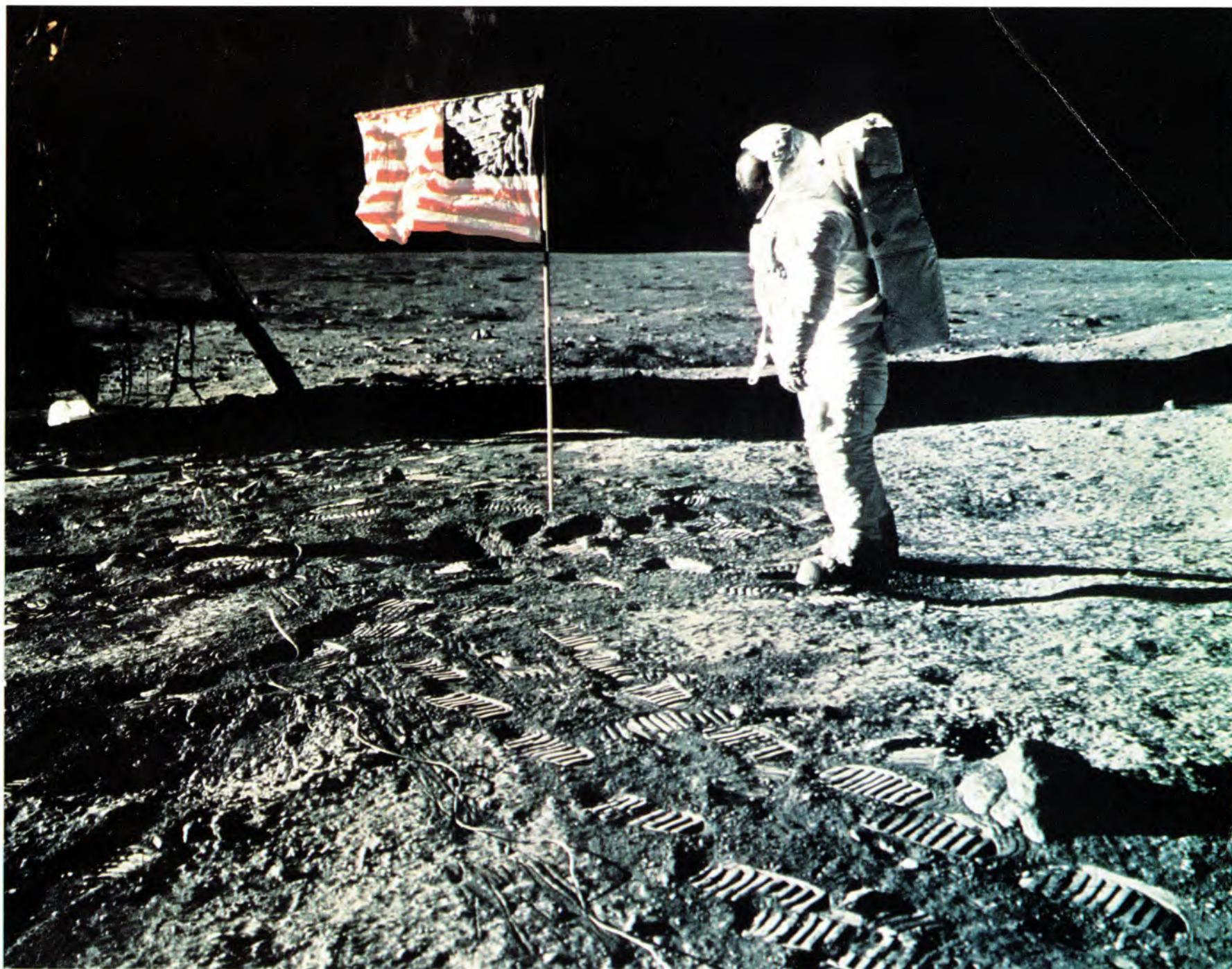
"Here man from planet Earth first set foot upon the moon. July 1969, A.D. We came in peace for all mankind."

(He gave the first description of lunar surface)

"The surface is fine and powdery. I can pick it up loosely with my toe. It does adhere in fine layers, like powdered charcoal, to the sole and sides of my boots. I can go in a fraction of an inch, but I can see the footprints of my boots and the treads in the fine sandy particles."

(When he spoke with President Nixon from the moon)

"It's a great honor and privilege for us to be here representing not only the United States, but men of peace of all nations. And with interest and a curiosity and a vision for the future."



Astronaut places American flag on moon, July 20, 1969.

OFFICIAL N.A.S.A. PICTURE No. 16

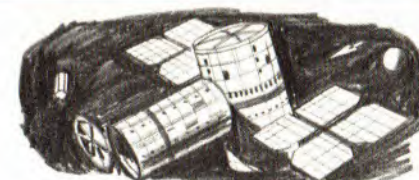
UNITED STATES IN OUTER SPACE Commemorative picture No. 16

Beside the Stars and Stripes stands Astronaut Edwin Aldrin. Since there is no atmosphere on the moon, there is no "wind" or "air" to fly a flag. The effect of the red, white and blue 'waving in the breeze' was created by using wire inserts.

In planting the American flag, the Astronauts did not claim the moon for the U. S. An International Treaty signed in 1967 by nearly 90 countries stated that spacial objects cannot be claimed—hence the moon belongs to all nations on Earth. Appropriately, the plaque left behind by American "moon men" stated that they came "in peace for all mankind."

Imprints of the rippled soles from the Astronaut's boots can clearly be seen on the powdery lunar surface. They will remain undisturbed in this vacuum for thousands of years—or until man again returns to this spot on his nearest satellite.

MOON FACTS

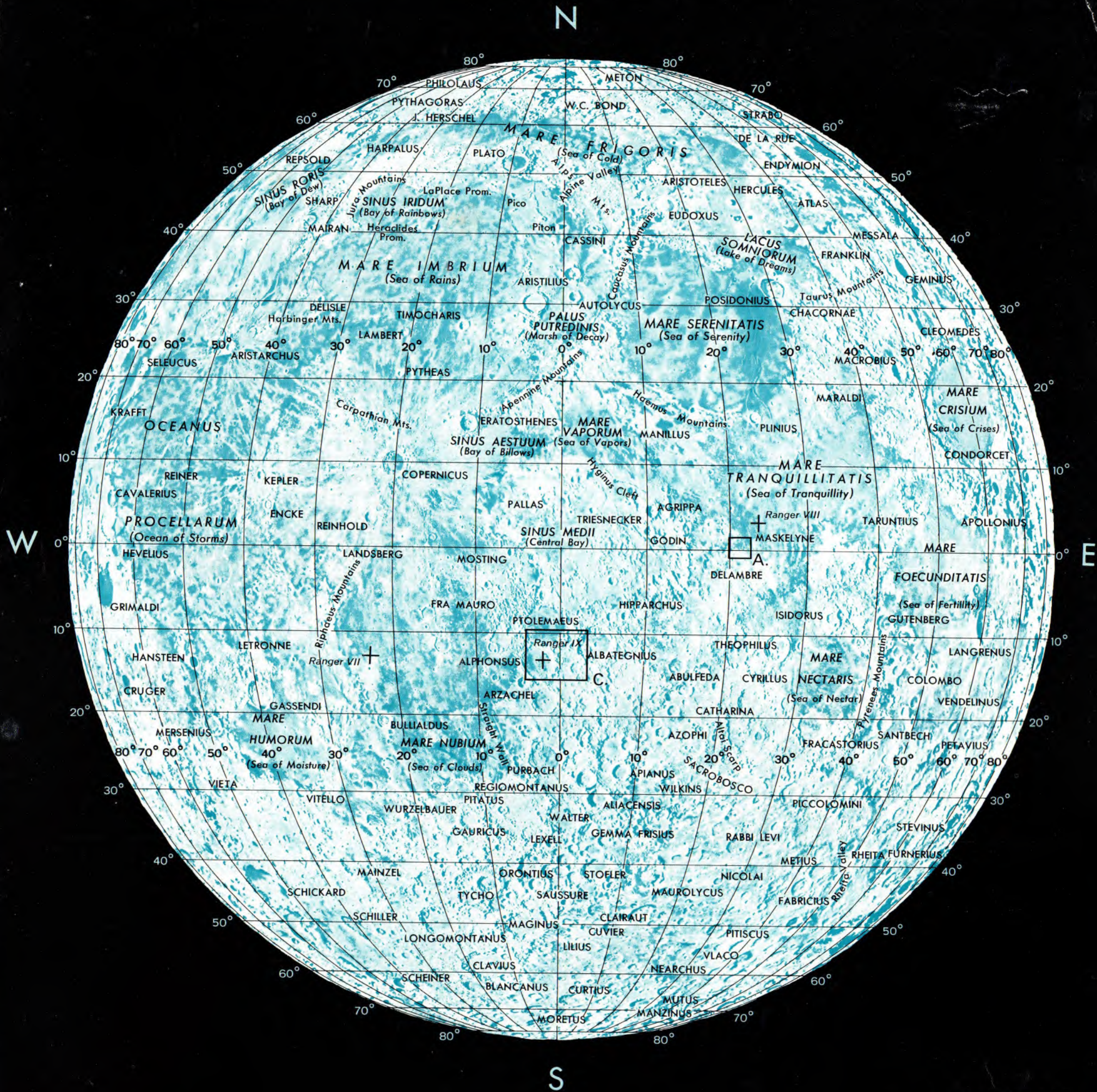


What does the future of spacial travel hold? The historic moon landing is but a stepping stone to the stars. Dr. Thomas Paine, Director of N.A.S.A. said: "The true goal is far more than being the first to land on the moon. The real goal is to develop and demonstrate the capability of interplanetary travel."

Space authorities have set their eyes on Mars as the next major national commitment, and have already started Mariner missions to take close-up shots of the "red" planet.

In the meantime, future Apollo flights will explore other areas of the moon, including the mountainous regions. Astronauts will remain for as long as four days, bringing along special vehicles to ride the moon's surface.

After the Apollo moon flights, workshops capable of holding 12 or more men will be established in Earth's orbit to test man's ability to remain in a weightless condition for long durations. A workshop will be established in moon orbit, and shuttle flights will take place between the two. Supplies and new crews will periodically be sent from Earth. Eventually atomic rocket engines will make it possible to re-use these 'space shuttles', and drastically reduce the cost of space flight.



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THE MOON

PHYSICAL FEATURES

COPERNICUS Craters
PITON Peaks and Mountains
OCEANUS PROCELLARUM . . . Seas and Oceans



APOLLO 8 LAUNCHED DEC. 21, 1968 ...
ASTRONAUTS BORMAN, LOVELL & ANDERS

... (Then they read from Genesis)
"And God called the dry land Earth;
and the gathering together of
the waters called the Seas;
and God saw that it was good."

