

JULY 25, 1969

# TIME

## APOLLO 11: THE RISKIEST VOYAGE



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# TIME

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TIME, JULY 25, 1969

## A letter from the PUBLISHER

*James R. Shepley*

FOR newsmen covering a major story, a succession of 18- and 20-hour days is not in the least unusual. But for TIME's Apollo space team, the days have grown into weeks. Associate Editor Leon Jaroff and Senior Editor Ronald Kriss had no sooner wrapped up our 14-page special Moon Supplement than they were right back at work, with only one day of rest, writing and editing this week's cover story on the historic mission itself. And this time the work stretched on for eight uninterrupted days.

At Cape Kennedy, Correspondents David Lee and Joseph Kane were joined by Senior Editor Peter Bird Martin and Contributing Editor Larry DuBois, who had flown down from New York to record firsthand impressions of the massive press, radio and TV coverage—and indeed share the feelings of the million or more other space watchers at the Cape during those awesome moments of blast-off. Recalls Lee, "Toward the end there was a prayerful hush."

Meanwhile, in Houston, the rest of TIME's Apollo reportorial team—Correspondents Don Neff and James Scheffter and Bureau Secretary Rose Graham—had set up operations in a motel directly across the street from the Manned Space Center. For Rose, it was the 16th time that she has supervised the movement of typewriters, files, Associated Press ticker and Teletype from the bureau offices in Houston's downtown Humble Building. During Apollo 8's pioneering voyage around the moon, she sent copy by Teletype for 20 hours without letup, all through Christmas Eve until noon on Christmas Day. The bureau's Apollo 11 file to Jaroff, Kriss, and Researchers Sydnor

Vanderschmidt and Gail Lowman made even that effort seem pale by comparison.

To everyone involved, the experience, like every flight into the unknown of space, was suspenseful, fearful, gut-gripping. "But with this one," says Correspondent Neff, "there was a big difference—a deep, visceral understanding that here was history, and perhaps the act that may ultimately guarantee man's survival. That is a once-in-a-lifetime emotion. And that's what all of us felt."

The Cover: Photographed by LIFE's Ralph Morse for NASA.

C. PHILLIPS



NEFF & LEE WITH LM

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## THE MOON



EDWIN ALDRIN



NEIL ARMSTRONG



MICHAEL COLLINS

### VOYAGE INTO HISTORY

In front of glowing television screens around the world, hundreds of millions of men, women and children watched with mounting excitement as the white-clad figure laboriously descended the ladder. At the bottom rung, U.S. Astronaut Neil Armstrong awkwardly placed his right foot in the bowl-shaped footpad of Eagle, Apollo 11's spindly lunar module. Firmly grasping the ladder, he placed his left foot tentatively—then firmly—on the sandlike surface of the moon.

Moving cautiously in his thick boots and bulky space suit, the first man on the moon surveyed his surroundings in the harsh light of the lunar morning. Then he began walking cautiously, testing his agility in the weak gravity and making certain on each step that the soil would support him. Before long, he was joined on the lunar surface by Astronaut Edwin Aldrin. For more than two hours, as a television camera tracked their movements, the two men arranged scientific gear and scooped up chunks of the moon's surface for study back on earth. Then, as clumsily as they had descended, they climbed back into the module and blasted off to link up with Columbia, their mother ship.

AFTER centuries of dreams and prophecies, that fantastic sequence of events was what the U.S. and much of the world hoped would become a reality this week. If all went well on the his-

toric flight of Apollo 11, man would break his terrestrial shackles for the first time and set foot on another world. Standing on the lifeless, pitted lunar surface and looking back across the velvety void of space, he would see the earth, a lovely, blue and white sphere hanging in a black sky studded with too many stars to count.

Although the Apollo 11 astronauts were to plant an American flag on the moon, their feat would be far more than a national triumph. It would be a stunning scientific and intellectual accomplishment for a creature who, in the space of a few million years—the bat of an eyelash in evolutionary accounting—emerged from the forests to hurl himself at the stars. Its effects on human civilization would be a matter of conjecture. But it would in any event be a shining reaffirmation of the optimistic premise that whatever man imagines he can bring to pass.

#### Medals and Microfilm

For Astronauts Armstrong and Aldrin, the task that lay ahead for the next two hours would preclude all but the most practical thoughts. With a sample bag at the end of a long, telescoping handle, Armstrong was to scoop up a coffee-cup-size quantity of lunar soil and stuff the bag in his pants pocket. This "contingency sample" would ensure that even if the moon walk had to be halted at an early stage, at least

some precious lunar material would be returned to earth for study.

While Aldrin was acclimating himself to the strange, light lunar gravity, Armstrong was to remove the TV camera from its position in an open equipment bay of the lunar module and put it on a tripod so that it could provide audiences on the earth with a panoramic view of the astronauts' activities for the remainder of their lunar stay. There would be plenty to see.

As quickly as possible, the astronauts were to set up three scientific devices: 1) a solar wind experiment, consisting of a 4-ft.-long aluminum strip designed to capture particles streaming in from the sun, 2) a seismometer to register moon tremors and meteor impacts and report them back to earth, and 3) a reflector to bounce laser beams from earth directly back to the source for measuring precise earth-moon distances.

The astronauts were also to collect another 100 lbs. or so of lunar material, photograph and describe some of it in notes, and place it in two airtight aluminum sample boxes to be carried back to earth. They also planned to leave behind a variety of mementos from the earth. The largest was a 3-ft. by 5-ft. U.S. flag stiffened with thin wire so that it would appear to be flying in the vacuum of the moon; one of the smallest, a 1½-in. silicon disk bearing statements (reduced in size 200 times) by Presidents Eisenhower, Kennedy, John-

son and Nixon and statements of good will from leaders of 72 different countries. The disk also bore a message from Pope Paul VI quoting from the Eighth Psalm, a hymn to The Creator:

*When I behold your heavens, the work of your fingers, the moon and the stars which you set in place—*

*What is man that you should be mindful of him, or the son of man that you should care for him?*

*You have made him little less than the angels, and crowned him with glory and honor.*

*You have given him rule over the works of your hands, putting all things under his feet . . .*

Attached to a leg of the lunar module's lower stage, which would remain on the moon when the upper portion blasted off, was the already famous "We came in peace" plaque signed by President Nixon and Apollo 11 Astronauts Armstrong, Aldrin and Michael Collins. Also to be left behind: medals and shoulder patches in memory of Yuri Gagarin, Vladimir Komarov, Virgil Grissom, Roger Chaffee and Edward White, five men who have died while in Soviet or U.S. space programs.

Once their assigned tasks were completed, the astronauts were to roll up the aluminum-foil solar wind experiment and seal it in one of the lunar sample boxes that were all to be hoisted aboard Eagle. After two meals and a rest period, Armstrong and Aldrin were to fire the lunar module's ascent engine and soar aloft for a rendezvous with Collins, still in an orbit 69 miles high.

Once that difficult and dangerous maneuver was over, the astronauts would breathe easier. Reunited aboard Columbia, they would be ready to release Eagle into an orbit around the moon and then blast out of the hold of lunar gravity for the trip back to the earth where they would splash down in the Pacific Ocean on Thursday, July 24.

#### Nagging Uncertainties

The meticulously planned Apollo 11 mission is the riskiest as well as the most dramatic spaceflight ever undertaken by man. It is susceptible to all of the dangers that attended the circumlunar flights of Apollo 8 and 10, and to a host of new ones besides. Step by step, each of the earlier Apollo flights checked out every maneuver along the way. Only the biggest ones remained—descending to the moon, exploring the surface and blasting off again.

After the always dangerous launch, when the astronauts were sitting atop the equivalent of a 363-ft. bomb that could explode with the force of 1,000,000 lbs. of TNT, the first truly critical maneuver occurred during the attempt to enter lunar orbit. If the service propulsion system (SPS) engine in the command module had burned too long at that point, it would have slowed the spacecraft too much and sent it crashing into the lunar surface. The return trip involves a similar risk. If the SPS

should fail to fire or burn too briefly when Apollo attempts to head back to earth, the astronauts would be stranded in lunar orbit. At any point during the eight-day journey, a massive failure of the electrical or oxygen systems, or a collision with a large meteor would almost surely result in tragedy. Control failures could cause the spacecraft to re-enter the earth's atmosphere at too steep an angle and burn to a cinder, or at so flat an angle that it would bounce off the outer fringes of the atmosphere far into space. There its limited supply of oxygen would be exhausted before it could loop back to the earth.

It was the novelty of the lunar landing and take-off, however, that weighed most heavily on the minds of both the crew and the men at Houston's Mission Operations Control Room. For those maneuvers were filled with the nagging uncertainties of the unknown and the unexplored.

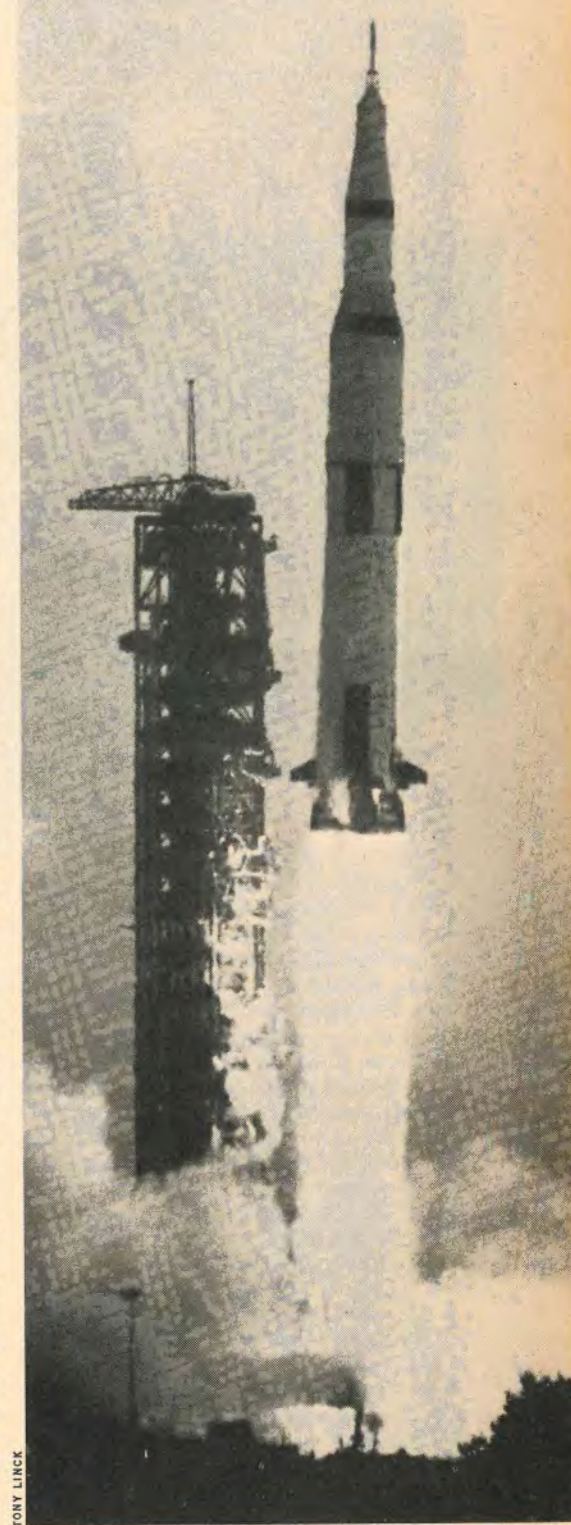
#### Lives on the Line

"I've never seen things so tense around here," said George Low, manager of the Apollo Spacecraft Program, as he surveyed the rows of flight-control officers, environmental-control specialists and other systems experts behind their blinking computer consoles in Houston's three-story Building No. 30. Although early stages of the flight had gone smoothly, every man was aware that more was riding on Apollo 11 than on any previous mission. "It doesn't happen very many times in a man's life that he consciously and deliberately faces death," said Christopher Columbus Kraft, director of flight operations. "These men are putting their lives on the line. Everybody here is aware of it. The crew is trying to do something that no man has ever done."

Most of the tension stemmed from the risks that Armstrong and Aldrin would take aboard. If the lunar module tipped over or set down at an angle of much more than 35° from the vertical, it would not be able to blast off again into orbit. If the ascent engine were damaged in landing—or simply failed to fire—the astronauts would have little time to repair it; their total oxygen supply would last for only 42 hours. There would be no hope of rescue on the lunar surface because Collins could not safely take the command module Columbia below 50,000 ft. altitude.

Perhaps the most nerve-racking part of the mission would come when the ascent engine was ordered to begin firing for lift-off from the moon. If the engine could not be started, Eagle would be stranded on the lunar surface. Too short a burn would toss Armstrong and Aldrin into a trajectory that would send the module smashing back onto the lunar surface. Even if the LM achieved an orbit, it would have to reach an apocynthion (high point) of 50,000 ft. or Columbia would be unable to reach it.

One potential low-risk hazard to Apollo's mission evaporated at week's end



APOLLO 11 AT LIFT-OFF  
For all humanity.

when a Soviet scientist assured the U.S. that Russia's Luna 15 would not intersect Apollo's planned trajectory. Replying by cable to a telephoned request by Apollo 8 Astronaut Frank Borman for Luna's orbital figures, M. V. Keldysh, President of the Soviet Academy of Sciences, promised that the U.S. would be informed of any changes in Luna's 83- by 179-mile orbit around the moon.

The early part of Apollo 11's epic journey was as uneventful as the later part was suspenseful. Lift-off was nearly perfect. Rising Phoenix-like above its own exhaust flames, a scant 724 milliseconds behind schedule, the giant rocket shook loose some 1,300 lbs. of

just 2½ hrs. after launch, the spacecraft was cleared by Houston for "translunar insertion" (TLI). Firing for five minutes, the reliable S-4B engine accelerated the ship to 24,245 m.p.h., fast enough to tear it loose from the earth's gravitational embrace and send it toward the moon. Under the continuing pull of earth's gravity, the spacecraft soon began to slow down, like a car straining toward the crest of a hill. For Apollo 11, the crest was reached at a point 43,495 miles from the moon; there lunar gravity exerted a force equal to the gravity of the earth, which was then some 200,000 miles distant. Beyond that crest, lunar gravity predominated, and Apollo

or awe in Armstrong's voice; he was living up to his reputation as a coldly professional test pilot.

Only occasionally did the view from the spacecraft window move Armstrong to offer an observation not called for by the flight plan. When Apollo was about 133,000 miles from the earth, he suddenly asked Mission Control about the weather in Houston. "Looks like a circulation of clouds in the area. Do you have any rain there?" he asked. "The report from the outside says that it's raining. Looks like you've got a pretty good eye for the weather," replied a communicator from the windowless control room. "It looks like it will be clearing up for you soon," Armstrong continued. "The edge of the cloud pattern has almost reached you." Sure enough, a few minutes later it stopped raining in Houston.

#### Pushdowns off the Ceiling

Through the remainder of the flight, Apollo 11 astronauts were demonstrably less talkative than their Apollo 10 predecessors. "It's all dead air and static," said an official in Mission Control. On the craft's second morning in space, a NASA public affairs officer announced: "This is Apollo Control at 22 hours 49 minutes ground elapsed time. The crew has been awake for some time—according to the surgeon." The astronauts had simply neglected to say anything after awakening; flight surgeons monitoring their respiration and heartbeats were the first to notice that the crew was up. Similarly, flight directors learned only through telemetry that the astronauts had doffed their pressure suits some nine hours out; the crew had said nothing about it.

In Houston, Flight Director Clifford Charlesworth explained: "They're just a quiet crew. I certainly wouldn't want to back-seat drive for them." What did Charlesworth think that Armstrong would say when Apollo reached its goal? "I would expect," the flight director told newsmen, "that he'll call Houston and say, 'We've landed.'"

The astronauts compensated for the uninspiring conversations with Houston during two performances in front of their color television camera—something that apparently can bring out the ham in any man. During the first show, which lasted 35 minutes, Collins first focused the camera on the earth, half in darkness and 150,000 miles away. "You're seeing the earth just as we see it out of our left-hand window," he said. "Just a little more than half the earth . . . North America, Alaska, United States and Canada, Mexico and Central America. We can see the San Joaquin Valley, the Sierra Mountain Range and Baja California. The greens do not show up so well."

Then there was a word of warning for his viewers: "O.K., world. Hang onto your hat. I'm going to turn you up-

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## The Scene at the Cape: Prometheus and Carnival

COVERING a football game or a space shot, TV these days delivers technical excellence, informed commentary and immediacy. So why go to the scene? Were the hundreds of thousands of tourists, the 6,000 or so special guests of NASA and the 1,782 journalists all foolish to take the trouble of being at Cape Kennedy? Just ask one who walked into the Vehicle Assembly Building, where the 363-ft.-tall Saturn 5 rocket was put together, and listen to him insist that no picture had ever prepared him for the experience of looking up at the towering vastness, the esthetic curves of the work platforms, the cathedral-like sense of man's puniness. No camera angle or word comparison can convey the feeling of standing like a blade of grass alongside the impersonal white complexity of the lofty moon rocket itself.

In the darkness of 5 a.m., when the brilliantly floodlit rocket gives off rays of light like a star sapphire, it seems entirely possible that so beautiful a machine might reach the moon. But with sunrise and the reappearance of the normal landscape, doubt intrudes; eventually, at a distance of three miles, the rocket seems to shrink in size and magic until it becomes an act of almost Promethean gall to aim it at the heavens.

At ignition, nothing that TV says or does can recreate the waves of sound that actually buffet the ears, chest and gut of the spectator. The slowness of lift-off contrasts incredibly with the acceleration into flight. The head goes back, hands are raised to block out the sun, tears of relief and perhaps pride fill the eye. The earth itself seems to be dropping away as fast as the wingless rocket is accomplishing the completely unnatural act of heaving itself upward and bursting through the sky.

This was what the crowds had come to witness. Jules Verne had the vision more than a century ago. When Western man finally launched himself into space, he foresaw, it would be from Florida's midsection. Men with less foresight saw only a forbidding stretch of sand, scrub and fetid marshland that was bypassed even during the land boom of the 1920s. In the 1950s, recalls Space Reporter Al Volker of the *Miami News*, the space program was so hushed up that the only way to find out that a shot had taken place was to have a Cocoa Beach bartender telephone the news. But in the 1960s the time had come for Verne's idea. With it came a permanent population of 250,000, cinder-block subdivisions, all the effluvia of a boom town and, last week, a million guests.

Cocoa Beach pays unending tribute to the space age that made it prosper. Motels bear names like Sea Missile, Satellite and Polaris. There is a Celestial Trailer Court and an Astro-Dine Outer Space Eat-In. George's Steak House has rest rooms marked "Astronauts" and "Astronets." The menu suggests: "Lift off with a three-stage martini. Order a steak that soars to an apogee of taste and splash down with coffee."

At least ten days before the launch the crowds began streaming in—those without press passes or VIP badges, families with young children, groups of students. They came out of curiosity to see a sensational event, but plainly also with a strong sense of patriotism. Thousands converged on the Cape by boat; 3,000 craft of every description gathered on the Indian and Banana rivers. They also came in jalopies of no recognizable genus, in Skampers, Starcrafts, Swingers and Shastas, in Lo-Liners, Open Roads, Trade Winds and Nomads, packing the campsites and motels. Long-Distance Runner Bill Emmerston, 49, arrived on foot, having jogged 1,034 miles from Houston.

On "T-minus-three" (for takeoff-minus-three days), as NASA labeled the Sunday before the launch, most journalists who covered the event were already on hand.

Close to 850 came from abroad, representing 54 countries and speaking in languages ranging from Spanish to Punjabi. Old hands at space reporting set up a telephone watch of the countdown and otherwise filled the evenings with beach parties, dancing at George's and lots of "Hemingway daiquiris" (Papa's recipe: grapefruit juice, lime juice, Bacardi and a dash of grenadine).

In contractors' hospitality suites, private houses, hotel ballrooms and on yachts, the cups never ceased running over. CBS commenced the nonstop round of parties with a "Come and Meet Walter Cronkite" bash Sunday afternoon at the Hilton. While Cronkite mingled affably in his role as something of a national institution, a clerk for Oakland-based Trans International Airlines took reservations for the firm's first charter flight to the moon and trotted out a "space age" stewardess encased from head to knee in a plastic bubble. "You can't win in this town," muttered Norman Mailer as he walked past her.

NASA's distinguished guest list included General William Westmoreland, Terence Cardinal Cooke, Charles Lindbergh, Johnny Carson and Jack Benny—not to men-



VIEW FROM A VOLKSWAGEN

tion 205 Congressmen, 30 Senators, 19 Governors, 50 mayors and 69 ambassadors. Lyndon and Lady Bird Johnson flew in from Houston aboard a military plane assigned to them by President Nixon and dined on launch's eve with NASA Administrator Thomas Paine. On launch day, the VIP grandstand was a miniature *Who's Who* of white America; it was disturbing to note that black faces were scarce.

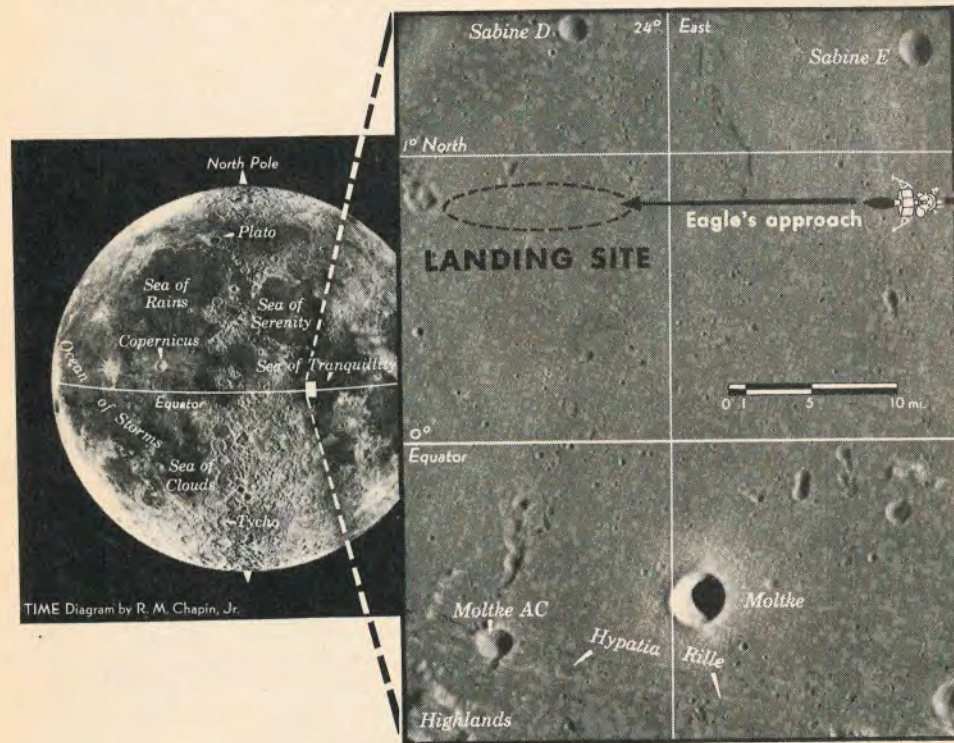
Soon after the relentless Florida sun came up, coats, ties and even shirts came off. The long wait grew wearisome, until the announcement: "T-minus-two minutes." Idle conversation halted. Tedium evaporated. "We have lift-off," said Mission Control. People shouted "Go! Go! Go!" and whispered "God bless you." In another two minutes, there was nothing to see but the blue sky. For those incredible two minutes, said the Rev. Ralph Abernathy, who led 250 Poor People's Campaigners in a protest march, he was so stunned by the sight and so proud of the astronauts that he forgot there was hunger.

He would soon remember. But Abernathy—and the hundreds and thousands of others who were on the scene—would probably also recall that moment last week as the biggest historical event of their lives. A radio newsman thrust a microphone into the face of William F. Buckley Jr. "You're an eloquent man, Mr. Buckley," said the interviewer. "How would you describe what you've just seen?"

"With silence," said Buckley.

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TIME Diagram by R. M. Chapin, Jr.

ice that had frozen on its white sides. Although it was the heaviest space vehicle ever fired aloft—6,484,280 lbs. at ignition—it cleared the launch tower in twelve seconds and quickly accelerated toward its planned orbit.

Aboard the spacecraft, the cool crew members took their fiery skyride in stride. Flight surgeons monitoring Armstrong's heartbeat at launch recorded 110 beats per minute (v. 146 when he lifted off in Gemini 8 in 1966). Collins' heartbeat was 99 (v. 125 aboard Gemini 10) and Aldrin's 88 (v. 110 on Gemini 12). Seasoned spacefarers all, the astronauts might well have been out for a Sunday-afternoon drive.

Less than twelve minutes after lift-off, a brief boost from the S-4B third stage placed Apollo into a circular 119-mile orbit at a velocity of 17,427 m.p.h. Keeping their observations to a minimum and conversing with Houston in monosyllables, the astronauts busily checked out Apollo's systems and even conducted a one-minute test of their color TV camera.

Over the Pacific for the second time,

began to accelerate once more. It was on the "downhill" leg of its journey to the moon.

Shortly after beginning their powerless glide toward the moon, the astronauts completed a now familiar maneuver. They separated *Columbia* from the S-4B rocket, thrust the spacecraft forward, pitched it up and over, then moved back to dock with *Eagle*, the lunar module, which was still riding in the rocket's nose. They plucked *Eagle* away from the S-4B, and turned once more toward the moon on a trajectory so perfect that the first scheduled mid-course correction was later canceled.

"Houston," called Armstrong, "you might be interested that at my left-hand window right now, I can observe the entire continent of North America, Alaska, over the Pole down to the Yucatan Peninsula, Cuba, the northern part of South America and then I run out of window." Apollo 11 was then about 10,000 miles from the earth, farther than all but six men (the crews of Apollo 8 and 10) had ever ventured. But there was almost no trace of excitement

side down." As Collins rotated his camera, keeping it pointed toward the earth, the blue and white planet took an erratic 180° turn on earth-based TV screens. "I'm making myself seasick, Charlie," Collins called to Astronaut Charles Duke, the capsule communicator in Houston. "I'm going to put you right side up where you belong." The earth promptly performed another lazy turn on the TV screens.

Aldrin took over the camera and focused on Collins, sending back an exceptionally clear picture of his clean-shaven face. "I would have put on a coat and tie if I'd known about this ahead of time," Collins quipped. After a shot of Neil Armstrong, expressionless, comfortable-looking and upside down, Collins appeared on camera doing push-ups on the floor. "When it gets pretty hard doing it that way, we do it this way," he explained, rolling over to push-downs off the ceiling.

Collins then conducted his viewers on a brief guided tour of the cramped command module. "Well, it looks like about dinnertime down there, earth. We'll show you our food cabinet." Opening the cabinet, he fished out a plastic package. "Would you believe you're looking at chicken stew?" he asked. "All you have to do is add three ounces of hot water, mush it around for five or ten minutes and cut off its head, and you've got chicken stew."

#### Surprise Bonus

With remarkable clarity, the TV camera showed a telescope used for sighting, black star charts with their precisely placed pinpoints of white arranged in familiar constellations, the brightly lit letters and numbers on the display panel of the spacecraft computer, and the American flag plus the Apollo 11 shoulder patch (an eagle with an olive branch in its talons, hovering over the moon) sewed on a space suit.

The second TV show, staged after a spur-of-the-moment decision by the astronauts, was a complete surprise to everyone—including ground controllers. It ran for 1 hour and 36 minutes, longer than any previous TV transmission from a manned spaceship, and it gave viewers a prolonged look at the process of inspecting the lunar module. It showed Armstrong floating upward to clear the tunnel between *Columbia* and *Eagle*, then turning a wrench to open *Eagle's* hatch. As he did so, his body twisted in the opposite direction in the weightless environment. "We don't see anything loose up there," said Armstrong, after opening the hatch. Aldrin, carrying the TV camera, wiggled through the tunnel into *Eagle* and began sending back a picture so clear that Houston could read lettering on the hatch and instruments. One communicator noted that he could see the cover on the abort button that Armstrong and Aldrin would have to push if they ran into trouble during their final descent to the moon. "We're going to tape that one over," said the determined Armstrong.

The astronauts obviously enjoyed their show-business roles. At one point, Collins turned to the camera, waved and said: "Hello, earthlings." Even the taciturn Armstrong was caught up in the mood. "This is probably the most unusual position a cameraman has ever had," he noted, as he hung upside down in the tunnel and shot a picture of Collins. When the telecast finally ended with a view of the dwindling earth, more than 200,000 miles away, Houston called it "one of the greatest shows we've ever seen."

A greater show was yet to come. At week's end, continuing their flawless flight, the astronauts zoomed past the western rim of the moon at 5,645 m.p.h. They were whipped behind the far side and into lunar orbit by the moon's grav-

ity and a 5-min. 57-sec. burn of the reliable SPS engine that reduced their speed to 3,736 m.p.h. When they emerged from behind the eastern edge of the moon, after 34 minutes during which radio communication with the earth was blocked, they had dropped into a 70- by 196-mile-high orbit.

That was about as close as Collins would get. Before the trip, he complained good-humoredly that because he would be piloting *Columbia* during the moon walk, he would be "about the only person in the world who won't get to see the thing on television." He asked Houston to save a videotape for him. At least, said Collins, "I'm going 99.99% of the way."

It was Armstrong and Aldrin who were to go the last and most dramatic one-hundredth of 1% of the journey. Some 20 hours after the spacecraft went into lunar orbit, they were to don their space suits and crawl through a tunnel into the lunar module. A four-hour check of *Eagle's* intricate equipment would follow, with particular attention to its propulsion systems—the tanks containing the hypergolic fuels that fire the descent and ascent engines, and the pressure gauges on the helium that is used to force the fuels into the combustion chambers, where they burn upon contact with one another.

#### Stepping Down

If all systems were go, Armstrong and Aldrin would separate the lunar module and begin their descent to the moon. At a height of 50,000 ft., 300 miles east of the landing site in the Sea of Tranquility, the descent engine would be fired. Aided by 97 detailed maps showing features as small as 2-ft. boulders on the moon's surface, they were to track their ground path, looking for such familiar landmarks as the crater Moltke and the smaller Sabine craters. As the module descended, its rate of fall was to slow steadily until it was as little as 3 ft. per sec. at touchdown.

Once on the moon, the astronauts were to make an internal check of the module to see if anything had happened during the landing that would force a quick takeoff and rendezvous with *Columbia*. After a meal and four hours of sleep, they were scheduled to begin the exasperating task of checking out *Eagle's* complex systems and putting on helmets, thick-soled boots and gloves, and Portable Life Support System backpacks. In all, each man would be weighed down by 183 lbs. of gear (only 30.5 lbs. in lunar gravity). Two hours were allotted in the flight plan for donning the equipment, but that was hardly excessive. As a NASA technician commented: "It's the equivalent of two men trying to get dressed in a phone booth."

As long as ten hours after landing on the moon, Armstrong and Aldrin would finally be fully outfitted. Then they would step down from the ungainly looking *Eagle*—and into history.

## GUARD AGAINST THE UNKNOWN

EVEN if their mission is a complete triumph, the Apollo 11 astronauts will face a reception far different from those accorded to previous space heroes on their return to earth. There will be no casual camaraderie with the frogmen after splashdown, no lengthy welcoming rites aboard the recovery carrier, no embraces with their wives in Houston. The moon voyagers will be treated—literally—as if they had the plague.

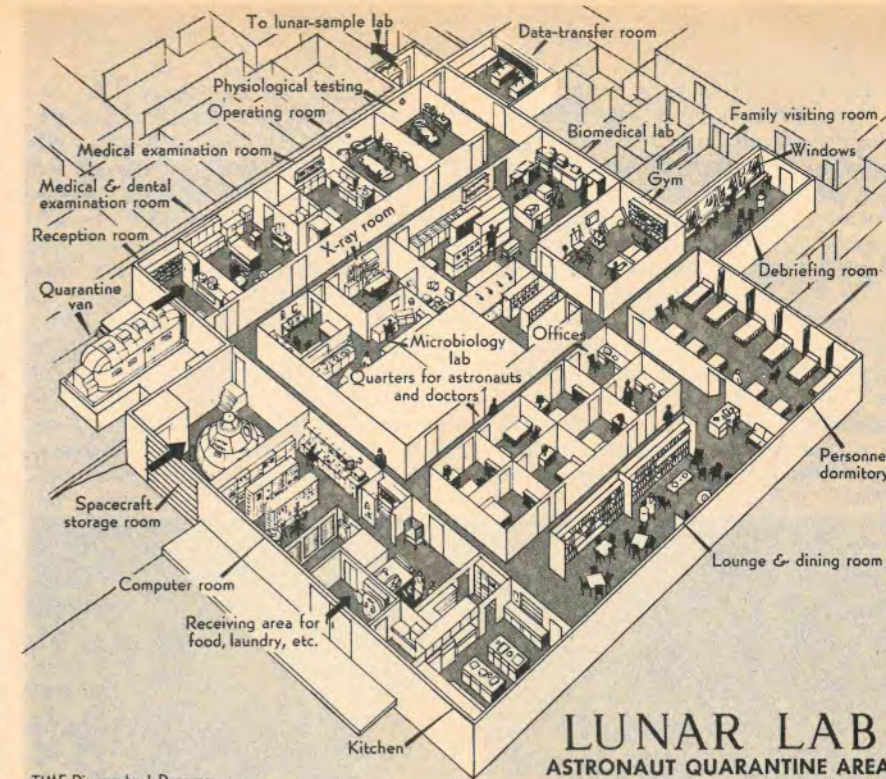
To guard against the remote possibility that they are harboring unknown lunar organisms that might endanger life on earth, the astronauts will be forced to exchange the isolation of space for a terrestrial variety nearly as lonely. For 21 days after Apollo leaves the moon, they will be in quarantine.

#### Pool of Antiseptic

At the recovery site in the Pacific, a frogman dressed in an all-enveloping biological insulation garment (BIG) will open the command-module hatch, toss in three similar garments and quickly close it again. Inside the Apollo cabin, the astronauts will don and seal their BIGs before reopening the hatch and stepping into a pool of antiseptic at the bottom of an adjacent rubber raft. Almost immediately, the frogman will again close the hatch, spray antiseptic around its edges, and then give the astronauts themselves a thorough spraying.

In their suits, the astronauts will be effectively prevented from contaminating the atmosphere. When they inhale, air will be drawn into their BIGs through a one-way valve; the air they exhale will be vented through a biological filter designed to block the passage of tiny organisms. Conversely, the frogman will be protected by a biological filter to screen the air that he inhales. Some scientists fear that these elaborate precautions—and those that follow—could be negated during the two brief intervals when the Apollo hatch is opened; alien organisms inside the spacecraft could take these opportunities to escape into the air and the sea. Space officials consider that an extremely remote possibility. Says Persa Bell, director of NASA's Lunar Receiving Laboratory: "The chance of bringing anything harmful back from the moon is probably one in a hundred billion."

After the astronauts are taken by helicopter to the recovery carrier, they will be hustled without ceremony into a biologically sealed van that vaguely resembles a house trailer without wheels. There they will join a flight surgeon and a technician, who will share the remainder of their quarantine time with them. During the next 67 hours, the sealed van with its five occupants will travel aboard the carrier to Ford Island, Hawaii, where it will be unloaded, flown in a C-141 to Ellington Air Force Base near Houston, and trans-



TIME Diagram by J. Donovan  
Adapted from LIFE

## LUNAR LAB ASTRONAUT QUARANTINE AREA

ported by truck to the Manned Spacecraft Center.

The airtight, watertight van is divided into a lounge, a galley and an area for sleeping and bathing. Meals will be passed into the van through an air lock and prepared in a microwave oven in the galley. Air pressure inside the van will be lower than it is outside; if a leak occurs, the "negative" pressure will cause outside air to flow in, preventing organisms from escaping.

#### Ultraviolet Shower

At the Manned Spacecraft Center, the van will be rolled up to the Lunar Receiving Lab (LRL), an 83,000-sq.-ft., \$15.8 million building designed specifically to house the astronauts and lunar samples during the quarantine period. After walking through an airtight plastic tunnel extended from the van, the Apollo crewmen and their two traveling companions will enter the astronaut-reception area, which occupies about a third of the laboratory. A dozen others—NASA physicians, technicians, a cook and a public relations man—will join them until the quarantine period ends.

In the LRL, each astronaut will have a separate room furnished in Sears, Roebuck Early American style with single bed, dresser, night table, chair and lamp. In identical adjoining rooms, there will be three physicians, one for each astronaut, to provide constant medical attention. The astronaut-reception area also contains a recreation room, a shower and locker room, a lounge lined with bookshelves, a dining room and a kitchen. In a nearby complex of rooms, NASA has also put together one of the most complete biomedical centers in the U.S. There the physicians will sub-

ject the astronauts to exhaustive clinical, chemical and microbiological tests.

Like the van, the astronaut area will be completely sealed off from the outside world, with its own air-conditioning and negative-pressure system. The air that the astronauts and their companions breathe will be continuously filtered and treated as it is recirculated, to cleanse it of any unwelcome organisms. Body wastes will be sterilized, and any notes that the astronauts wish to pass outside will be sterilized first for 16 hours in ethylene oxide gas. Even the traditional flight debriefing will be sterile. The astronauts will review details of their mission on one side of a glass wall while NASA officials question them and listen on the other side, communicating through a speaker system. In the same room, the astronauts will chat through the glass with their families.

#### Drastic Measures

NASA has not revealed how it would react to the outbreak of a strange illness inside the astronaut-receiving area. If the symptoms were mild, the quarantine would presumably be extended at least until the disease had run its course. NASA would have to consider more drastic measures to protect the health of the world's population if the illness proved disabling or deadly—like that in Novelist Michael Crichton's best-seller, *The Andromeda Strain*.

If, as NASA fully expects, no alarming symptoms develop in the astronauts, their attendants, or the test animals and plants in the adjoining lunar-sample laboratory, the three men of Apollo 11 will at last be allowed to emerge into the outside world in mid-August for a belated and well-deserved welcome.



JOHNSON & LADY BIRD WITH THE AGNEWS  
Go! Go! Go! and God bless you.

## AWE, HOPE AND SKEPTICISM ON PLANET EARTH

AS Apollo 11 hurtled through the heavens to land two Americans on the moon, it seemed as if all mankind were kin. Whether in stilt-supported houses over the canals of Bangkok or by the azure swimming pools of Beverly Hills, families sat mesmerized before the flickering history unfolding on their television screens. Along London's Piccadilly and Tokyo's Ginza, crowds and traffic thinned as the launch began. In West Berlin, as in South Nyack, N.Y., there was a rare sense of camaraderie. Strangers on the street were united by the universal question: "How are they doing?" It seemed, as

ship around the U.S., clerics and laymen prayed for the astronauts' success. At St. Ann's Roman Catholic Church in Boston, the four brothers of Patricia Finnegan Collins, wife of Astronaut Mike Collins, heard Father John Schatzel read from *Genesis*: "I will be with you and protect you wherever you go. I will bring you back to this land."

Americans were gratified that the U.S. had won the race with the Soviet Union to land men on the moon. Said Patricia Lepis of Brooklyn: "It's the greatest thing that could happen to this country. It's definitely an American triumph."

U.S.I.S.



KOREANS IN SEOUL WATCHING MISSION'S START  
United by the universal question.

Tennyson wrote more than a century ago, "One far-off divine event/To which the whole creation moves."

In the U.S., East Coast workers either rushed to the office early or stayed home until midmorning to watch the lift-off; across the country, Californians climbed out of bed at dawn to agonize through the countdown.

Most people seemed as awed by the colossal scale of the undertaking as they were baffled by its complexity. To many, the long series of space shots had become routine—until the moment that the mission of Apollo 11 finally struck home. Across the land, at the instant of launch, women dabbed their eyes and men blinked back their emotions. In Alaska, Newspaper Publisher Larry Fanning observed: "Intellectually and emotionally, man is incapable of parsing out the stunning implications of this fantastic voyage."

Despite the near-perfect record of Apollo space flights, many feared the perils of the journey. In houses of wor-

Houston Cameraman Ron Bozman argued: "The moon is there and we Americans have to get there first." More often, the moon mission evoked an exhilarating sense of human solidarity and potential. "I believe it's man's greatest achievement to date," said Barry Davidoff, 16, a student at the Bronx High School of Science. "It's a triumph for everybody."

Almost universally, Americans agreed that the moon voyage was a transcendent achievement—but that domestic demands on national resources are equally pressing. As John Furst, a University of Pennsylvania student, put it: "I was very proud when I saw that spaceship and the men with the flags on their sleeves. But I must confess that I also thought of all the people who live in the ghettos. This is their flag, too. The flag may be flying on the moon, but it is also flying in their neighborhoods, where there are poverty, disease and rats."

Opposition to an expensive space pro-

gram runs especially high among most of the nation's blacks. Black Panther Leader Eldridge Cleaver, a fugitive from justice in California, turned up in Algiers to denounce the moon shot as "a circus to distract people's minds from the real problems, which are here on the ground." "I think it's a waste of money," said Arvis Gilmore, a black typist at the Encyclopaedia Britannica in Chicago. "There's poverty all over the place, and yet we spend billions of dollars going to the moon. Let's take care of the U.S. before the moon." San Francisco Municipal Court Judge Joseph Kennedy, also a black, remarked: "It seems to me now that we can bring the same kind of organizational expertise to bear on the perplexing social problems that we have here at home."

### Is the Moon White?

To the argument that the billions for the space program could have been more usefully spent on the nation's myriad domestic ills, Brandeis Political Scientist John Roche—once President Johnson's resident intellectual—replies that the fundamentally conservative U.S. Congress would never have showered such sums on the problems of America. Adds Stanford's Felix Bloch, a Nobel laureate in physics: "Progress in science cannot be measured in dollars. The benefits of the expedition are so likely to surpass anything we can expect that the cost will seem a trifle once the results come in." Others suggest that while federal spending on space exploration is intrinsically constructive, vast defense outlays are not. If federal funds are to be diverted to urgent domestic needs, they contend, the money should come not from NASA but from the Pentagon.

If to many the moon seemed white, it also seemed middle-aged. Excitement about the voyage was strongest among those old enough to remember how fantastic the project seemed a generation ago. The young, who have grown up in the TV and space age, seemed the most blasé of all. Noted Andrew Craig, head of aeronautical engineering at Wichita State University: "They take for granted that what you see in *2001: A Space Odyssey* will become commonplace in their adult lives." Mrs. John Graves, an elderly Atlanta housewife, expressed a different kind of disenchantment. "It's all a bunch of foolishness," she grumped. "Didn't they say that about Columbus? 'Yes, and that was a bunch of foolishness, too.'"

It did not seem so to the majority of Americans, and certainly not to the majority of people abroad. By satellite television, the launch of Apollo 11 was seen and heard round the world by an audience estimated at 528 million by ABC-TV, which handled pool coverage. Many other nations sought a sense of sharing and involvement in the great adventure. Italians pointed proudly to Astronaut

Collins' Roman birth. Frenchmen recalled that Jules Verne had charted the voyage more than 100 years ago. Germans noted that it was Wernher von Braun who had labored a quarter-century to perfect a rocket that could carry men to the moon. Russians were gratified that the American astronauts carried to the moon medals awarded posthumously to two Soviet cosmonauts, Yuri Gagarin and Vladimir Komarov. Color television sets were virtually sold out in Japan.

More than 50,000 South Koreans watched the launch on a giant screen in Seoul. David Threlfall, 26, waited in London to collect his bounty from the bookmaking firm of William Hill Ltd.: he bet \$24 in 1964 that men would land on the moon by 1971, and got 1,000-to-1 odds. In Beirut on the morning of launch, a woman gave birth to her eleventh child—and promptly named him Apollo Eleven Salim. The Grand Mufti of Egypt, Sheik Ahmed Hereidi, said he approved lunar exploration because "the Koran urges Moslems to look up from their earthly abode to what lies behind the moon and the stars." In Recife, Brazilians planned an off-season carnival with float parades and dancing in the streets.

### Less Anthropocentrism

Even if the mission proved to be completely successful, it was much too soon to assess its true significance. Historian James MacGregor Burns was not impressed. "It's a very proud and fine day for all Americans," he said, "but it's an event apart from the main flow of history." Stanford Physicist Robert Hofstadter, a Nobel prizewinner, disagreed: "In a thousand years there will be few things remembered, but this will be one of them."

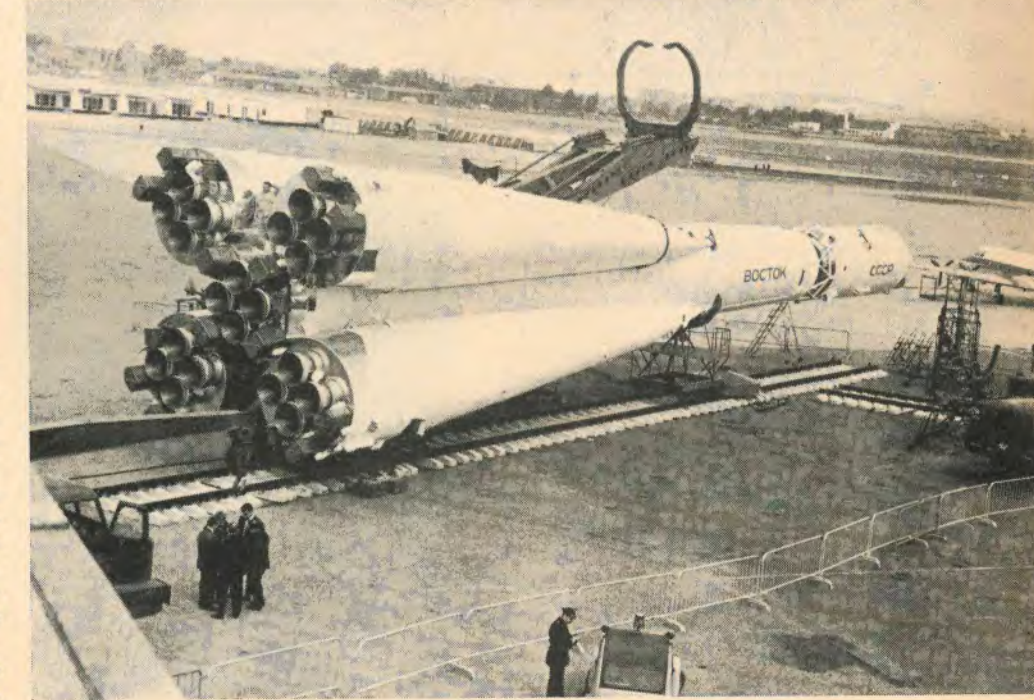
To some, Apollo 11's mission to the moon means hope for a less anthropocentric view of man and a new perspective on the human condition. "I think if we can get so far away from ourselves, we should be able to look back down here and see how tiny the earth is," said Rita Moore, an Atlanta secretary. "Maybe we'll be able to see now that we're all on a small planet and we ought to be working together." Said famed Biochemist Isaac Asimov: "It will teach us to be humble. The earth is a small body, a tiny thing lost in a vast universe." The British Interplanetary Society prepared a message for the astronauts on their return, ending with H. G. Wells' prophecy: "When man has conquered all the depths of space and the mysteries of time, then will he be but still beginning." If disaster were to overtake the astronauts of Apollo 11, or a later moon mission, men would not be deterred from pressing ahead to explore the universe. Whether excited, indifferent or embittered, few could doubt that in this week in July, A.D. 1969, the planet earth and all its people moved toward new beginnings, in the heavens and quite possibly on earth.

## SCOOPY, SNOOPY OR SOUR GRAPES?

SPPEEDING toward their dramatic rendezvous with the moon last week, the Apollo 11 astronauts were aware that they would have company in the lunar neighborhood. With the aid of periodic news reports from Houston, they were able to keep track of the progress of Luna 15, the unmanned Soviet moon probe launched from the Baikonur cosmodrome three days before their blast-off from Cape Kennedy. The Russians cloaked Luna's mission in characteristic secrecy. Some scientists speculated that it was a "scoopy" shot designed to dig up some lunar soil and return it to earth before a manned Apollo mission

nard Lovell. "Listening to Apollo with one ear and Luna with the other," as Lovell put it, he tracked the loudly signaling Soviet ship with the 250-ft. Jodrell Bank radio telescope. Soon after launch, he determined that the spacecraft was traveling more slowly than previous Russian moon shots, was on a different trajectory and was transmitting "heaps" of information with a new kind of signal that he could not interpret. The slower velocity indicated to Lovell that the Russians were trying to economize on fuel, perhaps saving it for a landing and subsequent blast-off from the lunar surface. This, he suggested, "supports

GAMMA



SOVIET VOSTOK ROCKET ON DISPLAY IN PARIS  
The controlling element is still competition, not cooperation.

could accomplish the feat. Others thought it might be a "snoopy" shot aimed merely at orbiting the moon and returning with photographs and telemetered data. Many Westerners suggested that it was, above all, a sour-grapes shot.

For months before Luna 15 was launched, rumors had circulated in Moscow that Soviet scientists would in one way or another try to steal some thunder from Apollo. Speculation intensified last month when Cosmonaut Aleksei Leonov told Japanese newsmen that he expected his country to exhibit rocks from the moon—gathered by an unmanned spacecraft—at the 1970 world's fair in Osaka. Three weeks ago, reports were heard in Moscow that two earlier versions of Luna 15 had exploded prematurely—one on the launch pad early in April, the other shortly after launch on June 12.

First details of the Russian shot came not from Moscow but from the irrepresible English astronomer Sir Ber-

the theory that Luna 15 may attempt to recover lunar rock."

After Luna 15 reached the vicinity of the moon, it went into an 83-by-179-mi. orbit. On that basis, Lovell predicted that the Russians would attempt "to land the whole spacecraft, or part of it, and collect some rock." Most Western scientists, however, doubted that such a feat could be brought off successfully on the first try. They know that the Soviets have not yet even tested a rocket large enough to launch a Luna with enough fuel to land on the moon and take off again. They also believe that Russian space techniques are still not sophisticated enough to detach a craft from the orbiting Luna, land it and launch it again to rendezvous with the mother ship for the return trip to earth.

Whatever the fate of the Soviet craft, its launching on the eve of Apollo 11's lift-off underscored the fact that the controlling element in Soviet-U.S. space relations is still competition, not cooper-

ation. Yet the question remains: With man now venturing to extraterrestrial bodies, how good are the chances for future joint efforts by the two superpowers? Said Lovell: "The time will come, within ten years, when considerable amounts of equipment will be left on the moon and lunar bases established, and international cooperation will become essential. Otherwise, a very serious situation might arise, both scientifically and politically."

Lovell's warning followed several recent suggestions, from Russians as well as Americans, for closer cooperation. Earlier in the week, NASA Administrator Thomas Paine had publicly voiced the hope "that the juxtaposition of two lunar missions in such a close time frame points out the desirability of close cooperation in space between the Soviet Union and the United States." During his recent tour of Russia, Apollo 8 Astronaut Frank Borman called for wider exchanges of scientific information and the joint tracking of satellites. He advocated a halt to "unnecessary duplication" in planetary exploration and suggested that when orbiting laboratories are lofted into space, they be manned with scientists from a number of different countries. A Soviet space scientist, Anatoly Blagonravov, has publicly conceded that there is duplication in U.S. and Russian space shots. "In the future," he predicts, "there is no doubt that space exploration will become a general task for all humanity and not only for individual countries."

#### Diplomatic Protocol

Actually, there has been some improvement in U.S.-Soviet space relations. The two countries regularly exchange weather-satellite data. They have signed a treaty for the safe return of any of their spacemen who inadvertently come down within the other nation's boundaries. But the competition remains intense. Moscow continues to maintain almost complete secrecy, never announcing launch dates or mission goals in advance, releasing precious little information during or after a mission, and never allowing an American to witness a launch.

For a brief time this month, as the Russians atypically heaped good wishes and praise on the forthcoming Apollo 11 flight, it appeared that a turning point had been reached in U.S.-Soviet space relations. Ambassador Anatoly Dobrynin even accepted a NASA invitation to witness the Apollo 11 launch at Cape Kennedy—the first Russian official to do so. Under normal diplomatic protocol, his attendance might have obligated the Russians to invite an American to a launch in the Soviet Union. But early last week, the Russian embassy in Washington revealed that Dobrynin would be out of the country at the time of the Apollo shot. It was still another indication that the Soviets will, for the time being, continue on their lonely and secretive path through space.

## NEXT, MARS AND BEYOND

**E**VEN as man prepared to take his first tentative extraterrestrial steps, other celestial adventures beckoned him. The shape and scope of the post-Apollo manned space program remained hazy, and a great deal depends on the safe and successful outcome of Apollo 11. But well before the moon flight was launched, NASA was casting eyes on targets far beyond the moon. The most inviting: the earth's close, and probably most hospitable, planetary neighbor. Given the same energy and dedication that took them to the moon, says Werner von Braun, Americans could land on Mars as early as 1982.

Mustering the necessary zeal—not to mention the political and budgetary support—may be more difficult than mastering the technology. NASA has no plans yet for any manned expeditions beyond the moon, largely because of its in-



"UNBOUND"

ability to wrest more funds from a Congress whose members are already divided over the \$24 billion tab for Apollo. Last week, as head of a task force on future U.S. space objectives, Vice President Spiro Agnew said the nation should aim for a manned Martian landing by the end of the century. But Agnew conceded that the other members of the panel might be more cautious about a manned Martian expedition.

With sufficient funds, NASA intends to launch nine more Apollo flights to the moon in the next three years. Lofted by the same powerful Saturn 5 boosters that have been Apollo's workhorses, U.S. astronauts will range over increasingly rugged areas. The scheduled Apollo 12 flight in November will take them to the Ocean of Storms. On subsequent missions, they will touch down near the Crater Censorinus, the Sea of Serenity, the Crater Tycho and finally such forbidding abysses as the craters Aristarchus and Copernicus.

As the lunar expeditions become more ambitious, so will their hardware. NASA

is now improving the life-support systems in the lunar module to allow visits to the moon of up to three days by 1970. The agency is also developing more flexible space suits and designing a small rocket-propelled "lunar flyer."

NASA also hopes to keep its manned space effort alive by using surplus Saturn 4B rockets—which now serve as the third stage of the Apollo launch vehicle—for earth-orbiting flights. This effort, dubbed the Apollo Applications Program, will begin in 1971 with a 28-day flight by three men—one a doctor. These vehicles are only forerunners of a giant space station that NASA plans to orbit by the late 1970s. The first station will probably accommodate twelve people, including the first American spaceman. It will remain aloft for at least ten years, with crew members rotated every six months.

#### Mapping the Red Planet

At the same time, NASA will attempt increasingly complex unmanned probes. Two unmanned Mariner spacecraft will soon pass within 2,000 miles of Mars and radio back enough close-up photographs to map about 20% of the Martian surface. In 1973, other Martian orbiters will eject two instrument-packed capsules for soft landings on Mars.

Mars, however, is only one of NASA's planetary targets—and a relatively close one at that. In 1972, the space agency will send two Pioneer spacecraft on a flyby of Jupiter, largest planet in the solar system. A year later, another Mariner will try the first multiple-planet probe. After a sweep of Venus, it will use the Venusian gravity to boost itself on toward Mercury, the sun's closest and smallest satellite. In the late 1970s, the so-called "outer planets" will be so favorably aligned that a spacecraft passing Jupiter could use its gravity to push on toward Saturn, Uranus and Neptune—a "grand tour" that would cover billions of miles and take as long as ten years.

The prospects for man's first leap into the solar system will surely be enhanced by the success of such unmanned missions. Not only will they prove the feasibility of interplanetary travel, but they will help arouse the public support necessary for such journeys. To be sure, Americans will continue to agonize over the cost of the program—which NASA says will come to no more than .5% to 1% of the gross national product (currently running at \$900 billion) a year. And the question of priorities will remain relevant as long as such earthly imperfections as poverty and pollution persist. Still, as Science-Fiction Writer Isaac Asimov says, "Man has always had the other side of the hill to worry about"—and he always will. This week the other side of the hill is the moon. Before this century ends, it will almost certainly be Mars—and beyond.

## ON COURAGE IN THE LUNAR AGE

**C**OURAGE leads starward, fear toward death," wrote Seneca. Man needs courage simply to live in spite of knowing that he must die. He needs it to live richly—to take risks and thereby define himself. There are many kinds of courage, moral and physical, but all involve a struggle against heavy odds. In that sense, the astronauts' courage is new and not easily classified.

Obviously it takes brave men to climb into that capsule and undergo the immense risks that lie between the earth and the moon and the earth again. Yet, to thoughtful skeptics, the superorganized voyage of Apollo 11 suggests that lone, individual courage belongs to the past. The astronauts often seem to be interchangeable parts of a vast mechanism. They are buffered by a thousand protective devices, encased in layers of metal and wires and transistors, their very heartbeats monitored for deviation. Most of their decisions are made by computers. Hundreds of ships, planes, doctors and technicians stand by to rescue them from error. All this is strikingly different from the lonely struggles of the ancient mariners and American pioneers, the early Polar explorers like Scott and Peary, the early aviators like the Wright brothers and Lindbergh. To many of today's young, who view courage in moral terms as a battle against impersonal organization, the astronauts do not seem particularly heroic precisely because they epitomize the organization man.

#### Fear Is Worse than Death

Courage, like morality, is redefined by each generation. "The monsters of this sea are everywhere," reported a Phoenician explorer several centuries before Christ, "and keep swimming around the slow-moving ships." The monsters were whales, the sea the Bay of Biscay. In succeeding generations men would skim over that water as if it were a pool, and the heroism of the early sailors on their scary voyage would resemble that of fearful children in the dark. What the explorer does by courage, the settler does by habit. What the father does by taking a deep breath, the son will do with a yawn. If Neil Armstrong and Edwin Aldrin succeed in leaving their footsteps on the moon, the steps may soon become a path—and the path a highway.

Still, there is more to valor than merely being first. For the Stoics, courage was every man's key to the province of the divine. From the Jewish defenders of Masada to the early Christian martyrs to the passive resisters Gandhi and Martin Luther King, the going was the goal—to be afraid was worse than death itself.

For lesser men, courage has often been a means to lesser ends. "Who gets wealth that puts not from the shore?" asked Poet Samuel Daniel in England's

expansive 16th century. "Danger hath honor; great designs their fame/ Glory doth follow, courage goes before." Daniel's poem was the mercantile ethic frozen in meter. In that spirit, the conquistadors braved terra incognita to bleed Montezuma of his gold; the slave traders kidnaped tribesmen from Africa. In that spirit empires were created—and the conflicts of colonialism that still haunt the world. The motives for these enterprises were not necessarily ignoble. Few men take risks for gain alone if glory does not follow, and most see in their glory a benefit to all mankind.

Whether used for good or ill, courage has never been in large supply in any society. Today's troubled feeling that it used to be far more common stems from the relatively recent West-



EXPLORER PEARY (1909)

ern belief that individualism equals virtue. The notion is contrary to the older (and Eastern) conviction that virtue lies in seeking balance with the community on earth and with the universe beyond. Especially in America, where individual courage once tamed the wilderness, pessimists now see an antlike mass society. There is no West to be wild in; the only terra incognita is under water. The plains are paved, farms are corporations, and, with too many of the young, dreams of adventure have been replaced by the haze of pot. Even in war, the brave man is not often truly alone with death. The team supports him, the group succors him. In the Philippine night, during World War II, Admiral Mitscher ordered an entire fleet to turn on its lights. The lives of 100,000 men were risked to let some 200 pilots see their way home. In Viet Nam, 50 planes suspended their air war for eight hours to try to rescue Major Jim Kasler, a popular ace who had gone down over North Viet Nam.

Yet a national character is like a ge-

netic one; it may die in the grandfather only to reappear in the face of a child. Seemingly, whenever America has been in crisis, courage has been reasserted. The quality has both old and new dimensions in the technological age. Man's restless probes into the unknown have not exhausted his chances of danger and courage; they have merely spurred him to probe further. The more he knows, the bigger his frontier, from the atom to space. In a day of committee decisions and anonymous heroes, he has changed his style—but not much else.

Despite the moon shot's vast supportive forces, the astronauts themselves are essentially loners. Before they take off, they have no guarantees of success, let alone survival. Airborne, they can be aided only so far. After that, like the very earliest adventurers, they are on their own. Out in space, the future confronts the past. If they are stranded, no Navy will light their way home, no friendly tribes will take them in.

#### Grace Under Pressure

Sometimes it seems as if the astronauts have been chosen by some secret P.R. quotient to project a wholesome, understated image. Bravery yes, but no heroics; little eccentricities yes, but no flamboyance. Their press conferences are small Seas of Tranquility. But, as with all other professional risk takers, the very absence of excitement suggests the presence of courage. In most valorous men there must be a diminution of the imaginative faculty. "Neither the sun nor death can be looked at steadily," wrote La Rochefoucauld. The talk of "fuel margins" and EVAS is, in part, a way of giving the eyes a rest. Moreover, each astronaut has the kind of test-pilot fatalism that calms—and deadens—the nerves. They need it. In the past, there were more imagined terrors to be dispelled. Today, the known dangers of failure, mechanical and human, are more numerous and harder to dismiss. The astronauts knew that if, on landing, the lunar module tilted more than 35°, they would be marooned on the moon. Each could remember that, with the best life insurance science could provide, three colleagues burned to death in a spaceship.

It is unimportant to dwell on why the astronauts have taken their risk. Undoubtedly, glory has something to do with it. So does sheer ego, plus the simpler notions of patriotism and unwillingness to let the team down. What is important is that individual valor can be preserved in a collective age. Hemingway once defined courage as "grace under pressure." In their balloon-shaped, ungainly suits, the Apollo 11 astronauts have demonstrated that man, despite his murderous and chaotic past, can still achieve a state of grace.

## NEWS COVERAGE

### Chronicling the Voyage

To parallel Apollo 11's trip to the moon, the *Niña*, the *Pinta* and the *Santa Maria* would have had to be accompanied by a fleet of dispatch boats filled with scientists, singers and scribes. Each day, one of the boats would have returned to Spain to report on the voyage, and the court would have been entertained by a new ballad about Columbus' exploits.

The TV-age equivalent was the special watch maintained by Frank Reynolds and Jules Bergman on ABC, Walter Cronkite and Wally Schirra on CBS, and Chet Huntley, David Brinkley and Frank McGee on NBC. The climax was reached when all three networks canceled their regular programs—CBS and NBC for 31 hours starting at 11 a.m. on Sunday, and ABC for 30 hours beginning at noon—to report, contemplate and analyze the space epic. To fill the hours the networks pulled out all the stops and scheduled an impressive array of names. ABC commissioned Duke Ellington to write and perform a piece of music, *Moon Maiden*. The network also 1) lined up Steve Allen to sit down at a piano and discourse on the moon and romance in popular music, 2) called together a panel of scientists and science-fiction writers including Rod Serling, Isaac Asimov, Frederik Pohl and John Pierce, 3) planned a four-part essay on movie sci-fi, featuring *Flash Gordon* and the Clay People, plus clips from *Destination Moon* and *2001: A Space Odyssey* and 4) taped James Dickey reading one of his space poems.

**Ultimate Values.** NBC's schedule during the rarefied race for the moon ratings included James Earl Jones and Van Heflin delivering dramatic readings and Rod McKuen reciting poetry. The network also promised discussions of

NBC NEWS



ASTRONAUT COLLINS IN SPACE  
Equivalent of a fleet for Columbus.



LUNAR CAMERA

Parts like the pupil of an eye.

the moon and its ultimate value by Authors Michael Crichton and James Simon Kunen, Critic Marya Mannes and Scientist Athelstan Spilhaus.

CBS called on Sir Bernard Lovell, director of the Jodrell Bank Experimental Station in England and one of the world's foremost authorities on astronomy, for a live interview feature. And while ABC might have 2001 film clips for its viewers, CBS planned to have 2001's author, Arthur Clarke, on hand, along with Sir Francis Chichester, Buster Crabbe (*Buck Rogers*) and Buckminster Fuller.

For their part in the moon special, the astronauts were scheduled to beam their live production back to earth via a signal sent through space to a receiving station in Parkes, Australia, from which point it was to be relayed on around the world. And the camera that did all this work? Not really very impressive looking: a 7.25-lb. miniaturized instrument that resembles an ordinary home-movie camera but operates on the same principle as its TV-studio big brother. It contains 250 components designed to operate in a vacuum and under extreme temperature conditions. Some of the parts are no larger than the pupil of an eye; others are as thin as a photo negative. Westinghouse designed the camera so that the astronauts, busy with important scientific experiments, would have a minimum of fussing to do once it was set up on a tripod on the lunar surface. Aside from switching from slow to fast scanning, no adjustments are necessary other than choosing between four fixed-focus lenses—a wide angle, a telephoto, a lens for lunar daylight and a lens for lunar nighttime.

To ward off the sun, which can skyrocket the temperature up to 240° F., the camera is equipped with a highly polished bottom and a top cover treated with heat-resistant paint. It operates on only 6.5 watts of power—less than that used by a household night light. Though it cost about \$400,000, the camera is as disposable as an aluminum beer can. Sad to say, this tough little minibrute was destined to be left behind on the surface of the moon.

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