



ASTRONAUT NEIL ARMSTRONG AT THE MODULAR EQUIPMENT STORAGE ASSEMBLY (MESA) OF THE LUNAR MODULE (LM). Location: Tranquility Base on the moon. Date: 7/20/1969. © CORBIS SYGMA

the bases all at the same time. I never could do it. So I understood the frustration that Neil and Buzz were having as they tried to center the BB on the PSEP. They were just about to give up and level the PSEP by “eyeball,” when the BB unexpectedly popped into place. The astronauts quickly deployed the solar panels, and the PSEP began transmitting data to scientists waiting on Earth.

The astronauts also set up the Solar Wind Composition experiment—the SWC. It was a white aluminum foil sheet, about one foot wide, hung from a pole in the sunlight. While the astronauts were on the moon, the SWC collected samples of the electrically charged particles emitted into space by the sun. The particles can’t be collected on the surface of the earth, because the earth’s magnetic field and atmosphere repels them. But when conditions are just right at the earth’s polar regions, the sun’s charged particles can sometimes reach down into the upper part of the earth’s atmosphere, causing auroras. I saw the aurora borealis once during a camping trip in northern Maine.⁴⁰

Houston: “Buzz, this is Houston. You’ve got about 10 minutes left now prior to commencing your EVA termination activities. Over.”

Aldrin: “Roger. I understand.”

Houston: “Tranquility Base, this is Houston. The passive seismic experiment has been uncaged and we’re observing short-period oscillations in it. Over.”⁴¹

In my time, space program technology is everywhere, but most people don’t know it. They don’t know that NASA technology is in the everyday things around them, like cordless drills and smoke detectors, and football helmets and virtual reality games. They never hear about how space technology made laser scalpels possible, or how space technology improved CAT scanners, magnetic resonance imagers, kidney dialysis machines, water filters, freeze-dried food, artificial heart pumps, air purifiers, sunglasses, artificial limbs, satellite radio, aircraft collision avoidance systems, optical sensor thermometers, land mine removal systems, and even golf

balls. There are 500 dimples on the longest-flying golf balls because of NASA research and engineering.⁴²

In 1962, President Kennedy predicted that the U.S. space program would unleash technical genius and enrich us all. He said: “The growth of our science and education will be enriched by new knowledge of our universe and environment, by new techniques of learning and mapping and observation, by new tools and computers for industry, medicine, the home as well as the school.”⁴³

President Kennedy’s prediction came true—and still, there are people who insist that man should solve all the problems on Earth before venturing further into space. Fix the planet, they say, before leaving it. But, isn’t America’s space program solving problems on Earth, and not distracting us from them? I think so, anyway.

“We cannot launch our planetary probes from a springboard of poverty, discrimination, or unrest,” Astronaut Michael Collins once said. “But neither can we wait until every terrestrial problem has been solved. Such logic 200 years ago would have prevented expansion westward past the Appalachian Mountains, for assuredly the eastern seaboard was beset by problems of great urgency then, as it is today.”⁴⁴

While thinking about these things, I threw my football as hard as I could toward the infinite black sky and imagined that it escaped the moon’s weak gravity. In my mind, I saw it whiz miles and miles and miles past Mars and Jupiter and the rings of Saturn, past Uranus and Neptune and Pluto, and, like a tiny Voyager spacecraft, leave the solar system entirely.⁴⁵

Voyager, when will man follow you?

It occurred to me that until the Picture Frame brought me to 1969, I had never seen a man stand on the surface of the moon. In my time, more than three decades after Neil Armstrong put his footprints on the lunar surface, manned space exploration of the moon and planets seems almost as improbable as it did when Sputnik crossed the night skies of 1957. I learned in school that it would take sixteen years for America to repeat the feat of Apollo 11, and perhaps twenty years beyond that to put a man on Mars. That’s if we ever decide to do it!⁴⁶

I noticed that the Apollo 11 astronauts were packing the last pieces of their equipment into the Lunar Module. They would be leaving soon. I approached them to say goodbye, but I was still thinking about the slow pace of space exploration in my own time. Buzz Aldrin seemed to know what I was thinking.

“The Apollo lesson is that national goals can be met where there is a strong enough will to do so,” he said.⁴⁷

We shook hands. Then, I watched the two astronauts climb the ladder to the Lunar Module, crawl inside, and close the door.

Aldrin: “Okay. The hatch is closed and latched, and verified secure.”⁴⁸

Stepping back from the Lunar Module, I noticed that the astronauts had left some things on the ground, next to the ladder. I think I saw a mission patch, some medals, and a small metal cylinder. I wasn’t able to take a closer look, because I had to get to a safe distance before the astronauts fired the Lunar Module’s engine to begin their ascent. And I forgot to go back and look after they blasted off, so I have always wondered what it was that they left behind.⁴⁹

Houston: “Columbia, Columbia, this is Houston, Over.”

Collins: “Roger, Columbia on Charlie. How do you read?”

Houston: “Roger, Columbia. This is Houston. Reading you loud and clear on OMNI Charlie. The crew of Tranquility Base is back inside their base, repressurized, and they’re in the process of doffing the PLSS’s. Everything went beautifully. Over.”

Collins: “Hallelujah.”⁵⁰

“Hallelujah,” I repeated.

It was not unusual to hear thanks being given to God by American astronauts in space. When Apollo 8 entered lunar orbit on Christmas Eve, 1968, Frank Borman, Jim Lovell, and William Anders did a live television broadcast during which they took turns reading from the book of Genesis. And shortly after Apollo 11 had touched down on the moon, astronaut Buzz Aldrin set a chalice of wine and some wafers on a fold-down table in the Lunar Module, and said: “This is the LM pilot speaking. I’d like to take this opportunity to ask every person listening in, whoever and wherever they may be, to pause for a moment and contemplate the events of the past few hours, and to give thanks in his or her own way.”⁵¹

In the vacuum of space, the Lunar Module’s engine fired without making a sound. I watched as the tiny spacecraft shot up from the surface of the moon and began its long journey back through the heavens, and toward home.⁵²

I waved goodbye.

The engine’s blast toppled the American flag, so I went over to stand it up. As I was doing that, I glanced over my shoulder and saw that the Picture Frame was no longer displaying my bedroom back home. Instead, a succession of images that I couldn’t quite make