

Lecture 18                      Apollo 14  
By Dr. Ed Mitchell; Apollo 14 astronaut

Born in 1930, Dr. Mitchell grew up on a ranch in NM. He attended Carnegie Mellon and graduated while the Korean War was going on; he already had a pilot's license when he joined the Navy. He was at sea when Sputnik flew in 1957. (He was a dedicated pacifist at this point, and strongly against nuclear weapons.) He came to work at MIT in 1961 in the Instrumentation Lab.

Crew Selection: the way it worked was, you were the backup crew for a flight, and then three flights later, you were the actual crew.

He was supposed to fly on Apollo 13; he was backup for Apollo 10. His crew ended up switching with Apollo 14's crew because their commander, Alan Shepard, needed more training time, after being off the crew rotation due to an inner ear problem.

Slide show of images: rocket launch, images of Earth from space; craters on the Moon; lunar lander.

Lunar lander's feet were shaped how they were because they knew there would be a soft dust on the surface, but they didn't know how deep it was, so broad foot pads were designed to prevent sinking.

First Apollo mission was to land, grab a handful of stuff, and come home; basically, it was to prove that we could do it.

Apollo 12's mission was to show we could land in a particular place.

Apollo 14's mission was to study Cone Crater – they were to collect ejecta from the impact in a geological survey of the crater, which is ~1000 ft across and ~750 ft deep.

For fun, they played golf and threw a javelin; things traveled further due to no air resistance.

From the spacecraft, you can see stars and nebulae much clearer and brighter than from the best vantage point on Earth. Really remarkable, especially when you realize that the molecules from your own body come from stars.

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Questions:

“Please say more about the landing.”

As they were landing, right over the landing site, the abort light came on. (This would send them back up towards the capsule). So Dr. Mitchell took his pen light out of his pocket and tapped the instrument panel, and the light went off! After awhile it came back on, he did it again, and it went back off. Ground control guessed that it was a loose ball in the switch; problem is, they couldn't land with that light on. Ground tried to figure out how to let them land manually while they made another orbit. They started coming down

over rugged terrain, where the landing radar was necessary, but it didn't switch on; Houston had cycled the circuit breaker. Once done, the radar started functioning, and they were right on their trajectory.

Would they have aborted if the radar hadn't come on? Well, they were already right on target; when they pitched over, they could see their landing site landmark – Cone Crater – right in front of them, so no.

“What's your perspective on whether or not we should go back to the Moon?”

We've barely scratched the surface of the Moon; we don't have a complete understanding, so we haven't done everything we could. Also, for the future generation of Solar System exploration and planetary colonization, we'll need to develop skill sets and knowledge close to home before setting out on more challenging targets that are farther away.

The political climate is not optimal for space exploration right now, but that doesn't mean we should stop thinking about it. Eventually, we *will* do it.

Also, humans should realize the possibility –the necessity – of a planetary society. We need to leave behind us our history of warring nation-states; we need to deal with climate change; etc.

“Could you talk about your experiences making a place in the astronaut environment?”

This wasn't really an issue; it was just like working at any company, really, with people who'd been there before you had, and in a short enough time we made our own mark. We were soon able to choose our own technical assignments, and proved our skills.