water exists there. The rocks and shallow cores brought back previously were absolutely waterless. Finding water on the moon would be a boon to lunar exploration. Future astronauts and moon colonizers could tap local sources for drinking and other purposes, instead of bringing water from earth.

Astronaut Mitchell is to lay out on the moon 94.5 meters of cable that will be hooked up to three vibration-detecting geophones. Then he will walk alongside the cable and, from a device called a "thumper," fire 21 cartridges (with the force of a pistol shot) into the moon every 4.6 meters.

The "thumper" is a short tube with a firing mechanism at the upper end and a hollow cylinder at the lower end. In the cylinder is a plate that Mitchell will press against the moon as he fires the cartridges, transmitting the force of the explosion to the lunar surface. This creates seismic waves whose reverberations will be picked up by the geophone and radioed to earth for analysis.

The strength and speed and other characteristics of the seismic signals bounced from as deep as 457 meters will be studied to determine whether the moon is layered like an onion (as earth is) or is homogeneous to its core.

This information, in turn, will suggest whether the moon had a hot molten core from its earliest beginnings (like earth) or whether the moon cooled rather quickly shortly after it was formed.

The question of a hot or cold moon is central to understanding the genesis and history of earth and the other planets of the solar system.

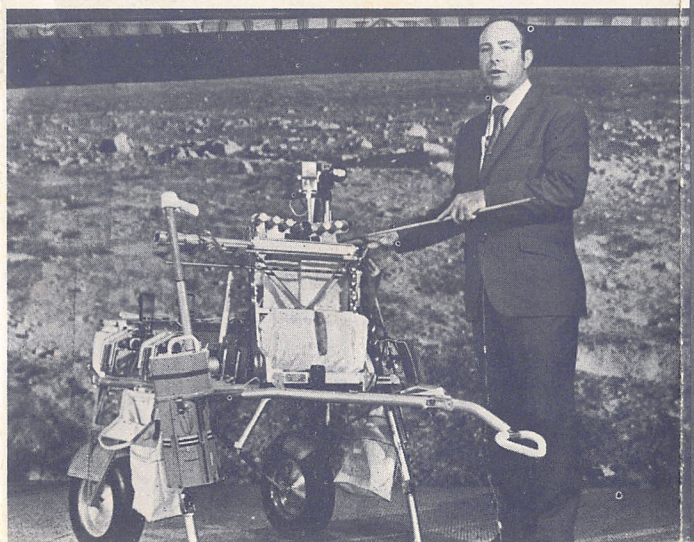
THE APOLLO-14 CREW

ALAN SHEPARD was America's first man in space. Almost 10 years ago, on May 5, 1961, Shepard was catapulted by a small Redstone rocket on a 25-minute suborbital trip. He then became America's almost forgotten astronaut, grounded by a troubling inner ear condition. He had stayed in the astronaut corps to help train the younger, newer astronauts, some of whom became heroes, while his comrades in the original pool of seven Mercury astronauts left the program one by one. Then, on his own, Shepard underwent surgery about 18 months ago to correct the minor ear problem which space doctors feared might adversely affect his balance during spaceflight. Shortly afterward, the 47-year-old veteran was named to head the prime crew of Apollo-14.

EDGAR MITCHELL, 40, was on the Apollo-9 support team and was lunar module pilot on the Apollo-10 backup team. A Commander in the U.S. Navy, he will pilot the lunar module for the Apollo-14 mission. Like Roosa, Mitchell is a space rookie and, again like Roosa, was one of 19 astronauts selected by the National Aeronautics and Space Administration in April 1966.

STUART ROOSA, 37, will be pilot of the command module for Apollo-14, orbiting the moon while his fellow crewmen set down on the lunar surface. A Major in the U.S. Air Force, he graduated from the Air Force Aerospace Research Pilot School in 1965, and was assigned as an experimental test pilot prior to his selection as an astronaut in 1966.

MOON CART, designed to carry 32 kilograms of equipment, is described for newsmen by astronaut Mitchell.

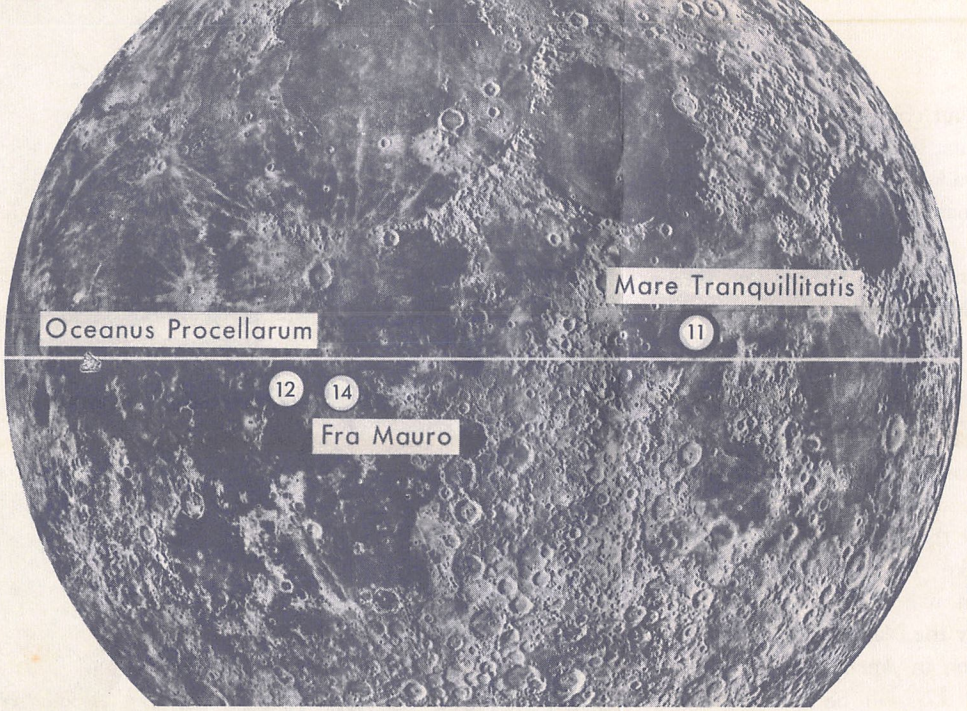


UNITED STATES INFORMATION SERVICE

71-223(2)

ON TO THE LUNAR HILLS

Rugged upland terrain near the moon's Fra Mauro crater is the site for the next lunar exploration by American astronauts.



HIGHLANDS near Fra Mauro crater just below the lunar equator is the landing target for Apollo-14. It will be man's first visit to the scientifically-intriguing mountains of the moon. Apollo-11 and Apollo-12 astronauts visited two of the moon's *maria* or plains in 1969.

Early in 1971, another spidery American spacecraft bearing two astronauts is scheduled to land on the moon. The site this time will be the hummocky, jumbled Fra Mauro formation—the most scientifically intriguing area of the moon yet to be visited by men. If all goes well, Apollo-14 astronauts Alan Shepard, Stuart Roosa and Edgar Mitchell will begin their trip to the moon from Cape Kennedy, Florida, on January 31.

Fra Mauro is the same site denied to Apollo-13 astronauts last April. An explosion that cut power in their command ship forced them to return to earth, using their lunar landing ship as a "lifeboat." The aborted mission followed two successful expeditions to the moon by Apollo-11 in July 1969, and Apollo-12 in November 1969.

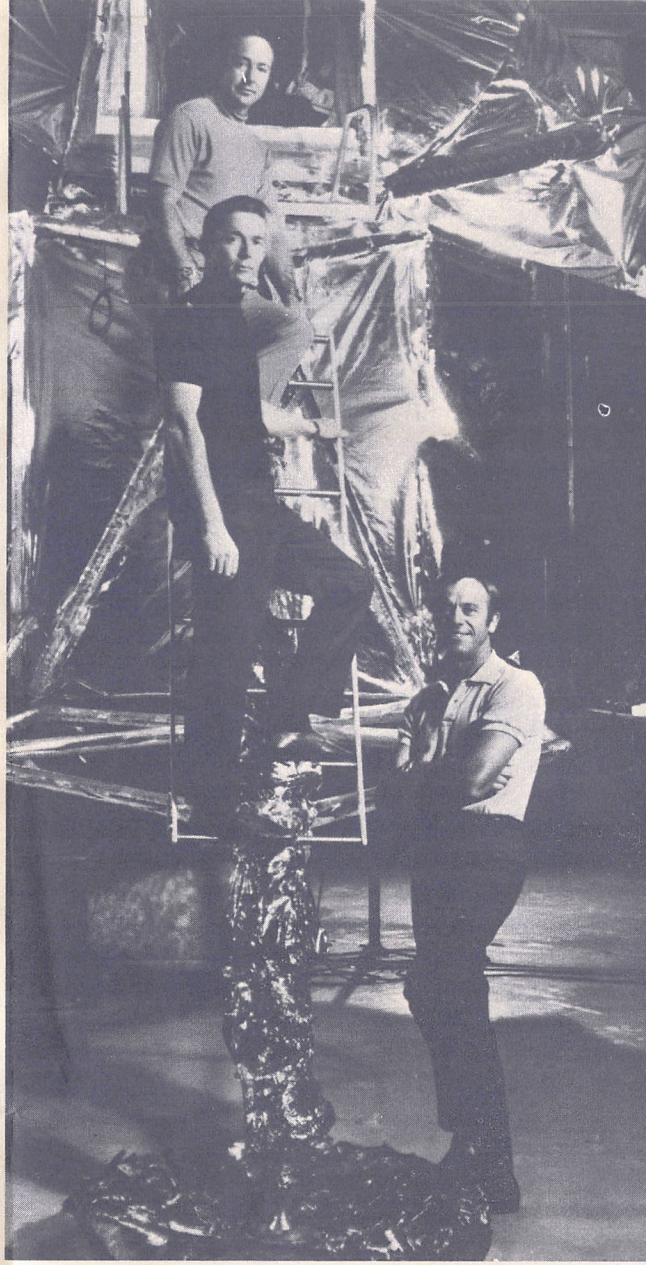
Since the Apollo-13 emergency, the command ship and service module have been made safer and more fireproof with nonflammable materials and rewiring. An extra oxygen tank has been added to the two aboard the service module and more chemical batteries installed in the command ship to provide more breathing air and electric power in the event of another emergency.

Scientists hope a landing in the rugged Fra Mauro region will turn up moon rocks older than the presently accepted age of the moon. The hope is based on the theory that the site represents material thrown out of the Imbrium Basin to the North during the earliest history of the moon, perhaps by a cataclysmic collision of a smaller moon with a bigger moon that formed the moon we know today.

Lunar geologists say Fra Mauro samples may be older than 4,600 million years, the age of the oldest rock so far collected on the moon and the generally accepted age of the earth-moon system.

Mission commander Shepard and Mitchell are to make two five-hour excursions outside the lunar lander. Besides gathering rock samples, they will make the first experiment that could provide clues to the presence or absence of water locked in rocks deep below the lunar surface.

So far there is not a shred of evidence that



APOLLO-14 commander Alan Shepard stands at the base of a lunar module at the Kennedy Space Center in Florida. With him are fellow crewmen Stewart Roosa (center), command module pilot, and Edgar Mitchell, lunar module pilot. The backup crew for the mission consists of Eugene Cernan, commander, Ronald Evans, command module pilot, and Joe Engle, lunar module pilot.