



*Watching the TV monitors in the Space Flight Operations Facility at JPL while Ranger IX transmits "live" pictures from the moon — Harold C. Urey, of the University of California at La Jolla; Ewen A. Whitaker, of the Lunar and Planetary Laboratory, University of Arizona; Eugene Shoemaker, U.S. Geological Survey at Flagstaff.*

## RANGER IX — HAPPY ENDING

The successful flight of Ranger IX ended at 6:08 a.m. (Pacific Standard Time) on March 24 when the spacecraft, traveling at 5,977 miles an hour, crashed in the Alphonsus crater near the center of the moon, after sending back more than 6,000 photographs of the lunar surface.

From its launching at Cape Kennedy, Florida, Ranger IX covered a distance of 259,143 miles in 64 hours, 31 minutes and 12 seconds. The point of impact on the moon was only four miles from the original selected aiming point.

The 6,000 photographs obtained by Ranger IX were taken in the last 18 minutes of flight. In the final minutes Ranger's two TV cameras televised the approach to the moon to home television sets throughout North America. About 100 television pictures were flashed on home screens at five-second intervals, until a few seconds before impact, when the spacecraft was about 4,000 feet above the moon.

Caltech's Jet Propulsion Laboratory hopes to be

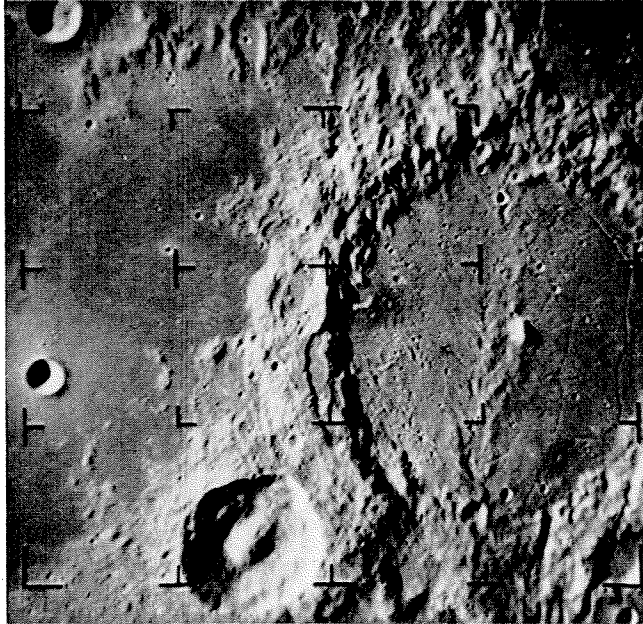
able to repeat this spectacular feat by providing home viewers with surface pictures of Mars, transmitted by the Mariner spacecraft as it approaches the planet in July.

The five-year Ranger program, conducted by JPL for the National Aeronautics and Space Administration, comes to an end with the successful flight of Ranger IX.

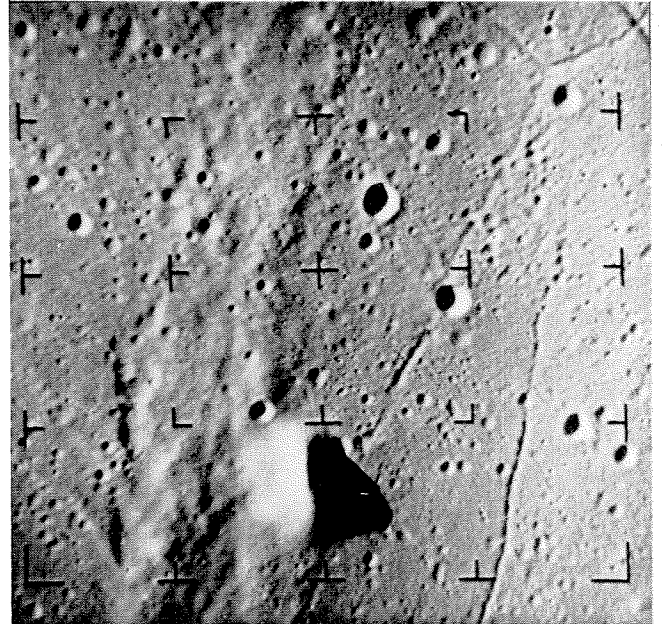
"The purpose of the Ranger program," says Dr. William H. Pickering, director of JPL, "was to get details of the moon and learn of possible landing sites. We have successfully achieved this."

This third and final success in taking close-up pictures of the moon sets the stage for the flight of the Surveyor, which will approach the moon at more than 6,000 miles an hour, then slow down to about 1 mile an hour to make a "soft" landing. Controlled by radio from the earth, Surveyor will then swing its television cameras around to photograph the nearby lunar landscape.

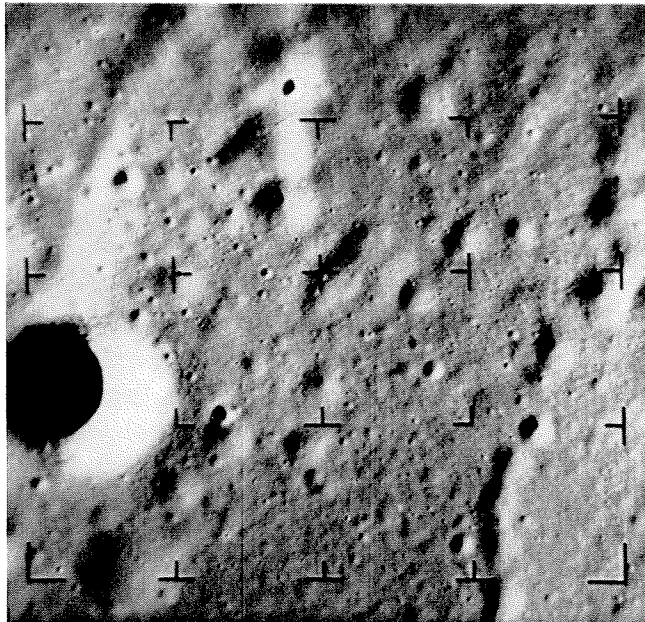
# The moon — as seen from Ranger IX



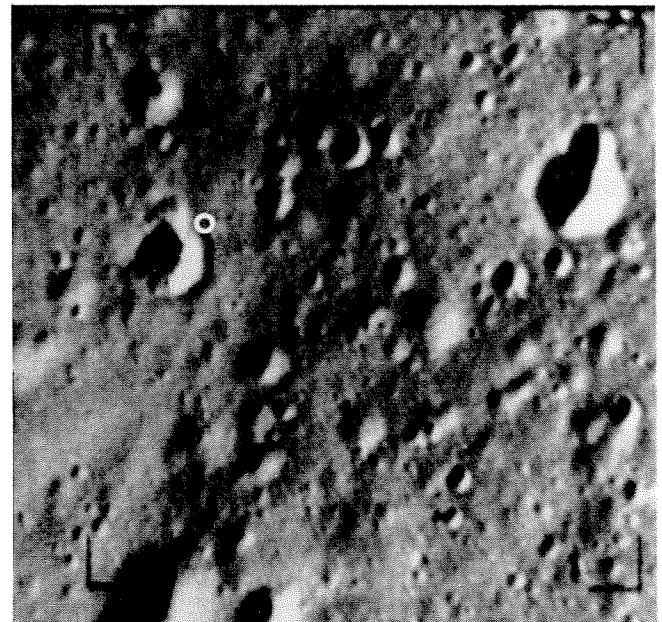
Television picture taken by one of Ranger IX's full-scan cameras (camera A) just 2 minutes and 50 seconds before impact. The spacecraft is 258 miles above the moon, heading for the crater Alphonsus, which fills the right half of the picture.



Picture taken 38.8 seconds before impact, when Ranger IX was 58 miles above the moon. The area shown here is 28 miles by 26 miles and is in the region of the central peak of Alphonsus, which has a rille or groove running through its shadow toward the upper right.



Picture taken 8.09 seconds before impact. Ranger IX is 12.2 miles above the moon. The area shown is 5.8 miles by 5.3 miles. The large crater seen at the left of the photograph is 1.6 miles across and is situated on the shallow rille running upward.



Last picture taken by partial-scan camera P-3, just about  $\frac{1}{4}$  second before impact. The capital "O" marks the impact point. The area shown in this final picture is about 240 feet on a side and lunar features can be seen with a resolution of up to 1.6 feet.