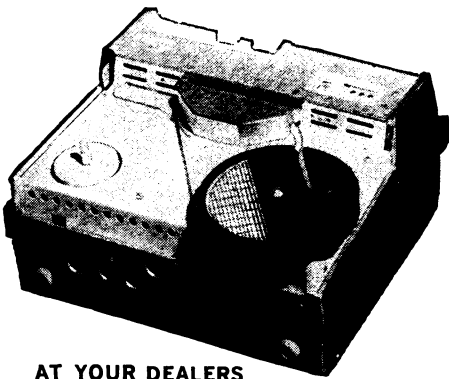




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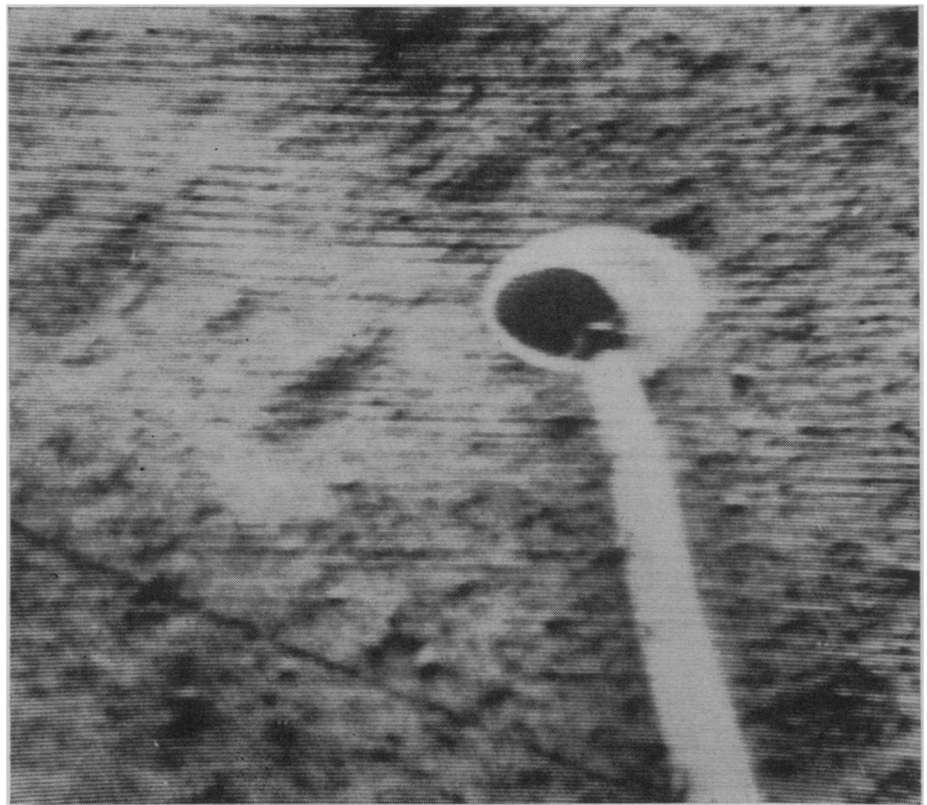
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UPI

ANTENNA—Surveyor sent back this picture of its own antenna during the first 600-line television transmission from the moon. This photograph was taken from a television monitor at the Jet Propulsion Laboratory, Pasadena, Calif.

### MEDICINE

## Drugs Help Leukemics

► TWENTY-EIGHT children with acute leukemia treated intermittently with huge doses of four anticancer drugs have remained alive up to 30 months after the start of therapy, the American Association for Cancer Research meeting in Denver was told.

Vincristine, prednisolone, 6-mercaptopurine and methotrexate were given on a three-stage 15-month schedule in the highest tolerated doses, Dr. Edward S. Henderson of the National Cancer Institute, Bethesda, Md., reported. Frequent transfusions of blood platelets were given to prevent hemorrhaging.

Thirty-five children with acute lymphocytic leukemia were treated, and 32 of them achieved a complete remission, or disappearance of all evidence of the disease within the first 22 days. The projected median duration of the original remission for all 35 children was more than 15 months, twice as long as that achieved in two previous studies at the institute when drug combinations were used for a shorter time.

Additions to efforts to demonstrate a virus-human leukemia link were reported by two scientists from Roswell Park Memorial Institute, New York

State's cancer research and treatment center in Buffalo.

Drs. David S. Yohn and James T. Grace Jr., used the immunofluorescence technique in a search for specific foreign proteins, or antigens, in white blood cells from leukemia patients.

The theory is that if a virus enters a white blood cell and causes leukemia, it will also cause the production of a new antigen in the cell that is not present in a normal uninfected cell.

The investigators were able through the appearance of a fluorescent green color to demonstrate a specific reaction between antibodies in rabbits and a material in the circulating white blood cells of more than 20% of acutely ill myelocytic leukemia patients.

However, whether a virus plays even an indirect role in increasing the concentrations of reacting material in leukemia patients is not yet known, the researchers said.

Dr. George E. Moore, director of the institute, reported on the culture of human leukemia cells outside the human body, making possible tests to determine the behavior of such cells.

• Science News, 89:456 June 11, 1966

SPACE

# Soft Moon Landing Successful

By Jonathan Eberhardt

See Front Cover

➤ **AFTER** the greatest series of delays in the history of the U.S. space program, the spidery Surveyor spacecraft more than made up for its transgressions by settling softly on the moon and proving the fact with pictures beamed to earth.

As jubilant scientists watched, a continuous stream of electronic impulses from Surveyor were received at the National Aeronautics and Space Administration's Jet Propulsion Laboratory in Pasadena, Calif., via the huge antenna at JPL's Goldstone Tracking Station in the Mojave Desert.

Surveyor touched down on June 1 at 11:17.37 p.m. (PDT) in an area called the Sea of Storms, on the west side of the moon just below its equator. Its journey had taken it just 2,462 miles less than a quarter of a million miles.

By 1:00 a.m., the first 13 pictures had been received. Two hours later, the push of a button sent a series of computerized instructions to the spacecraft, ordering it to deploy its high-gain antenna, switching the scan rate of the TV camera from 200 to a clearer 600 lines.

Heated arguments about the nature of the lunar surface had not been resolved by the Russian Luna 9, which soft-landed on the moon last Feb. 3 after five unsuccessful attempts, so the pictures were anxiously awaited. The very first photo showed one of Surveyor's legs on its crumpled pod, neither buried in the lunar surface nor covered by dust. "It's hard," was the conclusion.

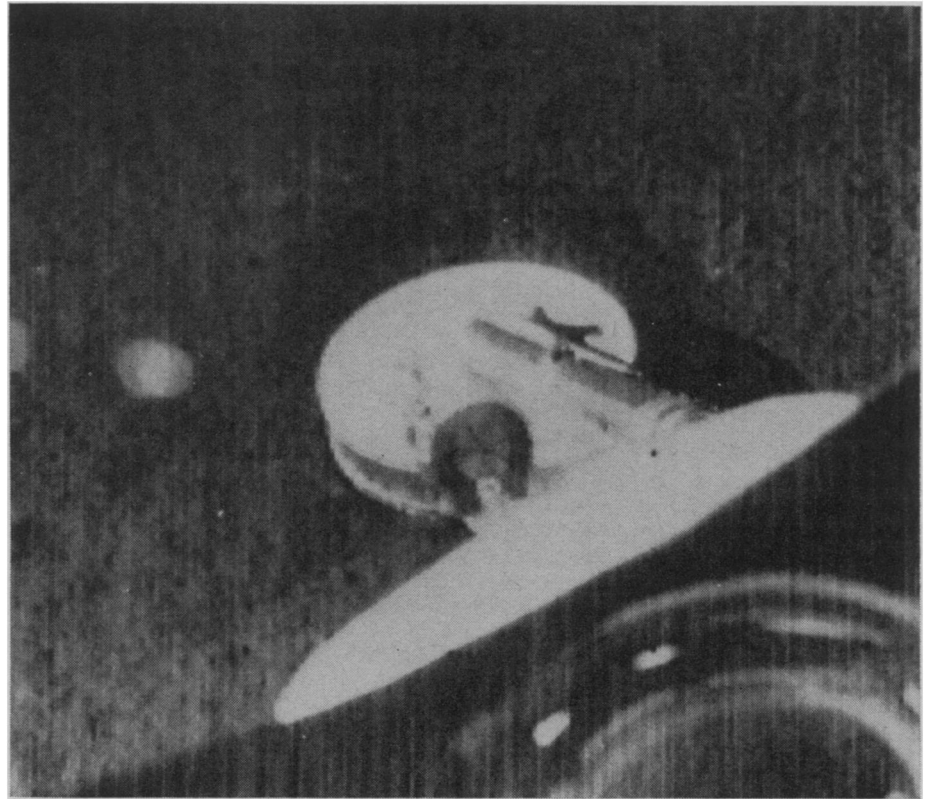
Rocks only inches across, as well as "mounds" and pits in the ground, were visible in early photos. The front cover shows a moon rock six inches high and twelve inches long. Bright spots are reflections of the sun.

More important than the photos, however, is the fact that Surveyor got to the moon "alive." The first applied use of retro-rockets by the U.S. demonstrates a technique without which men could never land on the moon. Surveyor's braking rockets were triggered automatically by radar bounced off the lunar surface and back to the craft.

The man-carrying Apollo spaceship will have human hands (aided by several million dollars worth of computers) at the controls.

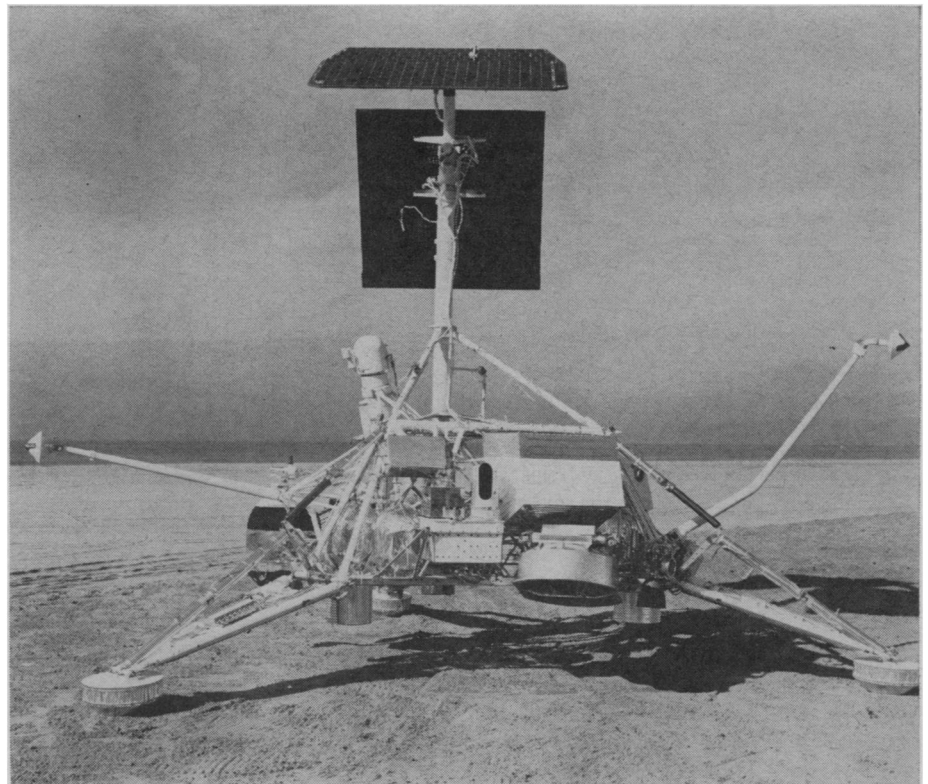
(Cover photograph by UPI telephoto.)

• Science News, 89:457 June 11, 1966



UPI

**HEAVY FOOT**—Surveyor's number two landing foot caused a depression, the dark area just above it, when it hit the moon. The photograph, made on a 200-line-scan television camera, shows bright spots (left) that are reflections of the sun and dark rings (lower right) that are reflections of the TV tube as seen in camera mirror.



Hughes Aircraft

**HERE IS SURVEYOR**—An exact counterpart of this Surveyor spacecraft, built by Hughes Aircraft Company, Culver City, Calif., landed softly on the moon. The television camera that radioed photographs of the moon's surface back to earth is housed in the white turret to the left of the mast.