

SPACE

Soviet TV Lands on Moon

The successful soft landing of the Soviet's Luna 9 on the moon on Feb. 3 was the first of many such touchdowns to come, with man eventually following the unmanned craft.

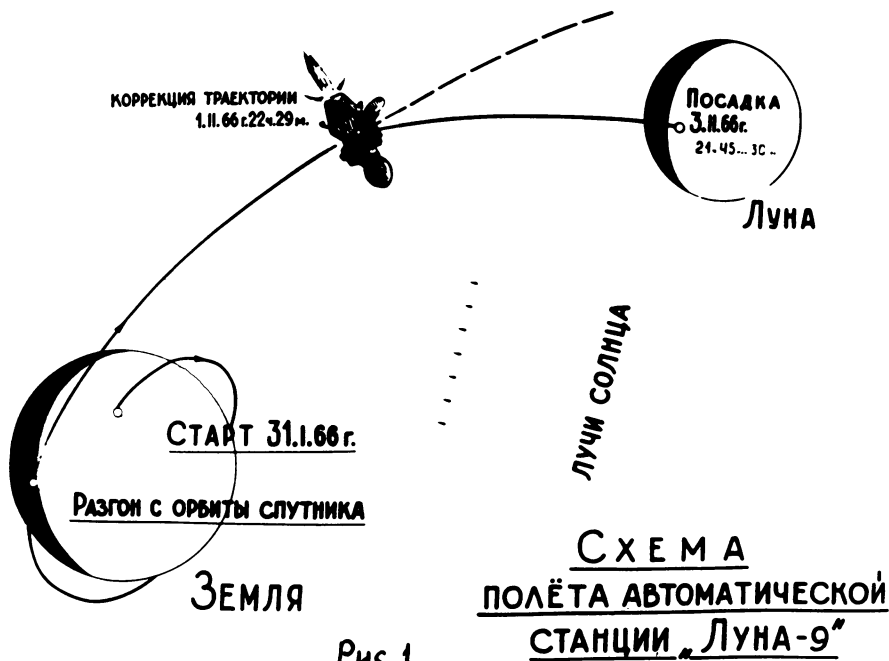


Рис. 1

Novosti

PATH OF LUNA 9—Diagram shows the flight of spacecraft Luna 9 to the moon at upper right.

See Front Cover

➤ THE FIRST SPACECRAFT to land on the moon without demolishing itself in the process did so on Feb. 3. The Soviet Union sent it, and it proved its feat by sending back photographs of the lunar surface in which objects the thickness of a dime were visible.

Soft landing is an absolute necessity if men are ever to set foot on the moon. The Soviet vehicle that finally reached the moon successfully is called Luna 9. It landed on the moon in a rocky plain called the "Ocean of Storms," where it opened up like the petals of a flower.

Perched atop the spacecraft, only two feet above the surface, was a television camera which produced the most exciting pictures of the moon since those made by Ranger 9 which crashed on the lunar surface last March. Seen on this week's front cover is a close-up of the moon's surface as televised by Luna 9.

Despite their success, however, Soviet scientists said that this did not mean they were going to send a man to the moon in the immediate future. In fact, there were indications that a dog or cat might go first.

Luna 9 weighed 3,482 pounds but the part that actually soft landed weighed only

Moon Crash Timetable

➤ EVEN THOUGH no human being has yet set foot on the moon, it is becoming quite littered with the fruit of the space age. In the past seven years, ten spacecraft have crashed into the surface.

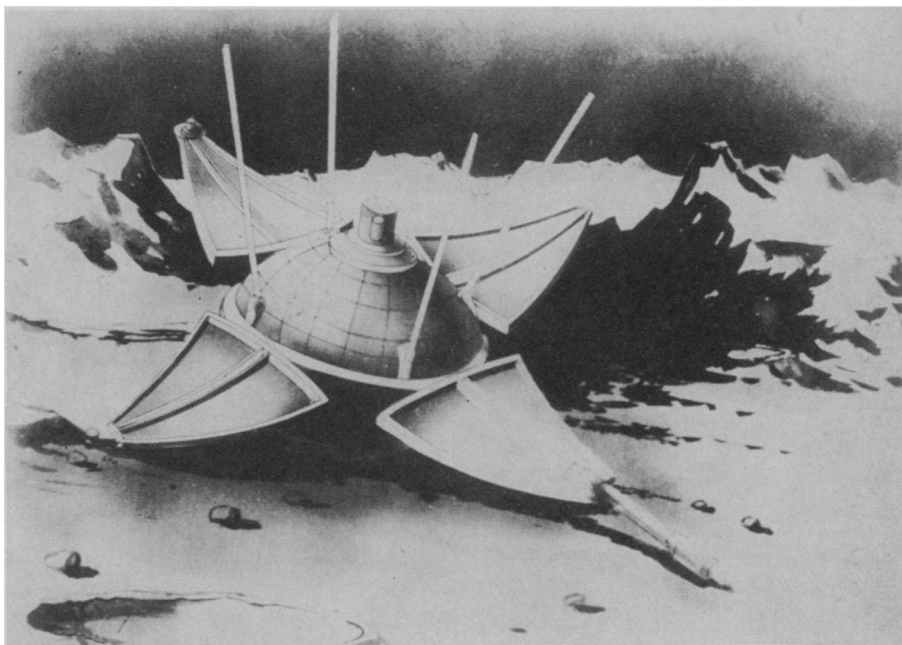
The first one was Russian, although the United States had been unsuccessfully trying to shoot things at the moon for more than a year previously.

Of the next five, all U.S. Ranger moon cameras, only the final three worked. In fact, they worked so well that some scientists said that the last one was an unnecessary waste of money.

Here is a list:

- Sept. 13, 1959..... Luna 2
- April 23, 1962..... Ranger 4
- Feb. 2, 1964..... Ranger 6
- July 31, 1964..... Ranger 7
- Feb. 20, 1965..... Ranger 8
- March 24, 1965..... Ranger 9
- May 12, 1965..... Luna 5
- Oct. 8, 1965..... Luna 7
- Dec. 7, 1965..... Luna 8
- Feb. 3, 1966..... Luna 9

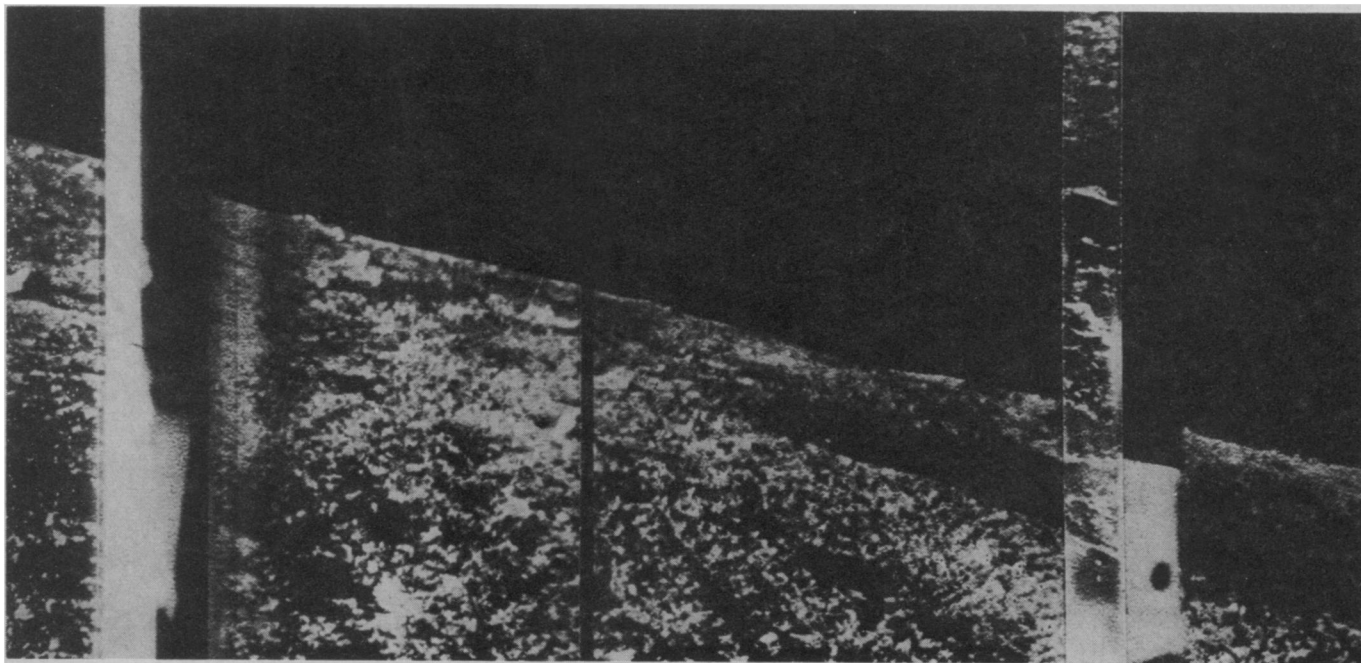
• Science News Letter, 89:115 February 19, 1966



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SOFT LANDING—Artist's concept of spacecraft Luna 9 shows the vehicle after soft landing on the Moon.





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DUST OR ROCK?—*The surface of the moon as televised by Luna 9 appears rough and irregular with no noticeable traces of dust. The vertical band at the left of the picture is an antenna on the spacecraft and the one at the right is its two-blade mirror showing reflections of the moon's surface. The horizon is about one mile distant. To the right is an especially large depression several meters long. Since there is no atmosphere surrounding the moon, the sky appears black.*

220 pounds, compared to the 2,200-pound weight of the upcoming U.S. Surveyor vehicles. The weight of anything that soft lands on the moon is a matter of prime concern, since the load-bearing strength of the surface must be known before a 16-ton vehicle of astronauts is set down safely.

Both the unmanned Surveyor spacecraft and the two-man Lunar Excursion module (LEM) of Project Apollo will definitely be able to land safely on the moon without breaking through the crust or sinking down out of sight in a layer of dust, some scientists now believe.

The photos from Luna 9 have not changed anyone's mind about the nature of the lunar surface, so the data accumulated from pictures taken by the last three Ranger spacecraft still apply.

Dr. Gerard P. Kuiper, director of the University of Arizona's Lunar and Planetary Laboratory, Tucson, computed on the basis of the Ranger photos that the moon will support about 2,000 pounds per square foot. This means that a Surveyor's three round "feet," carrying a total load of some 2,450 pounds (including instruments), would each have to be a minimum of 8.65 inches in diameter.

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Moon Theories Same

➤ **WHATEVER** the composition of the moon's surface, the scientists who are convinced it is dust still believe so, while those who are sure it is the result of lava flows have also not changed their minds

as a result of the magnificent close-up pictures transmitted to earth by the Russian moon station, Luna 9.

A third view is that the lunar surface is formed of ash flow.

The photographs show that the moon-scape is covered seemingly with a somewhat porous material pockmarked with small pits and scattered with oddly shaped rocks. One scientist likened its appearance to that of a sandy beach following a sudden, brief rainstorm.

The Soviets reported that during the transmissions the camera was slanted toward the horizon. The photographs allowed resolving details close to the camera on the order of one or two millimeters.

The Soviets said that Luna 9 was equipped with automatic antennas that opened only after the spacecraft had landed.

The transmissions from Luna 9 were picked up by British scientists using the huge radio telescope at Jodrell Bank.

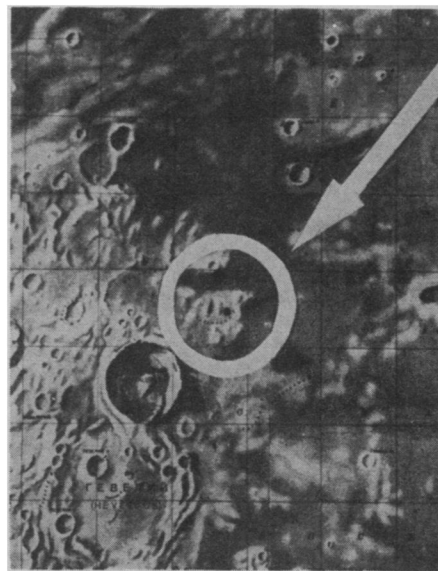
One of the foremost proponents of the lunar dust theory, Dr. Thomas Gold, director of the Center for Radiophysics and Space Research at Cornell University told SCIENCE SERVICE that it was "absolute nonsense" to say that the surface could not be dusty on the basis of appearances.

Because the lunar surface material is in a vacuum, it might well look quite different from earthly dust. Scientists should not have any preconceived notions of what lunar dust looks like.

Dr. Gerard P. Kuiper believes that the surface of the Ocean of Storms was formed by lava flow during ancient volcanic activity.

Dr. John O'Keefe of the National Aeronautics and Space Administration's Goddard Space Flight Center, Greenbelt, Md., told SCIENCE SERVICE that he thought the lunar surface resulted from the flow of ash-like material. This would account for the apparent lack of sharp rims on the crater.

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LUNA 9 LANDING—*The Soviet automatic research station, Luna 9, landed on the Ocean of Storms near the moon's equator, the area circled in white.*