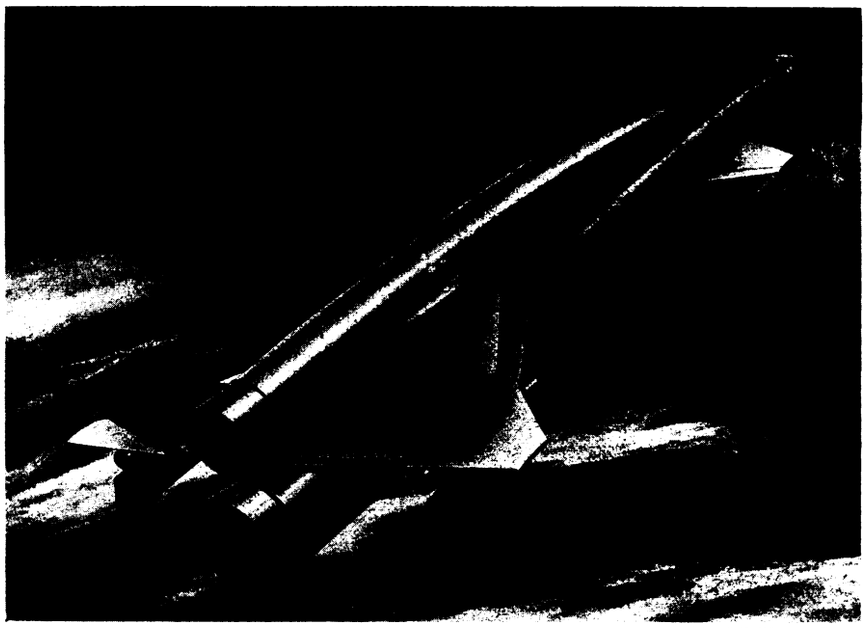

Lockheed-California Co.

ROCKET SHUTTLE (1975)—Two-stage vehicle carries ten passengers plus crew toward an orbiting space station in this concept by an artist at Lockheed-California Company, Burbank.

SPACE

Lunar Surface Debated

➤ THE QUESTION of whether man can land on the moon is still unanswered.

In spite of the 4,316 beautifully clear photographs from Ranger, scientists cannot tell whether the "seas" on the moon's surface are deep in dust or are lava flows from once-active volcanoes.

Each of these two views is firmly held by some lunar experts. Other scientists have in-between views.

However, all agree on one thing: the weight that can be supported on the lunar surface will not be known until a "soft" landing is made and measurements taken. That experiment is scheduled for 1967 by the United States with the Surveyor series of lunar probes.

In Science, 145:1046, 1964, Dr. Thomas Gold of Cornell University's Center for Radiophysics and Space Research reported his conclusions from studying the high-quality lunar photographs from Ranger 7. He finds no evidence for lava flows.

On the other hand, Dr. Gerard P. Kuiper, director of the University of Arizona's lunar and planetary instruments section, is convinced the seas, or maria, result from lava flows. His conclusion was based originally on photographs made with earth telescopes, then confirmed by the detailed Ranger pictures.

Drs. Gold and Kuiper do agree that the craters have been eroded, giving them soft edges. However, the amount of dust resulting from this erosion is in dispute.

Dr. Gold believes the dust layer is at least several yards thick, although some has probably cemented at greater depths.

He concluded, "Without any clear signs of firm rock, the pictures must lead to more concern about sinkage on impact or dust blowing in rocket exhausts in future operations on the lunar surface."

The area of the moon where Ranger 7 hit was officially named Mare Cognitum by the International Astronomical Union at its meeting in Hamburg, Germany.

• Science News Letter, 86:191 Sept. 19, 1964

SPACE

Rocket Fares to Be High For Space Passengers

➤ PASSENGERS traveling to a space station 300 miles above the earth by 1980 will have a speedy but expensive trip.

The ride in a two-stage rocket plane, which is now being studied for carrying ten passengers and a two-man crew to and from a space station, could cost a traveler an estimated $11,700 for a round trip ticket.

Such a vehicle could become operational by 1975, if a program were begun by 1967, reported Lockheed-California Company engineers who made the initial study in Burbank, Calif.

The passenger rocket, which would be 168 feet long and weigh nearly one million pounds at launching, would travel at 18,000 miles per hour.

Both stages would be powered by hydrogen high pressure engines.

The estimated $11,700 round trip fare would apply only after the passenger system has been operating for several years, engineers said. This fare would not cover the original research and development costs which would raise the per passenger rate to $49,500.

• Science News Letter, 86:191 Sept. 19, 1964

CYBERNETICS

Computer Predicts Space Budgets for Taxpayers

➤ TAXPAYERS can now know in a matter of seconds how much money a particular space program is going to cost them. A computer method has been developed that will predict total costs of current and future launch booster systems.

The computer, which can save up to 500 man hours for each project, will even tell how much effect program delays will have on the space budgets. It was built by the Lockheed-California Company, Burbank, for the National Aeronautics and Space Administration.

• Science News Letter, 86:191 Sept. 19, 1964