RADIO ASTRONOMY

Raise Space 'Mileage'

Greater cooperation between scientists who design spacecraft and those who decide which experiments will be aboard has been urged

➤ THE UNITED STATES could get a lot more "mileage" from its deep space and planetary probes with little, if any, added weight, if planners would consult radio astronomers long before the vehicles are hurled into space.

What scientists call "bistatic radar astronomy" is a key to learning about the make-up of interplanetary space and planetary atmospheres, Dr. Von R. Eshleman of Stanford University told the International Scientific Radio Union meeting in Washington, D.C.

Dr. Eshleman called for more communication, cooperation and interplay between those concerned with the design and communications of spacecraft and those who decide what scientific experiments will be aboard.

As an example of what can be accomplished with cooperation, Dr. Eshleman cited the outstanding success of the Mariner IV mission in using telemetry signals to learn that the Martian atmosphere has a pressure only one percent that of earth's.

This experiment, essential to planning for an unmanned Mars landing, was finally put aboard Mariner IV only four months before launch, although the idea of using the lens-like effect of the Martian atmosphere on radio waves to learn about its atmospheric structure had been suggested more than two years before the launch.

Two of the three moon probes scheduled for launch this summer—the Lunar Orbiter and AIMP, for Anchored Interplanetary Monitoring Platform—will use bistatic radar for studies of the lunar surface. Bistatic radar consists of sending a radar beam from an earth-bound antenna to the object being studied, then catching the return beam at another, far-distant antenna.

In the case of the moon and planets, the receiving antenna is located on the orbiting vehicle. The information contained in the reflected radar waves it receives is coded and telemetered to earth.

Dr. Eshleman reported that bistatic radar could be used to draw two-dimensional maps of the surface of Venus, which is now believed to have several mountainous areas. He also said that a space probe transmitting radio signals to earth from behind the sun could be used to make another check on Einstein's general theory of relativity.

• *Science News, 89:366 May 14, 1966*

TECHNOLOGY

TV Will Help Explore Space Communications

➤ TELEVISION programs will be beamed to and from orbiting spacecraft as part of a program to explore satellite stabilization and space communication techniques.

A taped telecast, transmitted to and from a simulated satellite by means of a 40-foot diameter dish antenna which is part of a transportable ground station undergoing final tests demonstrated how this will work. The station will be used by the National Aeronautics and Space Administration.

The ground station can perform automatic radio tracking; transmission and reception of multiplex telephone, television and wideband data.

The 40-foot antenna is capable of tracking medium altitude satellites at 6,000 miles and synchronous satellites at 22,300 miles with an accuracy of 15/1000ths of a degree.

• *Science News, 89:366 May 14, 1966*