

Draft Resolution -- Planetary and Interplanetary Committee

June 1, 1961

The culmination of the exploration of space would be the free traversal of interplanetary space, and the detailed scrutiny of planetary surfaces by man. Many aspects of this exploration can be done economically and expeditiously by scientific instruments which are an extension into space of man's eyes, ears, and hands. Indeed, the most telling measurements of the interplanetary "weather" and the planetary "terrain" require sophisticated aids to man's senses. These can also serve man at the end of a long tether, the communication link to interpretive man at the receiving station.

The scientific examination of the solar system is one of the principal challenges to our contemporary culture. We can predict that it will shed new light on the evolution of the universe, the cosmic distribution of life, the impact of the solar cycle on terrestrial phenomena. This study is also an essential basis for manned travel in the solar system.

The program for planetary investigation as now constructed is a marginally sufficient exploitation of our opportunities. We are bound to a rigid time table in planetary study--trips to Venus are feasible only about once every 18 months, to Mars about 2 years. Our next chance for Mars would have been December 1962; for lack of sufficiently energetic planning and support, we will doubtless miss this boat, as we did in 1960. But there were valid questions of vehicle and instrument capability; perhaps, too, we had not yet lived long enough in the space age to appreciate the realistic possibilities. This must not happen again in 1964, or we will be totally unprepared for the opportunities and demands in the later 1960's.

Mariner A, Venus 1962, is now very well conceived as an expedition with two vehicles to reinforce one another's measurements if both succeed, and to provide some assurance against mechanical failure. The same philosophy should be applied to Mariner B, Mars 1964, which is now a single vehicle with a drop capsule to the surface. It would be highly profitable to expand this into a two or three vehicle expedition. This would allow for (1) mechanical failure, (2) greater versatility in experimental plans, (3) mutual reinforcement of communications capacity (4) simultaneous study of several points in the vicinity of Mars and on its surface, (5) perhaps most important, extend the communications lifetime of the first drop sondes, now limited by the retreat of the flyby.

The replicate missions have additional values in the interplanetary study. The firings are phased so that the vehicles will be spaced to some extent along their orbits, finally converging on Mars. They will therefore give the opportunity for synoptic interplanetary measurements at several points.

The 1964 missions are perhaps the earliest ones that can be effectively boosted

by vigorous action at this time. An expanded interplanetary program is essential for the systematic exploration of space. These expeditions are the first step in a sound and aggressive program. If we do not exploit these opportunities that time gives us, we risk having to program later flights in the absence of some of the most elementary scientific data.

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