

September of 1975 through November of 1979 for a Mars mission. In the case of Venus, they run from June of 1975 to April of 1980. Those are the launch dates. They will come back a year or 2 years later depending upon the mission program.

One of the most interesting missions is a Venus-Mars-Venus flyby in February 1977. That permits you in some 700 days to fly out past Venus, go around Mars, fly back past Venus and then return to the Earth. The time is very comparable to that of the other flight times; the reentry velocity is low as is our projection velocity and it is an interesting case of billiards in space.

Mr. Gray informs me this is a unique event. It won't happen again in this century.

Mr. FULTON. Wouldn't it be interesting to pick up a piece of this asteroid, Icarus, that is expected to come within 4 million miles of the earth and compare it to whatever landed in Arizona, I understand that its size is estimated at between several kilometers and several miles and that its orbit will be between one-fifth of an astronomical unit (putting it inside the orbit of Mercury) and two astronomical units (putting it outside the orbit of Mars). You may have an asteroid in being. If so we could have our own laboratory.

Why don't we take over the tourist center in Arizona where there has been an impact from an outerspace object of some size.

Why doesn't the United States take that over as a national asset? Wouldn't that help?

Dr. MUELLER. I don't feel that I know enough about the problem, Mr. Fulton, to answer that.

Mr. FULTON. Go ahead with your report.

Dr. MUELLER. Significant results (MT 66-10,203, fig. 12, MT 66-10,202, fig. 13) that we would expect to obtain from manned Mars reconnaissance missions include returned surface samples, photography, measurements of the atmosphere and the solid body properties; we would expect also to carry out a number of en route experiments which, as we have looked at them in some detail would rather fully occupy the crew. Then in addition we have certain technological developments that will markedly affect the future of our own technology since for the first time we have to have equipment that will last for 2 years and in return there will be a certain amount of prestige associated with a first manned planetary flight.

Mr. DADDARIO. I assume those samples would be brought back to the lunar receiving laboratory?

Dr. MUELLER. That is correct. The samples would be returned to our lunar receiving laboratory where they would be processed. The interesting thing about such a reconnaissance program is that many of the major components can be modified from the existing Apollo Applications hardware so that it would appear that we do have at least the major elements of technology available to us for carrying out such a program (MT 66-6708, fig. 14). There are certain areas where we have to extend our technology and it would not be wise to embark on a program of this magnitude without in turn expecting to extend our technology because that is one of the major benefits that comes to our society here on Earth.