

SPACE

Mars-Venus Round Trip

Scientists hope to send men on a trip around Mars, Venus and back in 1970. Launch into deep space is expected to be made from orbit.

► SCIENTISTS are now trying to find out if the U. S. by 1970 can send men on one big trip around Mars, Venus and back to earth.

Dr. Seymour Lampert, manager of aerospace mechanics at Aeronutronic Division of Ford Motor Company in Newport Beach, Calif., told SCIENCE SERVICE a study is being made to see if large enough boosters and space engines will be available by that time to make the trip.

He suggested that the launch into deep space would be made from orbit by joining together various craft sent separately into orbit around the earth. The rocket boosters required to launch these elements for assembly in a near-earth orbit would be in either or both the Nova or the Advanced Saturn C-5 class.

Dr. Lampert said the spacecraft concept is generally considered to have three essential parts, the mission module in which the crew would live, a survival and reentry capsule module, a propulsion and service module. This modular concept in essence is similar to the approach taken for the Apollo mission scheduled to send men around the

moon by the end of the decade at the latest. The round trip of a fly-by of Mars, Venus and then back to earth would take from a year to a year and a half.

The assembled spaceship prior to orbital departure would probably weigh about 3,000,000 pounds. Fuel required to propel the spacecraft into the transfer orbit will account for most of the weight.

Heavy weight penalties also result from the shielding needed to protect the astronauts from solar flare radiation. In 1970, solar storms will be at their height and flares will periodically shoot millions of miles into space.

Other shielding problems include protection against meteoroid hits (small stone or metal particles) and the heat when close to the sun. Meteoroid hits could be especially troublesome close to Mars where the particles may be bigger and harder than they are close to earth.

Since prolonged weightlessness creates many problems for astronauts and may not be too well tolerated over long periods, some sort of artificial gravity may have to be provided. This could possibly be accom-

plished by rotating the spaceship on its axis.

The study is being made for the Marshall Space Flight Center, Huntsville, Ala., whose scientists need to know if special systems have to be developed for this mission and how much time will be required to develop them.

If the Mars-Venus round trip is undertaken, it is expected to be a multi-billion-dollar program, like the moon program now under development.

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SPACE

Soviet Places Two Men In Orbit Simultaneously

► TWO RUSSIAN COSMONAUTS, Maj. Andrian G. Nikolayev and Lieut. Col. Pavel R. Popovich, landed safely on Russian soil Aug. 16 within six minutes of each other although they were launched slightly less than 24 hours apart.

Maj. Nikolayev, the Soviet Union's third astronaut, completed 64 orbits of earth between Aug. 11 and Aug. 16. Col. Popovich, who was flung into space some 23½ hours later, completed 48 orbits.

The launchings were so precise that the two Russian astronauts came within three miles of each other and could see each other's vehicles. However, the two man-carrying satellites were not joined in orbit, as evidently had been intended by the Russians.

The question of how much ahead of the U.S. in the race for the moon this accomplishment put Russia is being hotly debated in this country. One of the Russians traveled nearly seven times the distance to the moon during his earth-circling journey; the other, five times. However, getting to the moon and back involves much more difficult problems than mileage alone. Many serious technical problems will have to be solved.

Both the U. S. and Russia have set a manned lunar landing and return as one of their space goals.

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SPACE

Bulky Bag for Research On Manned Space Travel

► A BULKY airtight bag is being used to help learn how man can survive on long space flights.

Air Force volunteers are being sealed in an airtight rubber and fabric space cell for periods of up to three months.

The program at the Aerospace Medical Research Laboratories at Wright-Patterson Air Force Base, Dayton, Ohio, is designed to test the volunteers' reactions to various atmospheric pressures and compositions.

Built by Goodyear Aircraft Corporation under an Air Force contract, the 850-pound cell is seven feet in diameter and 12 feet long.

Inside the cell, the test subjects are exposed to various combinations of gases such as oxygen, nitrogen, helium and argon at various pressures and for both short- and long-term periods.

• Science News Letter, 82:134 September 1, 1962



VOLUNTEERS ZIPPED IN—An airman zips shut the space cell in which Air Force volunteers are sealed to determine their reactions to various atmospheric pressures and compositions. The cell was built by Goodyear Aircraft Corporation at Wright-Patterson Air Force Base in Dayton, Ohio, for research on the best simulated atmosphere for long space flights.