

Examrace

Competitive Exams: Space Exploration

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General Background

Space exploration by man is almost three decades old now. It started with Russia's Sputnik and America's 'Explorer' Man reached the moon in 1969 to walk on the lunar soil. Then came the space stations called the "Sky lab" and the 'Salyut' Men learned to walk in space without tethers and retrieve and repair lost satellites. The space age began with Sputnik I (Russia Oct. 4, 1957) and this was followed by Sputnik 2 which carried the dog Laika. Measurements of the dog's heart beats, temperature and other reactions radioed to earth, suggested that human beings might also survive prolonged periods in space.

The first US satellite, Explorer 1, did not follow until January 31, 1958, but its instruments made the first major discovery of the space age the Van Allen radiation belts around the earth, where electrons and protons from the sun are trapped by the earth's magnetic field. Soon after, probes were sent to explore the moon and planets and on the way they detected the 'solar wind' of sub atomic particles streaming from the sun. Human beings 'first look at the moon's far side came with the pictures from the Russian Luna 3 (Oct 1959). The US Mariner 2 (1961) flew past Venus, confirming both its high temperature and the reverse direction of its rotation which had been suspected by astronomers. The work of early' space probes has been extended and improved by later planetary explorers, culminating in remote controlled landings on the moon, Venus and Mars in search of the possibility of life.

Manned Missions

Account for only 3 percent of the 2, 400 or so space craft which were launched in the first 23 years of the space age. The first man to be launched into space was the Russian Yuri Gagarin who orbited the earth once on April 12, 1961. Later Russian cosmonauts, including the first space woman, Valentina Tereskova (June 16, 1963) were able to stay in orbit for upto five days. American astronauts made more modest flights in their smaller Mercury spacecraft, but in 1965 began a series of two men Gemini flights that overtook the Russian lead in the space race. The team of astronauts in the Gemini program practiced rendezvous maneuver's, docking procedures and space walks in preparation for the coming Apollo missions to the moon. In Gemini capsule the astronauts had less space than in the front of a small car. Apollo, however, was relatively roomy, with sufficient space for the crew to move about and even to stand upright. The vital part of Apollo so far as landing on the moon was concerned was the four-legged 'Lunar Module' in which two men touched down on the moon. The first moon landing by Neil Armstrong and Edwin Aldrin from Apollo 11 took place on July 21, 1969.

Exploration of the Moon

A total of 12 Americans walked on the moon during the Apollo programme, bringing back 380 kg of rocks and soil. These samples from the moon, along with scientific measurements made on the surface and from the orbiting mother craft have helped scientists to piece together a detailed picture of our nearest neighbour in space. Although no more moon trips are currently planned men will eventually return to the moon, probably setting up small scientific bases like those in Antarctica, from where geologists will continue their study of the moon and astronomers will observe the sky. Such colonies might also mine the moon's crust for minerals. Eventually, a manned flight to mars may be planned, although not before the beginning of the next century.

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