May 21, 2002

The abstract below is for an invited plenary lecture to be delivered at the ASI Conference on Terrestrial Analogs for Martian Landing Sites to be held in Sicily from Monday September 23- Wednesday September 25, 2002.

ABSTRACT

THE EXPLORATION OF MARS

In the late nineteenth century the Italian astronomer Giovanni Sciapirelli looked at Mars through a new and different kind of telescope and found linear markings that he called canale, a word that means "channels" in Italian. His discovery fascinated Earthlings, suggesting the possibility of life on Mars. Since that time human beings have been more interested in Mars than any other planet.

The first robotic spacecraft to fly-by Mars took photographs of the Southern Hemisphere and revealed a dead and barren landscape much like the moon. Mariner '71, however, rekindled the discussion about the possibilities of life on Mars with its discovery of water vapor in the atmosphere and likely water ice in the permanent polar caps. Viking went to Mars in 1976 with life detection instruments designed to identify microbial life forms.

The overwhelming success of the four Viking spacecraft changed forever the concepts of Mars in the minds of both the scientists and the general populace. It was not until the end of the previous century that any significant new Martian exploration occurred. Pathfinder landed on Mars in 1996 and confirmed many of the Viking discoveries. The Mars Global Surveyor spacecraft, however, with its high resolution camera, Mars Orbital Laser Altimeter (MOLA), and other instruments, penetrated many of the mysteries of the red planet and revealed still another new Mars.

After two painful failures in the 1998 launch opportunity, the NASA Mars Program is now moving forward with an ambitious and integrated program of exploration. The twin Mars Exploration Rovers will launch toward Mars in the May-July 2003 time period, landing just after the first of 2004. The Mars Reconnaissance Orbiter mission, with a wide suite of instruments, including a camera with 30 cm resolution, will be launched in the next opportunity twenty-six months later in 2005. These two exciting missions will be followed by a decade of vigorous exploration of Mars.