

The background of the cover is a detailed illustration of a Mars rover on a rocky, reddish-brown landscape. The rover is white and grey, with a large circular antenna on top and a smaller one on the front. It has six wheels and is positioned on a rocky outcrop. The sky is a deep red, suggesting a sunset or sunrise on Mars. The overall scene is illuminated by a warm, golden light, creating long shadows and highlighting the textures of the rocks and the rover's components.

# Searching for Life on Mars

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## Chapter One

# Could There Be Life on Mars?



Some old science fiction movies showed Martians as little green men.

When you think of life on Mars, do you picture friendly green **aliens** or scary monsters? People have often wondered whether life ever existed on Mars. Do you think there is life on Mars?

Some people believe that if there ever was life on Mars, it was probably **microscopic**, like **germs**.

Scientists at **NASA**, the U.S. space program, have been trying to determine whether life ever existed on Mars. All forms of life need certain things to **survive**. One is water. This knowledge has inspired NASA scientists to try to discover signs of water and other clues to life on Mars.

## Chapter Two

# Robots as Explorers

This model of the Viking lander shows how it collects soil samples with its mechanical arm.



NASA would like to send people to explore Mars one day, but for now, humans cannot survive there. Over the years, NASA has **dispatched** robots to search for clues to life on Mars.

During the 1970s, NASA dispatched to Mars two landers called Viking 1 and Viking 2. They were considered good explorers at the time. However, they had limited abilities. The robots could not move around. Instead, they just sat where they landed and gathered information. Then they sent it back to Earth.

During the next two decades, NASA scientists designed better robots. They sent more robots to Mars in 1997. These robots were more advanced. They now were able to rove, or move, so they were named **rovers**. The Mars rovers picked up rocks and collected information about the surface.

## Chapter Three

# Spirit and Opportunity

In 2003, two more rovers were sent to Mars. They were named Spirit and Opportunity. NASA came up with these names by conducting a contest in which schoolchildren around the world wrote essays suggesting names for the rovers.

Sofi Collis, a Russian-American third grader from Arizona, won the contest. In her essay, she said, "I used to live in an orphanage. It was dark and cold and lonely. At night, I looked up at the sparkly sky and felt better. I dreamed I could fly there. In America, I can make all my dreams come true. Thank you for the 'Spirit' and the 'Opportunity.'" Sofi's essay captured the spirit of hope and opportunity that the space program had to offer. They were the perfect names for the rovers.

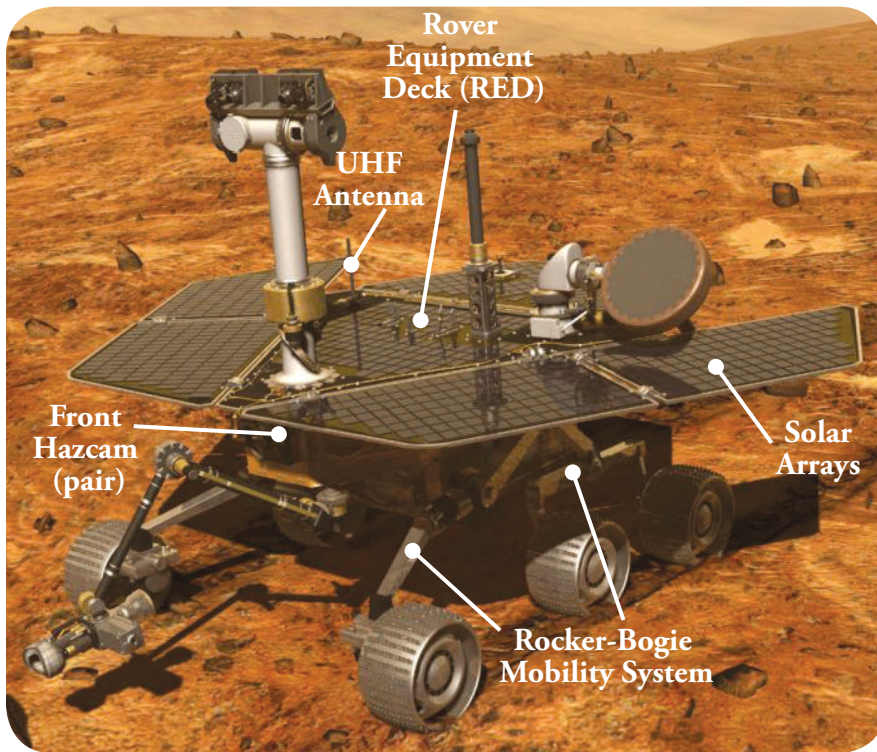
The first of these two rovers was launched toward Mars on June 10, 2003. The second was launched on July 7, 2003. Their main mission was to learn about the history of water on Mars.

This shows a NASA computer-generated image of what the rover Spirit would look like on Mars.



## Chapter Four

# What the Rovers Can Do



The Mars rovers have many built-in tools that help scientists explore the planet.

Spirit and Opportunity are much like remote-control toys you might play with at home. Only they are much bigger. Each rover weighs 408 pounds and has six wheels. Each wheel has its own motor, powered by energy from the sun. Scientists move the wheels by remote control from Earth.

Both Spirit and Opportunity have a camera and a moveable arm. The arm is equipped with a drill. The cameras act as the scientists' eyes, taking pictures and sending them back to Earth. However, the robots go one step further. Their arms grab rocks to examine, and their drills go into the rock, gathering samples for the scientists to test.

## Chapter Five

# The Rovers Make Discoveries

In 2005, Opportunity made an important discovery. It found a **meteorite**. This was the first meteorite found on another planet besides Earth. Scientists studied the meteorite's surface. It showed that for a long time there had been very little water on Mars.

In May 2009, Spirit got stuck in the sand. Scientists tried and tried, but they could not get it to budge. This problem led to a fascinating discovery.

When they couldn't move Spirit, scientists decided to study the soil it was stuck in. It led scientists to the conclusion that sometime in the last one hundred thousand years, there was snow in the spot where Spirit now sits. When the snow melted, the water seeped into the ground. It's possible that if there was water on Mars, there may have been life there, too!

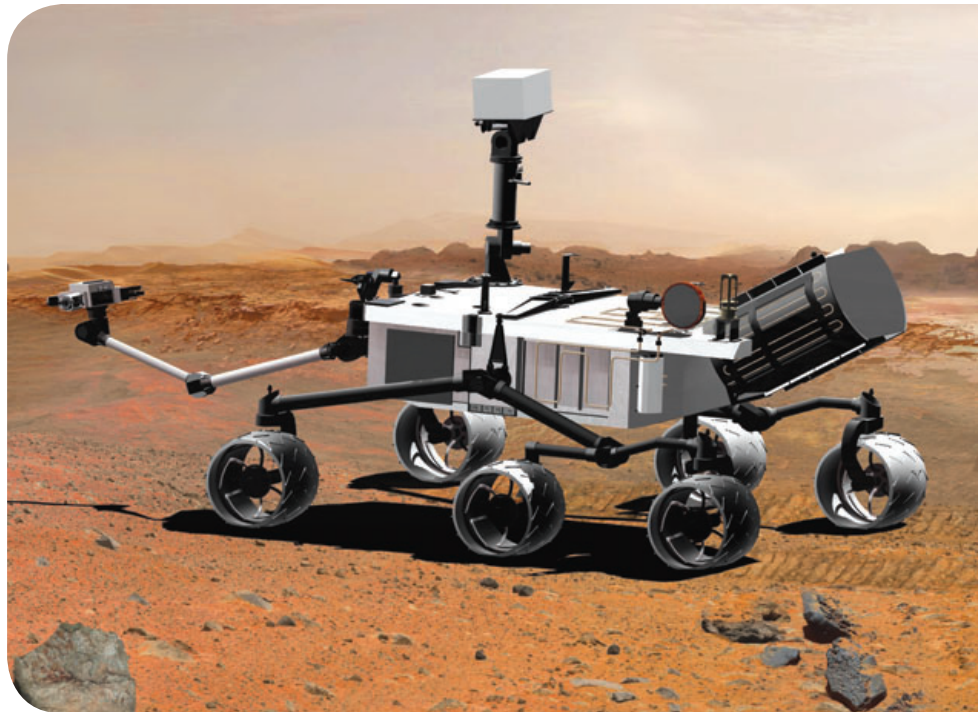


The rover Opportunity discovered a meteorite on Mars.

## Chapter Six

# Curiosity to Explore Our Curiosities

The Mars rover Curiosity



A new and better rover named Curiosity will be launched to Mars in 2011. Five times as large as Spirit and Opportunity, Curiosity is like a giant! It will experiment with **minerals** on Mars. It will look for tiny **fossils** and other signs of life from the past. Perhaps Curiosity will help us determine once and for all whether life ever existed on Mars. Who knows what other amazing rovers are yet to be developed? Will you be the scientist to build the next super rover robot?



# Glossary

**alien:** creature from another planet.

**dispatch:** to send.

**fossil:** remains, impression, or trace of a living thing from the past.

**germ:** small living substance that can make people sick.

**meteorite:** mass of stone or metal that has fallen to a surface from space.

**microscopic:** too small to be seen without the help of a microscope.

**mineral:** substance that occurs in nature (such as ore, petroleum, or water) obtained usually from the ground.

**NASA:** short name or acronym for the National Aeronautics and Space Administration. NASA is the U.S. government agency that runs the space exploration program.

**rover:** thing that roves or moves around.

**survive:** to continue to live in spite of a negative event.