Two amazing robot geologists...

...and one enigmatic planet that may once have been Earthlike.

The Rover Science Payload

Remote Sensing Package
Pancam Mast Assembly (PMA)
Pancam
Mini-TES

In-Situ Package
Instrument Deployment Device (IDD)
Microscopic Imager
Alpha Particle X-Ray Spectrometer
Mössbauer Spectrometer
Rock Abrasion Tool

Communications Antennas
A journey of a thousand miles begins with a single step
--Lao-tzu

“Spirit” (June 10, 2003)
“Opportunity” (July 7, 2003)

Spirit: Gusev
Opportunity: Meridiani Planum

A Tale of Two Landings...
Some Favorite Postcards

Based on, in no particular order:
- “That’s just purty!”
- Photographic Composition
- Historical Value
- Compelling Scientific “Value”
- The Story Behind the Picture...

Spirit in Gusev Crater

71 months of traversing by the Spirit rover...
• Total distance: 7730 meters (4.8 miles)
Reaching the Columbia Hills (~3 km traverse)

Husband Hill Summit (elev. ~100 m above plains)

The real voyage of discovery consists not in seeing new landscapes, but in having new eyes.
--Proust
Phobos emerges from eclipse in the pre-dawn sky

Spirit Sol 691 (Dec. 13, 2005)
Earthrise and pre-dawn clouds
Opportunity Sol 687 (Dec. 29, 2005)

Orion
(from S. Hem.)
Spirit sol 632
Oct. 13, 2005

LMC
(180 sec exp.)
Spirit sol 694
Dec. 16, 2005

Star Trails
(& meteor?)
(9x 60 sec exp.)
Spirit sol 643
Oct. 24, 2005

Southern Circumpolar Star Trails
(& meteors?)
(9x 60 sec exp.)
Spirit sol 668
Nov. 19, 2005

El Dorado sand dunes (~150 m wide)
Southern Basin, on to Home Plate

Exploring “Home Plate” ... for 4+ years!

Spirit’s stuck wheel reveals unexpected sulfur-rich soils!

Spirit’s latest troubles... stuck in the salty sand!
"Extrication Plan" approved by rover team and mgmt... 
First try: past three weeks

Sol 2090; Nov. 19, 2009
Stay Tuned...!

Opportunity in Meridiani Planum

70+ months of traversing by the Opportunity rover...
• Total distance: 18,907 meters (11.8 miles)
Spherule Spectra

Mössbauer: Klingelhöfer et al. (2004)
Mini-TES: Christensen et al. (2004)

Be Careful, Rover Drivers!
MRO/HiRISE
NASA/JPL/U. Arizona

200 m

Eagle

Endurance

“Purgatory”
sand trap

Erebus

Beagle

Victoria!

MRO/HiRISE
NASA/JPL/U. Arizona

200 m

• Alcove Panorama
• Crater Panorama

Arrived:
September 2006
(sol 1679)

Departed:
Oct. 2008
(sol 952)

Sol 970 (Oct. 15, 2006)
Cape St. Mary, from Cape Verde
False color composite
Sol 1019 (Dec. 6, 2006)
Bottomless Bay, from Cape St. Mary
False color composite

Sol 1037 (Dec. 24, 2006)
Looking across Bottomless Bay, from the northeast
False color composite

Cape Desire
Sol 1083
(Feb. 9, 2007)

View across Golfo San Matias to Cape of Good Hope
Sol 1108 (March 6, 2007)
View across Valley Without Peril to Cape St. Vincent
Sol 1137  (March 28, 2007)

Driving test along the rim: Obstacle avoidance
Sol 1162  (May 2, 2007)

Today:
Sol 2090

Long-term goal:
Endeavour Crater
• 22 km diameter
• 20x Victoria!
• 12.5 km SE
• We are 30% of the way there
• Drive may take another year!

Adventure is worthwhile in itself
--Amelia Earhart

Left Victoria:
Sol 1679  (Oct. ‘08)

Today:
Sol 2090

Why not?

Endeavour on the horizon!

Sol 1905
...and along the way: meteorites galore!

How great would be the desire in every admirer of nature to behold, if such were possible, the scenery of another planet! - Charles Darwin (1909) "Voyage of the Beagle"

How long will the rovers keep going? No one knows!
What about the future of Mars exploration?

Follow along!

http://pancam.astro.cornell.edu
http://marsrovers.jpl.nasa.gov
http://athena.cornell.edu
http://www.planetary.org