

# Next Stop For Mankind

By Marcia Bartusiak

New York Times (1923-Current file); Jul 15, 1990;

ProQuest Historical Newspapers The New York Times (1851 - 2007)

pg. BR1

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### MARS BECKONS

*The Mysteries, the Challenges, the Expectations  
of Our Next Great Adventure in Space.*

By John Noble Wilford.

Illustrated. 244 pp. New York:  
Alfred A. Knopf. \$24.95.

By Marcia Bartusiak

**J**UPITER has its Great Red Spot, Saturn its rings and Venus its brilliance in the early morning and evening. Astronauts have tramped upon the moon, and planetary probes — our robotic surrogates — have now either touched upon or flown by every planet in the solar system but one, Pluto.

However, it is Mars, the blood-red specter in the nighttime sky, that continues to reign in the imagination. It has inspired some of the best science fiction, from Edgar Rice Burroughs's romantic tales of John Carter and his exploits on Barsoom to Ray Bradbury's eerily beautiful "Martian Chronicles." For that matter, Mars is the only planet with a candy bar named after it.

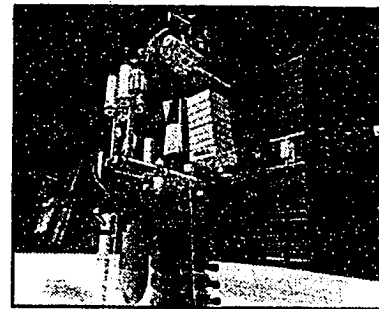
In "Mars Beckons," John Noble Wilford, a science correspondent for The New York Times and twice a Pulitzer Prize winner, writes on the historic myths, current speculations and scientific facts of this celebrated planet. More important, he weighs the question that, not too long ago, only space-flight aficionados dared to ask publicly: When do we go to Mars in person and directly seek the truth behind the legend?

There are more detailed books on the geology of Mars, others with analyses in greater depth of United States space policy. But Mr. Wilford provides a highly readable summary that also captures the manned-mission-to-Mars debate currently scattered over specialized journals and Government documents. It is a timely work,  
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Marcia Bartusiak, author of "Thursday's Universe," regularly writes on astronomy and astrophysics.



PHOTOFEST



FROM MARS BECKONS (LOWELL AND SPACE STATION)

*In the background, a 1939 globe of Mars at New York's Hayden Planetarium; at left, Percival Lowell observing the sky through a telescope; at top, Patricia Laffan as Nyah the Martian in the 1955 movie "Devil Girl From Mars"; above, artist's rendering of a space station on the way to Mars.*

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now that President Bush has called for a manned landing on Mars within 30 years.

Although it is roughly half the size of Earth, in some respects the red planet is our closest twin. It has white polar caps, a similar axial tilt and a 24-hour-37-minute-22-second day. Generations of visionaries have been lured by Mars's mystique, but none more than a Boston Brahmin named Percival Lowell. A scholar, diplomat and prolific author, Lowell was captivated by the talk of *canali* (Italian for channels or grooves) sighted on Mars by the Italian astronomer Giovanni Schiaparelli in 1877. Rich enough to do as he pleased, he up and built an observatory in the clear mountain air of northern Arizona to see for himself. By 1894 Lowell confidently asserted that the *canali* truly were canals, the work of intelligent beings.

Observers with larger telescopes were unconvinced. "Is there life on Mars?" the newspaper mogul William Randolph Hearst supposedly asked an astronomer via telegram at the height of the dispute. "Please cable one thousand words." The scientist's reply was: "Nobody knows" — written 500 times.

**T**HE old Lowellian fantasies were dashed in 1964 with Earth's first emissary to Mars, Mariner 4, which finally bested the "Great Galactic Ghoul" that scientists half-jokingly suggested had foiled three earlier American and Soviet attempts. "The seas of Barsoom were broad craters, old and bone dry," writes Mr. Wilford of Mariner's findings. "No canals crossed the surface; not an oasis in sight. One conclusion was inescapable: Mars looked like nothing so much as our own lifeless Moon." Gone forever were those little green men and Martian princesses residing in crystalline palaces.

Mariners 6 and 7 showed much the same. It was Mariner 9 in 1971 that took the quantum leap. Its breathtaking pictures revealed a geology unmatched anywhere in the solar system: a volcano twice as high as Mount Everest, a gargantuan canyon that could stretch from New York City to Los Angeles and riverlike channels (a reprise of Lowell's infamous canals) that were carved by massive floods in Mars's distant past. These findings have been overshadowed by the more recent Voyager expeditions; with Mr. Wilford as a guide, it is a delight to read them once again.

The Viking project, two orbiters and two landers, provided the climax to more than a decade of Mars exploration in 1976 with its search for life amidst the red, rock-filled landscape (although no one expected anything more than an Antarctic lichen or microscopic germ, if that). Signals of life were recorded by the biological experiments, but they are now largely attributed to highly reactive agents in the soil, not Martian organisms. Yet a nagging uncertainty remains. For many, there will be no definitive answer until we visit in person, perhaps landing at the Martian poles, where water and carbon dioxide mingle in what Mr. Wilford calls a giant "frozen club soda"

Much can happen in 30 years. An international push toward Mars, for instance, is very likely as countries jockey for position in the new world order. Should the current space-age leaders, the United States and the Soviet Union, join forces? As Mr. Wilford explains, our differing technological philosophies first will have to be meshed.

Westerners are concerned that the Soviets lack the organizational skills to implement bold programs. Yet the Soviets (at least for the moment) are very patient in their unrelenting pursuit of a larger objective. Their massive Energia rocket, Buran space shuttle and Mir space station step them ever closer to their declared intention to go to Mars. They are the tortoise to our hare — or what used to be a hare.

Mr. Wilford paints the picture of a very cautious United States — all talk, committees and proposals, but no long-term financial commitment

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Martians and their spacecraft in the Pocket Comics series "Mars Attacks."

to a Mars initiative beyond a new unmanned venture, to be called the Mars Observer.

Any flight to Mars faces many obstacles, Mr. Wilford notes. We must learn to assemble large structures in space, overcome the debilitating physical losses that can occur to humans over time in zero gravity and figure out how to shield Mars-bound astronauts from deadly radiation. There is the sheer housekeeping worry of storing 75,000 pounds of food, water and oxygen for a crew of eight over a two-and-a-half-year mission, as well as providing shelter on Mars and a return system home. And what will be the accepted sexual mores for men and women living together in months-long isolation?

**S**OME are advocating a quick-and-lean sprint to Mars, akin to our hustle to the moon. But fearful of a letdown similar to that following the completion of the Apollo program, many experts generally favor a gradual approach, possibly with a moon base as a steppingstone. Whatever the choice, others are already thinking of the subsequent goal: becoming Martians. "The early explorers of Mars will not find a new world ready for human expansion," writes Mr. Wilford. "They will have to create it."

Ultimately that means robot-operated factories, domed biospheres and genetically engineered agriculture. Perhaps some day we may even carry out the science-fiction vision of "terraforming" Mars, transforming it into an Earthlike province (although one can imagine pro-Martian environmentalists tying up that decision in space court for decades).

Mr. Wilford does not ask whether we *should* go to Mars. That is the wrong question. Given humanity's propensity for exploration, a voyage to Mars seems inevitable, certainly before the end of the 21st century. But travel to other worlds is not necessarily an American destiny.

"If Mars is not a central component of [a long-term space] strategy," warns Mr. Wilford, "Americans may forfeit their place in the vanguard of the human future that will be lived outside the cradle of Earth." Do we have the political will to carry out President Bush's goal, a faint echo of John Kennedy's command to land astronauts on the Moon by 1969? Or, to put it more bluntly, do we have the financial wherewithal? Can we land on Mars without sacrificing other areas of space science, a very valid worry?

Much is at stake. It is not just Mars that beckons. The universe calls us as well. □