



# Danger! This Mission to Mars Could Bore You to Death!

Maggie Koerth-Baker

## BACKGROUND

This article mentions Ernest Shackleton, who led several expeditions to the South Pole in the early 1900s. While these icy voyages took a huge toll on the crew's bodies, crew members also struggled with the mental stress of being isolated from society for months on end. On a mission to Mars, astronauts would also have to endure long periods of isolation and boredom.

SCAN FOR  
MULTIMEDIA 

- 1 **R**ight now, six people are living in a nearly windowless, white geodesic dome<sup>1</sup> on the slopes of Hawaii's Mauna Loa volcano. They sleep in tiny rooms, use no more than eight minutes of shower time a week and subsist on a diet of freeze-dried, canned or preserved food. When they go outside, they exit through a mock air lock, clad head to toe in simulated spacesuits. The dome's occupants are playing a serious version of the game of pretend—what if we lived on Mars?

1. **geodesic dome** round building that is inexpensive to build and is known for its structural strength, efficiency, and durability.

NOTES

**chronic** (KRON ihk) *adj.*  
lasting a long time or  
recurring often

#### CLOSE READ

**ANNOTATE:** Mark  
descriptive details you find  
in paragraph 4.

**QUESTION:** What point  
is the author making by  
listing such details?

**CONCLUDE:** Do the details  
effectively support the  
topic sentence of the  
paragraph?

**stimulus** (STIHM yuh luhs) *n.*  
something that causes  
action or reaction

- 2 Research at the Hawaii Space Exploration Analog and Simulation (HI-SEAS) project, funded in part by NASA, is a continuation of a long history of attempts to understand what will happen to people who travel through outer space for long periods of time. It's more than a technical problem. Besides multistage rockets to propel a spacecraft out of Earth's atmosphere, years of planning and precise calculations and massive amounts of fuel, traveling the tens of millions of miles to Mars will take a tremendous amount of time. With current technology, the journey takes more than eight months each way.
- 3 Which means that astronauts will get bored. In fact, a number of scientists say that—of all things—boredom is one of the biggest threats to a manned Mars mission, despite the thrill inherent in visiting another planet. And so, attention is being paid to the effects of boredom at HI-SEAS, and on the International Space Station. But because of the causes of **chronic** boredom, scientists say, research facilities in Antarctica might actually provide a better simulation of the stress of a journey to Mars.
- 4 Most living things constantly seek out sensory stimulation—new smells, tastes, sights, sounds or experiences. Even single-celled amoebas will move to investigate new sources of light or heat, says Sheryl Bishop, who studies human performance in extreme environments at the University of Texas Medical Branch. Animals deprived of naturalistic environments and the mental stimulation that comes with them can fall into repetitive, harmful patterns of behavior. Anybody of a certain age will remember zoos full of manically pacing tigers, bears gnawing on their metal cages and birds that groomed themselves bald—all a result, we now know, of their rather unstimulating lifestyles.
- 5 Human boredom isn't quite as well understood, says James Danckert, a professor of cognitive neuroscience at the University of Waterloo. He's currently working on what he says may be the first study of how our brain activity changes when we're bored. Danckert is hoping to find out whether boredom is connected to a phenomenon called the "default network"—a background hum of brain activity that seems to remain on even when you aren't directly focused on something. There's a lot of observable activity in the brains of people who are staring at a blank screen—way more than anybody expected, Danckert says. The default network maps closely to the brain-activity patterns scientists see when someone's mind is wandering. It suggests that what we call a restless mind is just that—a mind desperate for something to amuse it, searching frantically for **stimulus**.
- 6 Boredom, it turns out, is a form of stress. Psychologically, it's the mirror image of having too much work to do, says Jason Kring, president of the Society of Human Performance in Extreme

Environments, an organization that studies how people live and work in space, underwater, on mountaintops and other high-risk places. If your brain does not receive sufficient stimulus, it might find something else to do—it daydreams, it wanders, it thinks about itself. If this goes on too long, it can affect your mind's normal functioning. Chronic boredom correlates with depression and attention deficits.

- 7 Astronaut candidates go through two years of training before they're even approved to fly. And before they are chosen to be candidates, they have to compete against thousands of other applicants. The 2013 class, for instance, had more than 6,000 applicants and only 8 were chosen. Astronauts are rigorously tested for psychological as well as physical fitness. But no mission in NASA's history has raised the specter of chronic boredom to the degree that a Mars mission does, because none have involved such a long journey through nothingness.
- 8 What if, millions of miles from home, a chronically bored astronaut forgets a certain safety procedure? What if he gets befuddled while reading an oxygen gauge? More important, Danckert and Kring say, bored people are also prone to taking risks, **subconsciously** seeking out stimulation when their environment bores them.
- 9 The cognitive and social psychologist Peter Suedfeld says that people will sometimes do reckless, stupid things when they suffer from chronic boredom. In Antarctica, where winter can cut scientists and crew off from the rest of the world for as long as nine months, the isolation can lead to strange behavior. Suedfeld told me he has heard about Antarctic researchers venturing outside in 40-below weather without proper clothing and without telling anyone else they were going out.
- 10 The diaries of early polar explorers are full of tales of extreme boredom, depression and desperate attempts at entertainment reminiscent of prisoners' stories from solitary confinement. An important lesson that Antarctica can impart on a Mars expedition is this: even scientists on important missions can get **excruciatingly** bored.
- 11 One effective way astronauts combat boredom is by staying busy with work. That's a strategy at HI-SEAS, where the crew member Kate Greene told me that her schedule is packed—every hour planned and accounted for, from the time she wakes up to the time she goes to bed at night. Life on the International Space Station is similar. (In fact, historically, NASA's problem has been overworking people: in 1973, the exhausted crew of Skylab 4<sup>2</sup> actually staged a relaxation rebellion and took an unscheduled day off.) But Antarctica is different from HI-SEAS or the

2 **Skylab 4** mission aboard United States space station Skylab

## NOTES

### CLOSE READ

**ANNOTATE:** Mark facts in paragraph 7 that show the challenges with which astronauts are faced.

**QUESTION:** Why did the author include these facts?

**CONCLUDE:** How do these facts help you to better understand the reason that chronic boredom is especially problematic for a Mars mission?

**subconsciously** (suhb KON shuhs lee) *adv.* occurring in the mind without one's full awareness

**excruciatingly** (ehk SKROO shee ay tihng lee) *adv.* painfully; miserably

NOTES

**monotony** (muh NOT uh nee) *n.* sameness; boredom

**catastrophic** (kat uh STROF ihk) *adj.* disastrous

International Space Station. Communications are limited. There's nobody outside the base directing your day. Spectacular views vanish in a haze of white. It's just you, the people you came in with, no way out and little to break up the **monotony**.

12 And so some researchers there have learned to actively fend off boredom by creating what you might call a unique office culture. They celebrate a ridiculous number of holidays, both traditional and invented. You need something to look forward to, Suedfeld says, and planning the events helps change the routine. Even Ernest Shackleton's Antarctic crew found ways to put on skits and concerts. On one expedition, Shackleton brought a small printing press. At McMurdo Station,<sup>3</sup> the 1983 winter crew created costumes, learned lines and acted out scenes from the movie *Escape From New York*. It's possible that we may, someday, watch recordings of Mars-bound astronauts acting out other John Carpenter films. (It's not so far-fetched. Chris Hadfield, a Canadian astronaut, made a tribute to David Bowie's "Space Oddity" that racked up more than 16 million views on YouTube.)

13 It might sound absurd, but many scientists say strategies like this are necessary because, without proper mental stimulus, we risk making a physically and technologically challenging endeavor into a psychologically grueling one. It would be **catastrophic** if humanity's greatest voyage were brought low by the mind's tendency to wander when left to its own devices. ❁

3. **McMurdo Station** Antarctic research station.

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