



Book Review

Packing for Mars – The curious science of life in the void

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Author	:	Mary Roach
Publisher	:	W.W. Norton and Company
Pages	:	509
Year of Publication	:	2010
Genre	:	Space Biology
ISBN	:	978-0-393-07910-4
Language	:	English

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Received: 22 October 2024
Accepted: 22 October 2024
Published: 25 November 2024

DOI
10.25259/IJASM_31_2024

Quick Response Code:



Introduction to the Author: Mary Roach is an American non-fiction writer of seven New York Times bestselling books, known for her candid and humorous style of science writing. The author though does not have a background in science, but she interviews multiple scientists and other experts to inform her writing about the human body for a general audience. The author's perspective on humans and space travel is different from that of rocket scientists. For the scientist, humans are unpredictable, emotional, vulnerable, and trouble-some antithesis to the clockwork reliability of machines. In contrast, for the author, these human limitations make space travel endeavors more fascinating.

Brief of the Book: Packing for Mars – The curious science of life in the void is a book in which the author searches for answers to questions about the gross, bizarre, and uncomfortable aspects of space travel. The book consists of 16 chapters which cover the entire comedic spectrum of all space travel-related things on one side and scientific part on the other. The book focuses on all the peculiarities and triumphs of human exploration in the extreme environment of space and perhaps even stranger environment of space simulations. She celebrates how ingenuity and absurdity coexist to achieve the monumental and the mundane. The author focuses on the human side of space travel and offers behind-the-scenes peculiar and taboo topics such as sexual activity, vomiting, and toilets in space.

The first quarter of the book addresses the psychological impact of space travel, particularly the effects of confinement and isolation. The author reports on an isolation chamber experiment in Japan Aerospace Exploration Agency (JAXA), where various experiments are done to select astronaut corps. Some astronauts experience an overwhelming sensation of awe called “Space Euphoria,” while others encounter an uncomfortable and existential apprehension of the expanding universe.

In subsequent chapters, the author described the mechanics of low gravity as well as excessive gravity on the human body. In low gravity, astronauts struggle with motion sickness, vomiting, and visual disorientation which makes it difficult to discern up from down. The author also describes her experience on C-9 (“vomit comet”) aircraft while performing parabolic flights as

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these flights simulate zero gravity allowing researchers to test out the functionality of new equipment in space scenarios. The author observes NASA performing a crash test at the Ohio Transportation Research Center where the cadaver is subjected to 12G-15G of impact with some of the space capsules' restrain features similar to race car seat design.

The author devotes a portion of her book to explaining bodily functions in zero gravity as she struggled to find any evidence of the occurrence of sexual intercourse in space, though the abundance of research material on personal hygiene, food, and waste management is present. Scientists have experimented with how long an astronaut could comfortably wear a spacesuit without showering, how to develop crumbs-less food make low-residue excrement and dispose of body waste with adhesive plastic bags or vacuum suction pumps. Researchers at the Haughton Mars Project (HMP) practiced timed simulations in the desolate Canadian arctic landscape to test new technologies and to make strategies for moon and Mars missions. Volunteers at the flight analog research unit in Texas remained in bed for 3 months, to study bone loss and a professional base jumper was hired to test free fall from space to test a pressurized escape suit for emergency escape at Perris Sky Venture, California having indoor vertical wind tunnel and this was sponsored by company "Red Bull."

The author discussed the study of scientists at Wright Patterson Air Force Base about the effects of wearing a space suit full time on skin and body odor without bathing or showering. She recounts several theories to explain the body odor plateau including limiting factors to bacterial growth and Weber's law stating that changes in odor intensity are less noticeable when odor is already at a heightened state. About this condition, the author highlighted astronaut Frank Borman's reluctance to update mission control due to his skin condition.

The author visits astronauts timely to hear their experience about sharing a confined space with other people from different cultural backgrounds such as Russians Canadians and Americans sharing a space station (where a fist fight and sexual harassment incident occurred once in Mir space station).

Opinion about the Book: The book encompasses the lesser interest of the author in the thrills and agonies of space travel

than the stuff in between describing small comedies and everyday victories. In lucid writing well turned to humor and absurdity, the author tackles topics like bowel movements in zero gravity. The author takes the reader on a journey to think about all the things from the space shuttle training toilet to a crash test of NASA's new space capsule (cadaver filling in for astronaut). Packing for Mars takes us on a surreal entertaining trip into the science of life in space and space on Earth.

Recommendation: Packing for Mars gives an overview of all the physical and physiological challenges of trying to live in space as a human being and human beings are just not in the slightest bit equipped to do that, so it's kind of an entertaining challenge. Easy to read, well-edited, and must-read to gain knowledge about things happening in space missions.

Ethical approval

Institutional Review Board approval is not required.

Declaration of patient consent

Patient's consent not required as there are no patients in this study

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

How to cite this article: Garg G. Packing for Mars – The curious science of life in the void. Indian J Aerosp Med 2024;68:28-9. doi: 10.25259/IJASM_31_2024