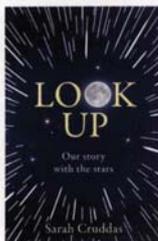


## Look Up: Our Story with the Stars

**Sarah Cruddas**  
Harper Collins  
£16.99 • HB



How many people have been to space? What is the future of space travel? And why is it important to continue to travel and explore the heavens? These and other questions

are explored in Sarah Cruddas's comprehensive history (and future) of space travel.

Cruddas is a space journalist, giving her unprecedented access to the people involved in historical and current space travel. Her book puts human stories at the centre. We hear not only about each mission and the astronauts involved, we also learn of those back on Earth, in mission control and of the families left behind.

The book begins with a summary of astronomy and flight before the Space Race. There then follows a detailed account of that race to get the first person on the Moon. From there, we learn about the unanticipated consequences of space exploration, the 'unexpected space age', such as the first photo of Earth from space that inspired the environmental movement and the technological advances that shape our everyday lives. Finally, Cruddas looks to today, as private companies try to make space tourism a reality.

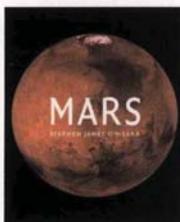
At its best, this book is so full of optimism. The story of Apollo and Challenger missions fills the reader with a sense of pride in the unity and possibility of the human spirit. It is hard not to feel a tinge of sadness at the narrower, more conventional ambitions of today. That said, Cruddas does her best to offer hope.

★★★★★

*Emily Winterburn is a science historian and author of The Stargazer's Guide*

## Mars

**Stephen James O'Meara**  
Reaktion  
£25 • HB



Our love affair with Mars is deeply rooted in history, dating back to the fifth and sixth millennia BC when the Sumerians believed that

Mars was the god of plague and war. We have been fascinated with its physical characteristics since Galileo observed the planet through a telescope in 1609 and Christiaan Huygens drew the first map of its surface in 1659. The opening chapters of *Mars* span three centuries and provide an interesting insight into these human relationships and discoveries. O'Meara then explores the Space Race and travelling beyond the Moon, taking us on a journey of disappointment and joy as the two superpowers compete to reach the Red Planet. From Marsnik 1 to

ExoMars, to how the newly developing internet first made modern Mars mission data accessible to a curious public, this is a fascinating topic.

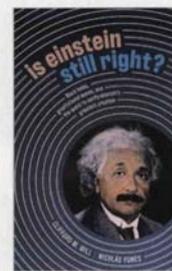
For readers investigating Mars for the first time, the impressive collection of glossy photographs taken by rovers and orbiters will astonish, and may even make you question if what you are seeing is real. If you've ever wondered about life on Mars or what Martian blueberries look like, O'Meara will provide you with the answers. Looking to our future, he explains how humans will journey to the Red Planet, the risks involved and even the ethical challenges we face. Concluding the book with useful appendices, including a timetable of future oppositions for the next 15 years (the next of which will occur this October), *Mars* will appeal to historians, planetary geologists and anyone with an interest in space exploration. ★★★★★

*Katrin Raynor-Evans is an amateur astronomer and librarian for Cardiff Astronomical Society*

## Is Einstein Still Right?

**PACKED WITH FACTS**

**Clifford M Will & Nicolás Yunes**  
Oxford University Press  
£16.99 • HB



After reading this great book, you'll never forget the three naked physicists who came up with the idea for Gravity Probe B, the NASA satellite that confirmed Einstein's prediction of

frame dragging – the slight warping of space by massive, rotating bodies like the Earth. It's these kind of funny anecdotes that make *Is Einstein Still Right?* such a great read.

Relativity guru Clifford Martin Will and his younger colleague Nicolás Yunes conclude that yes, Einstein's theory of general relativity is still right, but no, we can't be sure there won't be a better and more fundamental description of space, time and gravity around the corner. After all, general relativity doesn't match with quantum physics, so scientists haven't found the final answer yet.

Starting with the detection of gravitational redshift and the bending of starlight by the gravity of the Sun, Will and Yunes provide an entertaining overview of the many tests that general relativity has been put to over the past 100 years or so, introducing pulsars and black holes along the way. In fact, the book contains a lot more interesting stuff – and nice personal anecdotes – than the title suggests.

The last third is devoted to the search for and detection of gravitational waves over the past few years, and how future gravitational wave detectors (like the European Einstein Telescope and the space-based LISA interferometer) may change our view of the cosmos again. Here, too, the authors strike the perfect balance between depth and accessibility, using helpful metaphors wherever it is necessary. ★★★★★

*Govert Schilling is an astronomy writer and the author of Ripples in Spacetime*