

planet and experience the alien environment of outer space. After completing one orbit around the Earth, the courageous young man with the infectious smile ejected from his spacecraft and parachuted back to the steppes of Kazakhstan, to be greeted by a cow and two bemused peasant farmers. Since Gagarin's pioneering feat, well over 600 people from many nations have risked their lives to venture beyond Earth's atmosphere and explore the 'final frontier'. Their stories are the focus of this historical summary written by UK astronaut Tim Peake, who spent six months on the *International Space Station* in 2016. The book includes many of the most memorable events of the Space Age, covering the exploits of the early pioneers who ventured forth in the Vostok, Mercury, and Gemini missions, the Apollo lunar expeditions, and the orbital workshops that culminated in the giant *International Space Station*.

The account follows a logical format, starting with a chapter about how astronauts are selected, then moving on to preliminary training and assignment to a mission. The remaining chapters are devoted to the launch process, operations in orbit, walking in space, and returning back to Earth. Although Peake does include some anecdotes from his astronaut career, and refers in places to the forthcoming Artemis lunar missions, most of the book is focussed on the historic achievements, problems, and failures of the US and Soviet/Russian space programmes since Gagarin's breakthrough in 1961 April. There is no discussion of the Chinese human space programme or the recent advent of commercial space tourism, and the book's only illustrations are provided by two inserts of colour photos.

Although most of the material has been covered in other volumes, the book is an entertaining read and I would recommend it to anyone not familiar with the exploits of the spacefarers who have volunteered to leave our planet behind in order to explore and exploit the near-vacuum of space. — PETER BOND.

Japan in Space: Past, Present and Future, by Brian Harvey (Springer Praxis), 2023. Pp. 421, 23.5 × 15.5 cm. Price £27.99 (paperback; ISBN 978 3 031 45571 1).

Brian Harvey has been writing about global space activities since the late 1980s, covering the Russian, Chinese, European, Indian, and American space programmes. This volume is a follow-on to two previous books which largely focussed on developments in Japan, bringing the story up to date. This time, the author concentrates solely on the evolution of the Japanese space programme, from its early rocket experiments and the launch of its first satellite in 1970, to the development of sophisticated launch vehicles and spacecraft, and the country's participation in the *International Space Station (ISS)* programme.

Today, few outside the scientific community are aware of Japan's significance as a key partner to other leading space powers, most notably the United States and Europe. However, the country has made its mark over the past 50 years by developing its own military surveillance, engineering, and navigation satellites; contributing the *Kibo* science laboratory to the *ISS*; creating a family of indigenous launch vehicles; and making history by returning the first surface samples from two asteroids.

Harvey's thorough, detailed account examines the early history of Japan's space programme, the country's current state of development, and its future plans. He also describes the infrastructure that includes Japan's ocean-side launch sites, training centres, testing facilities, and tracking stations. Another area of focus covers the political and financial difficulties that the country's space industry has faced, not least an ambivalent relationship with the United States.

Once the premier spacefaring nation in Asia, Japan is now left in China's shadow. However, the future still holds much promise, including missions to Mercury and the moons of Mars, and the long-term prospect of Japanese astronauts setting foot on the Moon and driving roving vehicles across its surface. — PETER BOND.

How to Write and Publish a Scientific Paper, 9th Edition, by Barbara Gastel & Robert A. Day (Cambridge University Press), 2024. Pp. 348, 23 × 15 cm. Price £27.99/\$34.99 (paperback; ISBN 978 1 009 47753 6).

If you are an established professional scientist, you probably think you already know how to write a scientific paper, and of course that's essentially true. But a quick glance at this book might be enough to tell you that you still have things to learn. For first-time paper writers, it will be very useful indeed. This is the ninth edition, which argues that people do find it helps them.

When I looked at the list of contents, I was not surprised. Every conceivable topic is covered, together with quite a few that I would not have thought of. There are eight main sections: 'Preliminaries' (including such basic topics as What is Scientific Writing? and What is a Scientific Paper?); 'Preparing the Text', with subsections on all the necessary parts from Title to References; 'Preparing the Tables and Figures'; 'Publishing the Paper', starting with an explanation of Copyright; 'Doing Other Writing for Publication'; 'Conference Communications'; 'Scientific Style' (including Use and Misuse of English); and 'Other Topics in Scientific Communication', including How to Write a Thesis and How to Work with the Media. There are four useful Appendices (including Words and Expressions to Avoid, with two columns: Jargon and Preferred Usage; we would all benefit from looking at that one).

The text is clearly and logically written, so the book is a pleasure to read. It is lightened from time to time by relevant cartoons, including two from Peanuts. There is a pertinent quotation at the head of each of the 42 sections (e.g., "Manuscripts containing innumerable references are more likely a sign of insecurity than a mark of scholarship", attributed to William C. Roberts). There is a glossary, a list of References, and an Index. A very useful reference book for all scientists who want to have their work read — and that's all of us, isn't it? — ROBERT CONNOR SMITH.

Pisgah Astronomical Research Institute: an untold history of spacemen & spies, by Craig Gralley (History Press), 2023. Pp. 158, 22 × 14 cm. Price \$23.99 (about £19) (hardbound; ISBN 978 1 4671 5218 1).

PARI, the Pisgah Astronomical Research Institute, was founded in 1998 by Don Cline and his late wife, Jo. It now focusses on both live and remote astronomical education and also houses many collections of astronomical glass plates, deaccessioned by Harvard and many other observatories. But the site started life as a NASA tracking station (1963–1981) and next was owned and operated by the US National Security Agency (1981–1995). The author is a former senior executive of the US Central Intelligence Agency. The above is meant to be an 'other books received' summary.

A review would continue: It isn't often that a book, especially a history book, hits one's mailbox just in time to provide a slice of information needed for the next day's teaching. But this one did. In its tracking-station days, the two 85-foot-diameter radio dishes could pick up the signal from a 5-Watt source on a satellite 200 000 miles away. How much is that in janskys? Well, for some