

tively involved in almanac calculations and production, I found this work highly rewarding.
— STEVE BELL.

The Secret Life of the Universe: Searching for the Origins and Frontiers of Life, by Nathalie A. Cabrol (Simon & Schuster), 2025 (originally published 2024; originally published in French 2023 as *À l'aube de nouveaux horizons*). Pp. 315, 20 × 13 cm. Price €16.99 (about £14.89) (paperback; ISBN 978 1 3985 3132 1).

The hardback edition has the subtitle ‘An Astrobiologist’s Search for the Origins and Frontiers of Life’. In any case, it was translated by the author from her own best-selling book in French. I haven’t read the French book, but the English version is extremely good, and based on the text alone I would not have suspected it of being a translation. (Lack of knowledge of the topic is what usually indicates a translation, though occasionally insufficient knowledge of one or both of the languages does so; neither is the case here.) Born, educated, and initially working in France (Observatoire de Paris-Meudon and the Sorbonne), Cabrol and her husband, Swiss-born hydraulic engineer (and after retirement and further studies planetary scientist) Edmond A. Grin (1920–2022), moved to the US, worked for NASA, and became US citizens. She later moved to the SETI institute, becoming the director of the Carl Sagan Center in 2015. Cabrol has 426 entries (135 refereed) at ADS and has been the PI of several NASA projects involving Solar System exploration (including life in extreme environments on Earth).

The book is not just written in good English; some of it is almost poetic: “Rocks made of solid water ice rolled and rounded by time in torrents of liquid methane.” “. . . a world where everything looks familiar, yet nothing is really what it seems, and where we could be given a chance to explore side-by-side life as we know it and life as we don’t.” Having said that, the book is a down-to-Earth (and/or some other Solar System body) account of the one known and many possible abodes of life, starting (after a brief autobiographical sketch) with Earth and moving to Venus, Mars, the Jovian satellites, Titan and Enceladus, the outer Solar System, extra-solar planets (after a chapter on six methods of detecting them). After that tour in nine chapters, discussion turns to the Drake equation, the Fermi paradox, and whether the solution to the latter is some sort of great filter^{*}; and the Kardashev scale, SETI, METI, and UFOs/UAP. Cabrol is clearly someone who would like there to be extraterrestrial life, thinks that it is probable, but, whether regarding microbes on other worlds or visiting aliens, remains true to Sagan’s dictum that extraordinary claims require extraordinary evidence. The final chapter is concerned with various attempts at a definition of life (perhaps it is easier to explain the origin of life or to describe what it does than to define it) and related ethical questions. While the earlier chapters give an up-to-date account of topics I was already somewhat familiar with, much of the last chapter, while not always covering completely new ground, introduced me to things such as xenobots. The epilogue is similar to two others³⁻⁴ I’ve reviewed^{5,6} in this *Magazine*, but without the complaint that it seems tacked on; rather, it seems like a logical conclusion, the difference being that it is more related to the main text.

Most of the book is concerned with the Solar System, which is at the opposite end of the scale from my main astronomical interest, cosmology. Nevertheless, I really enjoyed reading the book, and it’s good to be brought up to date on topics such as planetary missions by someone actually involved in them. We now know that many Solar System bodies contain water, though not necessarily liquid and on the surface, and Ganymede has more than Earth. Cabrol has a knack for including interesting details without losing sight of the overall picture. I was reminded of many popular-science books which I read as a child and how they inspired and reinforced my interest in science; this book is a fine addition to that illustrious collection.

^{*}See a somewhat complementary book¹ reviewed² in these pages for more on the concept of ‘filters’ as bottlenecks of evolution.

There are a couple of mistakes which are probably just careless errors and probably most readers won't notice them. I almost always quibble about style, though here less so than is usually the case, and there are few actual typos. There are sixteen pages of colour 'plates' near the middle of the book as well as several black-and-white figures scattered throughout. The former are fine, but the latter could use more detail. Even several years ago I encountered books with high-resolution colour figures printed on regular (as opposed to slick) paper, so I wonder if printing prices really still play a role. Three pages of acknowledgements mention, among others, Frank Drake and Carl Sagan, both of whom she knew personally, as well as her husband. As is to be expected, the four pages of image credits often mention NASA. Somewhat unusually for a popular-science book, there are eight pages of 'Notes' (all references rather than endnotes; neither are there any footnotes); the index of somewhat more than twenty pages is especially thorough. The book is not as long as it looks since it is essentially double-spaced, with enough room for a line of text between two others (by contrast, interline spacing in this *Magazine* is less than 19% of the height of a line; the font size is about the same).

The fact that the French book is a best-seller confirms my impression that there should be a wide readership for such a book, from somewhat older children to the proverbial 'interested layman' to professional astronomers (at least those who don't work in planetary science, but maybe some of them as well). Even those who have read many books on the topic will probably learn something new from this well-written up-to-date book. — PHILLIP HELBIG.

References

- (1) D. Schulze-Makuch & W. Bains, *The Cosmic Zoo: Complex Life on Many Worlds* (Springer), 2017.
- (2) P. Helbig, *The Observatory*, **138**, 174, 2018.
- (3) M. E. Tegmark, *Our Mathematical Universe* (Allen Lane, London), 2014.
- (4) T. Hertog, *On the Origin of Time: Stephen Hawking's Final Theory* (Transworld), 2023.
- (5) P. Helbig, *The Observatory*, **134**, 150, 2014.
- (6) P. Helbig, *The Observatory*, **144**, 201, 2024.

Here and There

HOW ABOUT PLANET EARTH, FOR EXAMPLE?

Planets smaller than Neptune with a gaseous atmosphere don't exist in the solar system, but they're plentiful around other stars. —*Sky & Telescope*, February 2026, p. 11.

A LUCKY REGION?

MARS can still be seen in the evening sky, although the length of time during which it is visible is rapidly decreasing. After the middle of the month it will be difficult to still see the red planet without binoculars or a telescope. In northern Germany one will search for it in vain. [Original: **MARS** kann noch am Abendhimmel gesehen werden, wengleich seine Sichtbarkeitszeiten rapide abnehmen. Nach der Monatsmitte wird es schwierig, den roten Planeten noch ohne Fernglas oder Teleskop zu erkennen. In Norddeutschland wird man ihn vergeblich suchen.] —*Kosmos Himmelsjahr 2025*, p. 156