and a brief biography of someone who has worked in that field; 'Theories' is like 'History and Future' but without the timeline. I'm reminded of the professor (whose main job was theoretical particle physics and who looked very much like James Clerk Maxwell) who taught me classical mechanics: for the exam at the end of the course, he allowed us to bring one sheet of paper containing anything we wished to write on it. (Of course, and that was probably the intent, the act of thinking about what is important and writing it down meant that it wasn't actually used as much as we might have thought would be necessary.) This book is similar but covers more than a hundred topics. All of the parts range over (but, of course, don't really cover) essentially the whole of astronomy in about the expected proportions except that 'Components' devotes about half of its chapters to the Solar System, which reminded me of the previous book I had read[7].

'Paperback' is a bit of a misnomer; the cardboard cover (with somewhat thinner front and back flaps) is a bit stiffer than is the case with most paperbacks, and the binding is more like a hardcover. The paper is slick, the images are in high resolution, there are almost no typos, and I noticed no factual mistakes. Apart from the chapters (including a couple of introductory ones) and the seven-page index, that's it, but that is all that is needed. This is a beautiful and well-produced book and would provide not only a good introduction to astronomy, astrophysics, and cosmology but also, despite the lack of full traditional references, enough information so that the interested reader could easily find further information on the topic. — Phillip Helbig.

References

(1) G. Sparrow, *50 Astronomy Ideas You Really Need to Know* (Quercus), 2016.
(2) P. Helbig, *The Observatory*, **137**, 30, 2017.
(3) G. Sparrow, *The History of Our Universe in 21 Stars (That You Can Spot in the Night Sky)* (Welbeck), 2023.
(4) P. Helbig, *The Observatory*, **145**, 40, 2025.
(5) A. Cohen, *The Universe* (William Collins), 2023.
(6) P. Helbig, *The Observatory*, **145**, 78, 2025.
(7) J. Scudder, *The Milky Way Smells of Rum and Raspberries: …and Other Amazing Cosmic Facts* (Icon Books), 2023.
(8) P. Helbig, *The Observatory*, **145**, 65, 2025.

The Universe, by Andrew Cohen (William Collins), 2023 (originally published 2021). Pp. 272, 19·5 × 13 cm. Price £9·99 (paperback; ISBN 978 0 00 838935 2).

Andrew Cohen is Head of the BBC Studios Science Unit and this book is based on the BBC series of the same name, which is presented by Brian Cox (who contributes a foreword). I haven't seen the programme, but the book stands well on its own. The title is something of an exaggeration, as there are only five major topics (each with its own chapter). However, any book broad enough to cover the entire Universe would be very shallow. It is thus similar to other books[1–8] which select a (small, medium, or large) number of topics and discuss them in some detail without trying to cover too much ground, a welcome alternative to introductory books which cover all of (some branch of) astronomy but necessarily at a rather superficial level. The areas covered — exoplanets, stars, galaxies, black holes, and the early Universe — are a mixture of major subjects in the field and those with a large public interest (or both). At about fifty pages each, the chapters are long enough to explore the corresponding topics in some detail. Of those covered, I know the least about exoplanets, and learned a lot from the corresponding chapter. The book is a good introduction

to various fields of research, some of which some readers might want to explore further *via* more detailed books on one or more subjects.

Like the book with respect to the included chapters, each chapter concentrates on a few aspects rather than trying to cover too much. The chapter on exoplanets concentrates on the *Kepler* mission, water, and life; 'Stars' is mainly about stellar nucleosynthesis, the lives of the stars (including the Hertzsprung–Russell diagram), the Sun, and the final stages of stellar evolution. 'Galaxies' is of course a very big topic; the chapter concentrates on *Gaia*, the dynamics of galaxies, dwarf galaxies, collisions, tidal tails, and so on. The chapter on black holes covers the most ground: Sgr A*, X-ray binaries, the Schwarzschild solution, the Chandrasekhar mass limit, gravitational waves, the *Event Horizon Telescope*, Nobel Prize winners Andrea Ghez and Reinhard Genzel and the Milky Way's central black hole, the presumably related *Fermi* bubbles, and Hawking radiation (the corresponding equation for the Hawking temperature is one of only two in the book). The emphasis is mainly on astrophysics rather than the mathematical aspects of black holes. The final chapter delves into the early Universe and its evolution: high-redshift galaxies, the Hubble constant and the Hubble tension, Lemaître's ideas of the early Universe, the singularity theorems of Penrose and Hawking, and inflation. The story of Koichi Itagaki and the discovery of SN 2018gv in NGC 2525 is recounted in some detail, leading on to more general discussion of supernovae and their use in cosmology.

The book is very well written, has comparatively few typos or other goofs, and, though non-technical, does not oversimplify. There are twenty-six colour figures on ten plates about two-thirds of the way through the book (one of which, showing a galaxy cluster acting as a gravitational lens, mistakenly has a caption about globular clusters). There are a few black-and-white figures scattered throughout the text as well as a few boxes, which are long quotations from various people on a subject discussed in the neighbouring text. There are neither footnotes nor endnotes. The book ends with an eight-page small-print index. A few things are a bit confusing, such as that the Sun is more than a hundred times larger than the Earth — its *diameter* is somewhat more than a hundred times larger than that of the Earth, but most readers would probably think of the much larger difference in volume. Somewhat annoying is referring to the equivalence of mass and energy in Special Relativity as the 'equivalence principle', which of course has a different meaning in General Relativity, and the garbled idea that microlensing is caused by "a massive object like a supernova" as the gravitational lens — supernovae as *sources* in gravitational-lens systems exist but are rare, but there are no cases of them being *lenses*. While it is true a star with about half of the mass of the Sun has a lifetime of about a hundred billion years (actually somewhat more), the smallest hydrogen-burning stars are an order of magnitude smaller with much longer lifetimes.

Despite my few quibbles I recommend the book as a good introduction to those interested in various aspects of our Universe which, by limiting the breadth of topics covered, goes into somewhat more depth than is usually the case in otherwise similar books. — Phillip Helbig.

References

(1) G. Sparrow, *50 Astronomy Ideas You Really Need to Know* (Quercus), 2016.
(2) P. Helbig, *The Observatory*, **137**, 30, 2017.
(3) G. Sparrow, *The History of Our Universe in 21 Stars (That You Can Spot in the Night Sky)* (Welbeck), 2023.
(4) P. Helbig, *The Observatory*, **145**, 40, 2025.

(5) J. Scudder, *The Milky Way Smells of Rum and Raspberries … and Other Amazing Cosmic Facts* (Icon Books), 2023.
(6) P. Helbig, *The Observatory*, **145**, 65, 2025.
(7) G. Lavender, *The Short History of the Universe: A Pocket Guide to the History, Structure, Theories & Building Blocks of the Cosmos* (Laurence King), 2022.
(8) P. Helbig, *The Observatory*, **145**, 77, 2025.

OBITUARY NOTICE

Helmut Arthur Abt (*1925–2024*)

One of the most prolific astronomical spectroscopic observers of the last century, Helmut Abt passed away peacefully on 2024 November 22 at the ripe old age of 99. Born in Germany, Helmut arrived in the United States as a child and went on to be awarded the first PhD in astrophysics at Caltech in 1952. Known for his work on metallic-line stars, I first met him at a workshop in Tucson in 1969 dedicated to Am and Ap stars. Later I was to encounter his many papers on radial velocities, binary stars, and other stellar topics, so many of which were invaluable in much of my work. But his herculean observational work was accompanied by his long stint as Managing Editor of the *Astrophysical Journal* and its *Supplement* series and his work with the American Astronomical Society and the Kitt Peak National Observatory. His autobiography is presented in *A Stellar Life*, which was reviewed in these pages by Virginia Trimble (**142**, 13, 2022). A truly stellar astronomer indeed. — David Stickland.

[A more substantial obituary can be found at https://baas.aas.org/pub/2024i023/release/1]