

be useful, though of course that is an inherently difficult topic. The statement that Planck, Einstein, Bohr, Heisenberg, and Schrödinger all “laboured until the end of [their lives] to disprove the implications of quantum theory” is at best very misleading. Statements about Big Bang nucleosynthesis, the size of the horizon of the Universe, spatial curvature, and so on are, as stated, just wrong, but I’m willing to put them down to oversimplifying and/or bad editing, but perhaps they are due to unfamiliarity with other branches of astrophysics than quantum cosmology; certainly there is no other explanation for claiming that Tycho found that the Earth moves around the Sun. (That last claim is found in the epilogue, which contains a history of cosmology in a few pages. That is otherwise more or less correct, though the tendency to interpret some current debates in the light of that history seems dubious to me.)

My usual complaints about style apply, and there are a few nasty typos (I’m sure that a universe complex enough to support life must have many more than 10^{15} particles). There are a few black-and-white figures scattered throughout the book, which fortunately has footnotes rather than endnotes and ends with a seven-page small-print index. Despite my qualms, I found the book to be an interesting read, both with respect to her work and to her personal odyssey, though in both cases I wouldn’t draw the same conclusions in all cases. — PHILLIP HELBIG.

References

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- (6) P. Helbig, *The Observatory*, **134**, 150, 2014.
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Annual Review of Astronomy and Astrophysics, Volume 62, 2024, edited by E. van Dishoeck & Robert C. Kennicutt (Annual Reviews), 2024. Pp. 645, 24 × 19.5 cm. Price from \$460 (print and on-line for institutions; about £357), \$126 (print and on-line for individuals; about £98) (hardbound; ISBN 978 0 8243 0962 6).

Annual Review was a particular treat this year since it seemed to be mainly about *stars*, which is the pond in which I dabbled as a young astronomer, and indeed for the remainder of my career. And it begins in splendid fashion with an autobiographical account by Michel Mayor, famed not only as the discoverer of the first star to show signs of an exoplanet but honoured with a Nobel Prize for his work. Based on the principles of radial-velocity measurement pioneered by long-time Editor of, and contributor to, this *Magazine* Roger Griffin, Professor Mayor and his colleagues have pushed the technique to amazing precision — less than 1 m s^{-1} .

Starting with our own private star, the Sun, Fletcher gives an in-depth account of solar activity revealed by spectroscopic examination of flares over a range of wavelengths. Then staying with stars even cooler than the Sun, Henry

& Jao pick over the characteristics of M-type dwarfs, stars that have not really started to evolve in any dramatic way yet. The composition of such stars and any putative Earth-like exoplanets is discussed by Teske. And spectrum synthesis of stellar spectra is described by Lind & Amarsi in which many factors, like convection, are included — so much more sophisticated than my dabblings in the late 1970s.

Star and planet formation is considered in several chapters. Schinnerer & Leyroy start with the examination of molecular gas in nearby galaxies, while Hunter *et al.* study the ISM in dwarf irregular galaxies, and Birnstiel looks at dust growth in planetary discs, with *ALMA* now a valuable tool; related work on proto-stellar systems is reviewed by Tobin & Sheehan. And at the end of it all, *Gaia* results examined by Hennebelle & Grudić give us the IMF that should be produced!

On the larger scale, how galactic development is affected by the products of massive-binary evolution is described by Marchant & Bodensteiner, with Thompson & Heckman viewing an even bigger picture featuring winds from star-forming galaxies.

Away from the observatory and in the laboratory, Cuppen *et al.* make a study of the ices found in the ISM, adding detail for the observers to hunt down.

And last but not least it is time to see, in the company of Verde *et al.*, where we are in the determination of the Hubble Constant. Not a pond in which I ever poked a toe! — DAVID STICKLAND.

The Short Story of the Universe: A Pocket Guide to the History, Structure, Theories & Building Blocks of the Cosmos, by Gemma Lavender (Laurence King), 2022. Pp. 224, 21.5 × 15.5 cm. Price £14.99 (paperback; ISBN 978 0 85782 938 2).

After studying astrophysics in Cardiff and holding various jobs in publishing, Lavender now works in Communications, Content & Outreach at the European Space Agency and has written a few other books. This book is one of a series ‘The Short Story of...’, others including photography, architecture, film, *etc.* Obviously, such topics, much less the Universe, will not fit into one book, especially if it’s just the short story. The strategy is to choose a wide range of topics and offer a summary of each. It is thus similar to other books^{1–8} which select a (small, medium, or, as in this case, 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 many chapters are collected into four parts: ‘Structure’ (two pages per chapter), ‘History and Future’ (one), ‘Components’ (usually two), and ‘Theories’ (one). Some examples: ‘Spacetime’, ‘Stars’, ‘Elements’, ‘Forging the Elements’, ‘Birth of the Moon’, ‘The Future of the Universe’, ‘Elliptical Galaxies’, ‘Wolf-Rayet Stars’, ‘Uranus’, ‘Multiverse’, ‘Stellar Spectroscopy’, ‘Galaxy Evolution’; the second part is by far the longest.

Each chapter contains a picture (usually colour; exceptions are historical black-and-white images) and a few paragraphs of text. At the bottom of the page are references to related chapters. Otherwise, the format depends on the part. In the ‘Structure’ part, each chapter mentions one or more scientists together with a relevant topic, place, and time; a brief biography (sometimes of a ‘key scientist’, sometimes of some other relevant person); and key publications (authors, titles, and years). ‘History and Future’ has key scientists and a key development as well as the time since the Big Bang of the corresponding event; ‘Components’ has a list of notable examples of the corresponding component