Lithium Across the Universe, by Eduardo Martín (IoP Publishing), 2022. Pp. 214, 26 × 18·5 cm. Price £120/$190 (hardbound; ISBN 978 0 7503 3621 5).

Appearance of the element lithium in astronomical locations occasions so much spectroscopic examination and theoretical pondering that this IoP book (also available as an e-book) by Eduardo Martín should be welcomed by astronomers across the age spectrum from fresh research students through the experience continuum to retirees. This reviewer, now off the top end of the age spectrum, learnt a lot about the abundance of lithium in a wide variety of astronomical environments.

The origins of my interest in lithium in stars were stimulated through an encounter over a cup of tea with John Alexander at an RAS meeting in Burlington House. John told me of his idea that lithium in a red giant's atmosphere could be augmented if the giant were to capture terrestrial planets from its 'solar' system. John's idea is detailed in Correspondence to this *Magazine* (**87**, 238, 1967). Just imagine if John's proposal had then initiated an observational search for stars hosting planets!

Martín's book discusses the major astronomical environments in which lithium atoms are spectroscopically detected and the likely controlling influences on the lithium abundance in those environments are aired. Open issues are often adequately highlighted. Just two areas are mentioned here: the Big Bang and Li-rich red giants. Hopefully these and other open observational and theoretical issues will soon attract enthusiastic inquisitive individuals on the young portion of the age spectrum.

One key environment is, of course, the Big Bang. With completion of accurate mapping of the cosmic microwave background, key cosmological parameters are now so well known that the post-Big Bang composition may be rather securely predicted: almost pure hydrogen composition with contaminants D, He-4, He-3, and Li-7 may be safely predicted. Except for Li-7, as measured from the Spite plateau provided by the Li I resonance line at 6707Å in metal-poor dwarfs, these predictions may be deemed to match observations traceable to the Big Bang. Li-7/H on the Spite plateau is about a factor of a few below its predicted value. Martín refers to this situation: "The jury is still out on the resolution of the cosmological lithium problem." As an observer, one expects the resolution will come from observations!

Martín's text also discusses stars exhibiting lithium abundances — almost exclusively Li-7 —where the inferred surface abundance is not yet fully understood. Historically, the initial example was provided by the very strong 6707Å Li resonance doublet first reported decades ago in photographic spectra of certain carbon giants: Martín illustrates a segment of Sanford's (1950) classic atlas showing the strong Li doublet in the N-type carbon star WX Cyg. A large range in Li abundances among K and M giants is also now known with very Li-rich examples an infrequent occurrence. The statistics for surface Li abundances in red giants are aired by Martín but, I feel, the likely required combination of 'nuclear' origins of a Li enrichment in a stellar interior and the transport of that synthesized Li to the surface are provided an inadequate airing. Lithium synthesis is quite appropriately named as 'the Cameron–Fowler' mechanism but a reader new to this fascinating topic and hoping to resolve outstanding issues would be challenged by reading just this book to explain how the Cameron–Fowler mechanism is expected to enrich red giants in lithium. Of course, exploration of published literature is to be encouraged. New observational and theoretical results are sure to be presented at RAS meetings in coming years! — David Lambert.