Nearly every page has a purple mark — not for errors (I have done no fact-checking) but for "ah ha!" moments — one of the women was a Girl Scout (no luck checking which one: the index is very sparse); another attended a high school that shared its name, Sidney Lanier (also not indexed), with the local public library of my childhood (both have probably been renamed). There really were icicles on the launch tower the day Judy Resnik (the first Jewish woman to fly) took off for the second, devastatingly brief, time. Karen Nyberg was the first astronaut to operate all three robotic arms on the Shuttle, and she also enjoys quilting, and made a dinosaur toy for her son out of Russian velcro-like fabric that lined their food containers. Megan McArthur celebrated her 50th birthday in space, the zeroth having been celebrated in Honolulu, because her father was a career naval officer.

Appendices list all the women, in chronological order by first flight (Tereshkova, Savitskaya, Ride, Resnik, McAuliffe…on to Mae Jamison (the first female African–American astronaut) and Elena Kondakova (third Russian woman, who appears in Appendix IV because of being married to another cosmonaut)), and on to the last eight, nearly all on commercial flights, beginning with Beth Moses. The other appendices list female EVAs (the longest 60 hours in ten separate activities by Peggy Wilson); astronauts with military affiliations; astronaut marriages and a good many divorces.

All in all a fascinating book, which is probably best read a few stories at a time, like consuming a large box of candy of many different flavours.

Of the women, I knew only Sally Ride, having met her when she was still a graduate student at Stanford, and then having served on her advisory board when she was running the California Space Institute (CalSpace) from UC San Diego. — Virginia Trimble.

Quantum Processes & Measurement. Theory & Experiment, by Claude Fabre (Cambridge University Press), 2023. Pp. 303, 26 × 18·5 cm. Price £49·99/$64·99 (hardbound; ISBN 978 1 108 47777 2).

We are rapidly approaching the centenary of the first papers on what is now called quantum mechanics, and the number of published textbooks on the subject must certainly also be close to 100. Early ones often emphasized puzzling aspects of the subject — that a careful calculation never gave an exact result for the product of a well-defined particle collision, for instance, but only the distribution of probabilities over the range of possible final states. Most of the later texts (at least in English) have been of the 'shut up and calculate' variety. Author Fabre takes a third approach, beginning with recent experiments that involve the detection of single quantum entities, photons, particles, and energy levels of an atom. Subsequent chapters alternate between theory (especially as required to understand recent experiments — entanglement and all) and those experiments. The experiments end with SQUIDs and the theory with quantum non-demolition.

The last 100 pages include 11 appendices, from qubits to quantum mechanics of electrical circuits, 187 references (from Aaronson to Zurek), and the usual inadequate 2¼-page index characteristic of physics texts. Each chapter and each appendix ends with exercises, some requiring serious derivations; others inviting the reader to attempt an order-of-magnitude estimate of some quantity she had probably never thought of before. She will, however, find lots of old friends in the list of references: Aharonov and Bohm, Bell, Bohr, and Born, Hanbury Brown and Twiss, Dirac, Podolsky, and Rosen, Landau (looking lonely without his Lifshitz), Planck, Robertson, and Schrödinger, von Neumann and Wigner.

Alice and Bob appear scattered through the text, though neither seems to be an author or an index entry.

Astronomers are obviously not the primary readership for this volume as we hardly ever encounter single atoms, let alone rubidium in $n = 49$ to 54 levels. It is, however, surely good for the soul to be reminded from time to time that there is a distinction between things nobody understands (the ratio of electromagnetic to gravitational forces) and things that other people understand and I do not! — Virginia Trimble.

From The Library

Suns and Worlds, by W. H. (William Herbert) Steavenson (A & C Black Ltd.), 1933. Pp. 104, 18 × 12 cm. Price about $25 for used copy from an on-line bookseller. (hardbound; no ISBN).

W. H. Stevenson (1894–1975) was a medical doctor, variously called Dr. Steave, Steave, and Old Steave (that last by Raymond Arthur Lyttleton) with a life-long love of visual astronomical observing with small-to-moderate-sized telescopes, some of his own design. Rather remarkably, he did this with only his left eye, the right one having been lost in a boyhood accident, and he abandoned observing at the age of 60 (1956), though he lived nearly another 20 years and participated in both RAS and the British Astronomical Association in his later years.

Dr. Steavenson's ADS publications come mostly from the *Journal of the BAA* and include many annual reports from his observatory in Norwood, but also this book. *Suns and Worlds: An Introduction to Astronomy* is a wonder of glorious English prose of a style I fear no one still knows how to write. Some sentences are quite long, but every word counts, is in the right place, and sometimes clarifies in a way that might easily have taken another whole sentence.

My copy once belonged to the Reverend R. Lacey Webb, who did not turn up in a very casual web search. The copy came with two bonus loose pieces of paper: a 28/11/71 clipping from the *Sunday Express* headlined "So maybe there is life on Mars", reporting water vapour seen in the Martian atmosphere from *Mariner 9*; and a handwritten page of notes on Earth, Pluto, Mercury, and the Sun taken from the *Readers Digest World Almanac*. Written with a fountain pen in a rather old-fashioned spikey hand, the extract claims that the Sun has a central temperature of 36 million degrees C and an estimated survival of 16 000 million years. These are, to our minds, too large by factors of about 2 and 3, respectively. But we must not blame Dr. Steave for the mistakes.

What then did Dr. Steave have to say? He is very sound on day and night, eclipses, motions of planets, and the like, giving the objects concerned personal pronouns (*She* for the Moon and Venus; *He* for the Sun and the other planets). We are told that use of Eros to get the length of the AU has replaced transits of Venus, which no one will again attempt to observe. Well, we did for the most recent pair, but not to determine the length of the AU!

Skipping to 'A Boundless Universe' at the end, he accepts that the Universe is expanding, and that indeed some mathematicians had expected this. He worries that the expansion time-scale is much shorter than the time needed for stars to form and achieve their various current appearances. Nowhere, however, does he attempt to estimate ages or life expectancies for the Sun or any other stars. There is an evolutionary scenario laid out in 'Other Suns' and 'Change and Motion in the Universe', but no time-scale at all.