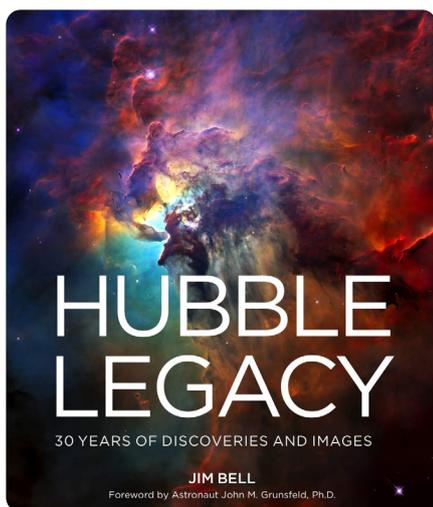


# Reviews

Reviews published in *School Science Review* are the opinions of individual reviewers, and are not an official Association for Science Education (ASE) view or endorsement of the resource. Reviewers are selected to write reviews on the basis of their experience and interests. They are expected to draw attention to perceived weaknesses or limitations of a resource as well as its strengths. The reviews are written from the standpoint of someone seeing the materials for the first time and considering how they themselves would use them, or think colleagues would be likely to use them.

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## **Hubble Legacy: 30 Years of Discoveries and Images**

*Jim Bell*

*New York: Sterling, 2020*

*205 pp. £25.00*

*ISBN 978 1 4549 3622 0*

Initial funding approval for the Hubble Space Telescope (HST) was given in the late 1970s, but it was not until 24 April 1990 and \$4.7 billion later that it was launched. The aims were straightforward: the HST was ‘to gather light from cosmic objects [and] to better understand the Universe’. This wonderful book gives an excellent overview of the history of the HST, a very well-chosen selection

of beautiful photographs (many of them full page), details of some of the HST’s achievements, and predictions for future developments. There is even a page on Hubble servicing missions!

The HST’s actual photographs are false-colour composites using different parts of the electromagnetic spectrum; many of those in the book will already be very familiar to the reader. Astronomical science has been completely revolutionised by the HST: it determined, ‘with exquisite precision’, the rate of expansion of the universe; it took the first photograph of a planet orbiting another star; it provided us with the most accurate dark matter measurements to date; it discovered new moons in our solar system, and very much more. What else might it achieve before its likely demise in the next few years?

Author Jim Bell (a professor at Arizona State University, a visiting scientist at NASA’s Jet Propulsion Laboratory and President of the Planetary Society) has written a first class, highly readable book recording the life of the HST. He

also provides details of what the next project might be – will it be the James Webb Space Telescope (operating in the infrared), the WFIRST (Wide-Field Infrared Survey Telescope), the LUVOIR (Large Ultraviolet, Optical and Infrared Surveyor Telescope), the HabEx (Habitable Exoplanet Imaging Mission), the OST (Origins Space Telescope), the LYNX (an X-ray Observatory) or something else? Much will depend on available space exploration budgets but the whole future of astronomical research promises, as always, to be extremely exciting.

*Gordon Miller*

## **From Arsenic to Zirconium – Poems and Surprising Facts about the Elements**

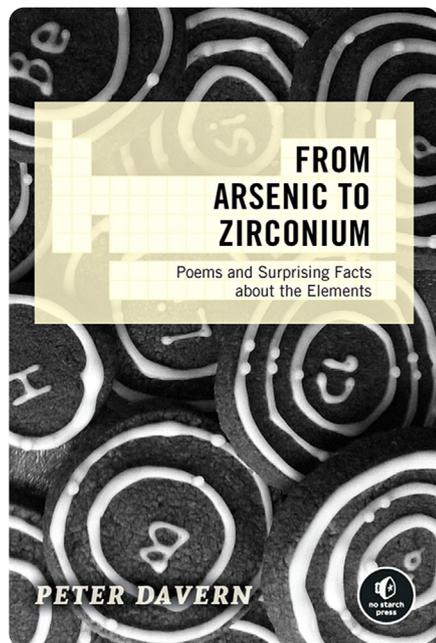
*Peter Davern*

*San Francisco, CA: No Starch Press, 2020*

*280 pp. £15.99*

*ISBN 978 1 7185 0027 3*

If you are the type of science teacher who loves telling stories and sharing anecdotes to enhance your lesson material, this book is for you! Adding to the ever-growing



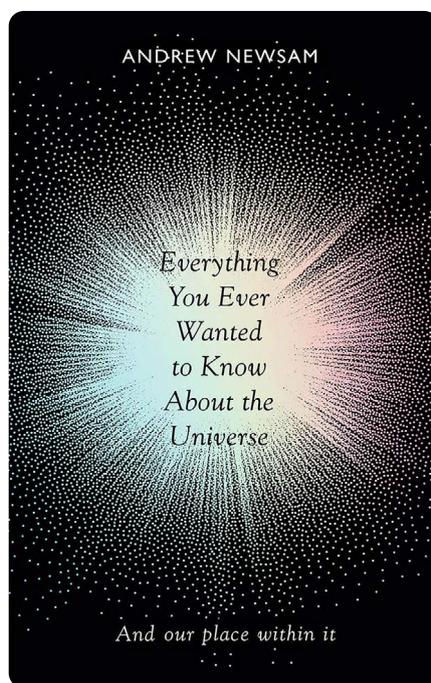
library of books about the chemical elements, their properties and uses and their positions in the periodic table, Peter Davern has come up with an interesting and engaging approach to this fundamental area of chemistry, involving the mammoth task of writing 93 topical and metred poems on which to base his commentary!

Presented in atomic number order, the elements from hydrogen to uranium are each treated individually, while the transuranic elements are dealt with collectively in the final section. Starting with the poem, the facts and ideas presented within the verse are expanded in the text, providing a necessarily limited but nevertheless valuable up-to-date look at each element. With titles such as *'The handy, sandy, cyber king'*, *'Made from kelp of old'* and *'Pigments blue and cancer's foe'*, a picture is painted of each element's place in the world. The facts included across the poems range from uses of the elements to their biological roles, from chemical and physical properties to colours and chemical tests, and from historical references to the origin of names. As an illustration, the poem about cesium (the book is an American publication) entitled *'Atomic clock'* introduces the reader

to a wide-ranging group of facts: the physical properties of cesium related to its position in group 1; its apparently low reactivity in water (due to rapid dispersion of the hydrogen gas produced); the use of its salts to toughen glass; cesium formate brines and their use as drilling fluids; and a brief explanation of the standard cesium atomic clock.

This is not the sort of book one would sit down and read from cover to cover in one sitting. Dipping into it for even just five minutes would provide some new slants on one or more of the elements and another interesting fact or two to add to the reader's bank of periodic table knowledge. Left lying around in the lab or on display in the school library (although perhaps not in these COVID times!), a budding chemist would also find endless fascination in its contents.

*Janet Mitchell*



**Everything You Ever Wanted to Know About the Universe: And Our Place Within It**

*Andrew Newsam*  
 London: Elliott and Thompson, 2020  
 207 pp. £11.99  
 ISBN 978 1 78396 260 0

There cannot be many people who have not stopped to look at

the stars in the sky and admired them, especially when comets like NEOWISE were visible to the naked eye. This book aims to spark more curiosity about the universe and to help the reader make sense of the discoveries about and mysteries of the cosmos.

The author takes the reader on a journey across the universe, starting with what we can see when looking at the night sky from our own place on Earth. In the introduction, Professor Newsam sets the scene by describing what astronomy is, and uses examples such as the discovery of helium to explain the benefits of studying objects so far away. He provides advice and suggestions about how the reader can start to study astronomy without the need for expensive equipment.

After the introduction, the reader's journey through the universe is divided into six chapters: *Looking out from Earth*; *The Sun as a star*; *The Solar System*; *Stars*; *Galaxies*; and *The Big Bang*. There are colour plates in the middle of the book, including some taken by the author, and the appendices contain useful facts and figures for all budding astronomers. The author's writing style makes the information easy to comprehend without being too simplistic or technical; he achieves a really effective balance between giving plenty of facts and detail and giving clear and simple descriptions and explanations. Discoveries about celestial bodies are set in historical context and the pen portraits of key scientists, alongside their observations and theories, allow the science to be told without being distracted by life stories.

The book is aimed at anyone wanting to know more about astronomy, and is an ideal book for A-level students and curious key stage 4 students (ages 14–18). For example, I intend to use the section on Kepler's laws as pre-reading for

lessons on gravitational fields as it explains how Kepler developed his laws. This sets the scene for using the mathematical expressions in lessons. The chapter on the solar system includes 'stories' about minor bodies such as dwarf planets and asteroids, which will give context and detail to support the astronomy and cosmology topics in A-level courses. I will also be

recommending this book to GCSE students, particularly those who are looking to take physics to A-level and those who are curious about the night sky.

Above all, this is a really enjoyable read for a wide range of readers. The author is an experienced science communicator so you would expect the book to be easily accessible for the

non-specialist, as well as providing facts and details to satisfy those with more understanding of astronomy. In my opinion, the book met these expectations and, as a physics teacher, I enjoyed reading this book and will be recommending it to my colleagues for subject-specific professional development.

*Gill Clarke*

### Reviewer

**Gill Clarke** teaches biology and physics to A-level and is studying part-time for a doctorate in education.

**Gordon Miller** is now retired after 40 years of teaching physics in both state and independent schools, with the last 27 years spent at St Paul's School, London.

**Janet Mitchell** is a recently retired chemistry teacher living in Surrey.

## Safeguards in the School Laboratory (Twelfth Edition)

**By the ASE Health & Safety Specialist Group**  
**Member Price £20.00**

The 12th edition of this invaluable ASE publication is for all those involved in 11-19 science education. It seeks to provide an overview of health and safety issues in science education; it flags up areas where there are significant misconceptions and where problems commonly arise, and draws attention to situations which, although rare, may have serious consequences.

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