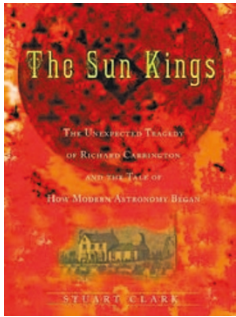


An unexpected thrill



THE SUN KINGS: THE UNEXPECTED TRAGEDY OF RICHARD CARRINGTON AND THE TALE OF HOW MODERN ASTRONOMY BEGAN BY STUART CLARK

Princeton Univ. Press: 2007. 224 pp. \$24.95.

Run, don't walk, to your nearest Princeton University Press outlet store to buy *The Sun Kings* by Stuart Clark. It is a remarkable book combining science, history and human drama. It exemplifies a genre that includes fascinating physical science stories such as *The Neptune File* (by Tom Standage) or *Longitude* (Dava Sobel). I was drawn into Clark's story like to a detective novel — even devouring his footnotes with as much anticipation as his human accounts.

Stuart Clark deftly manages an authoritative description of how the Sun affects the Earth within a captivating story-telling presence. He weaves a tale that spans the golden era of modern astronomy — when telescopes grew in size and light-gathering power and became sufficient to support quantitative measurements. Perhaps it was William Herschel's boredom in charting stars that led him to make quantitative solar observations, but this new style of observing soon became the norm, marking the birth of what we now call astrophysics.

Clark introduces us to this science by writing about a modern solar flare and coronal mass ejection — a time when our mobile phones, satellites and radio communications failed us. There's a deep message in his tale of that October/November 2003 week: this recent storm paled in comparison with the 'perfect solar storm' of 1859 that destroyed some of the communication infrastructure of the day. As we soon discover, history has repeated itself, in part because we've learned only too slowly that the Sun can have dramatic effects on a technological society.

In addition, Clark touches on the longer term, and more profound, interaction of the Sun and civilization through climate change. For example, he reveals that Herschel was the first to attempt to quantify these effects by studying sunspots and the price of wheat. Prophetically, the scornful response to his analysis from the academic community accurately foreshadowed what is now a central issue in the current ongoing astrophysical climate-change debates.

The connections he draws between the scientists' life stories and the trajectory of modern physical science is captivating. One

wonders, for example, where modern solar physics would be today if Richard Carrington had not suffered from the personal failings of the Astronomer Royal, George Airy. Today we recognize Carrington as an innovator in fixing our coordinate system for describing the changing solar surface, but evidently had circumstances been different, his mark on history would be much bigger.

The book also reveals other 'tragedies' — for example, where would we be now if the academic community had investigated fairly the claims of Herschel (our first infrared solar physicist) in the nineteenth century that sunspots were correlated with a hotter climate? Perhaps our non-astrophysical colleagues wouldn't still be lost in the ongoing debate over whether the Sun, in addition to mankind, plays a role in terrestrial climate change.

Despite being a working scientist, it was still sobering to read how the personalities and life circumstances of the likes of Carrington, Airy, Herschel and even Carl Friedrich Gauss and Lord Kelvin were intertwined in ways that prioritized the directions of future scientific enquiry. But it was inspiring to see that some of our greatest understanding has come from the quiet determination of lone individuals like the retired pharmacist Heinrich Schwabe who discovered the 11-year sunspot cycle. According to Clark, he also made his mark without the benefit of scientific establishment. Clark's exposé of Carrington's encounters with the powerful scientific figures of the nineteenth century is as much a lesson as it is a history. The reader is left with the clear sense that science often advances in random, but very human, ways.

This story is big — much more than just a biography of Richard Carrington. As a scientist this book is one I'd even recommend to non-scientific friends and colleagues who ask not just what we do, but why we do it.

Jeff Kuhn

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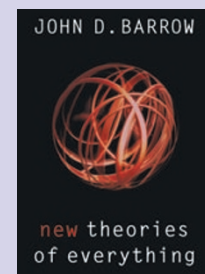
On our bookshelf



The Earth Machine: The Science of a Dynamic Planet by Edmond A. Mathez and James D. Webster

Columbia Univ. Press: 2007. 335 pp. \$24.95.

How does our planet work? From the Earth's formation out of space dust to its continuing evolution, from the molten core to the outer atmosphere, this book presents what we currently know as well as the open questions.



New Theories of Everything by John D. Barrow

Oxford Univ. Press: 2007. 272 pp. £16.99.

An updated version contains the latest ideas, tools and predictions in the quest to find the one theory that explains everything in our past and future. Besides physics, the author considers philosophical and cultural implications.