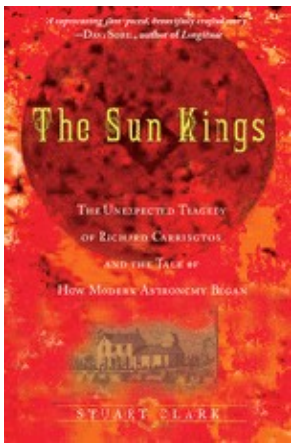
September 2009
Reviews

'The sun kings'

reviewed by Keith Mansfield



The sun kings: the unexpected tragedy of Richard Carrington and the tale of how modern astronomy began

by Stuart Clark

Imagine a biologist trying to deduce the life cycle of an unknown creature by observing it just long enough to witness four beats of its heart. Nowadays, we know the Sun follows an eleven−year cycle, so even lifelong professional astronomers are likely to witness no more than four of its pulsations. Solar astronomy is truly a multigenerational science and its beginnings are brilliantly summarised in Stuart Clark's story, built around the greatest magnetic storm ever recorded.

Telling how astrophysics was born out of astronomy, the narrative weaves backwards and forwards through time and space, tracking a handful of key personalities Clark's Sun Kings whose obsessive drive laid the foundations of modern solar theory. The tale is lively, informative and often compelling, even though this jumping back and forth can be confusing. While a tighter narrative and structure might have been more effective, it is well worth persevering with Clark's inspirational read.

As the book opens we join the crew of the nineteenth−century clipper, Southern Cross, sailing the Pacific in

the throes of the most widely observed aurora on record one that stretched from the poles to deep within the tropics. It transpires that Clark's central character, Richard Carrington (of the book's subtitle), witnessed something most unusual while observing the Sun the day before. Intriguingly, the magnetic instruments of the observatory at Kew recorded a disturbance in the Earth's magnetic field at just the same time. So the puzzle begins.

Clark rewinds fifty−plus years to the ideas of William Herschel the celebrity astronomer of his day as the only person in history to have discovered a new planet. Many of Herschel's insights proved to be as ahead of their time as his telescopes, but the thought that the price of wheat might be affected by a solar cycle was met with ridicule.

After Herschel we follow the explorations of German naturalist Alexander von Humboldt, another of the players fascinated by the phenomenon of magnetic storms. Even Carl Friedrich Gauss himself makes a cameo appearance as he is co−opted into Humboldt's plan for a global network of magnetic observing stations to systematically measure Earth's restless magnetic field. But, for this to succeed, Humboldt also needs the help of the British Empire. Step forward Colonel Edward Sabine and Herschel's illustrious son, John.

The cast of characters also includes Heinrich Schwabe, climbing into his Dessau attic every day for 31 years to log the number of sunspots; Warren de la Rue who pioneered solar photography; Gustav Kirchhoff; Robert Bunsen (the only person I know to have a burner named after him); and Joseph von Fraunhofer (ditto with lines). There's also Edward Walter Maunder, George Ellery Hale and, latterly, William Thomson (aka Lord Kelvin). Throughout, Carrington is often in the foreground, while the shadow of long−time Astronomer Royal, George Airy, looms larger than life behind.

Like a telescope magnifying the practice of science itself, a fascinating aspect of *The Sun Kings* is the way it casts its own lens over how this great endeavour really progresses. Yes, there are observations, often meticulous measurements, theories and predictions, but there are also strong personalities and sometimes bitter priority disputes. Many times, those whose earlier work has given them sufficient kudos can use this scientific capital to dismiss or discredit the young upstarts who might steal their mantle. Readers familiar with David Bloor's *Knowledge and Social Imagery* (2nd edn, Chicago University Press, 1991) will nod sagely as Airy's attempts to maintain an iron grip of the observations and data throughout his forty−year tenure at Greenwich.

Similarly with Kelvin, C. Watson's view (from *Some Nineteenth Century British Scientists*, OUP, 1969) that "during the first half of Thomson's career he seemed incapable of being wrong while during the second half of his career he seemed incapable of being right", is vividly brought out. The Baron of Largs steadfastly refuses to countenance any connection between the Sun and the magnetic storms that rage in Earth's upper atmosphere. Meanwhile, the unfortunate Carrington is left struggling and enters a downward spiral, having been denied the professional position that his observing skills and zeal undoubtedly merited.

Despite the rankling on all sides, what also shines through as brightly as any solar flare is the unstinting dedication of the body of astronomers who made these discoveries possible. To watch the skies systematically, day and night, year after year, demonstrates an astonishing level of patience and commitment that will inspire every reader.

The wrappers around Clark's book bring us firmly back to the present, and it is at the conclusion that the author is at his absolute confident best. It would be wrong to see *The Sun Kings* as purely a read for history of science buffs. The subject matter may be historical, but the interest in it was born out of a series of magnetic storms in 2003 that brought down a Japanese weather satellite and forced airline flights to be lowered and diverted, while disrupting radio communications, mobile phones, satellite TV and the GPS system. They were a reminder that we are not always the masters of this island Earth we inhabit. Despite our technological

achievements, there are times when we have to bow to the awe−inspiring power of nature in this case stretching its fingers across ninety−three million miles.

Clark tells us that it's a case of when rather than if this will happen again one day, on a scale matching or even greater than Carrington's flare. Reading his gripping story, I confess I'm tempted to settle for the technological problems in exchange for the chance to witness the spectacular accompanying aurora that would illuminate our skies.

Book details:

The sun kings
Stuart Clark
paperback 224 pages (2004)
Princeton University Press
ISBN−10: 0691141266
ISBN−13: 978−0691141268

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