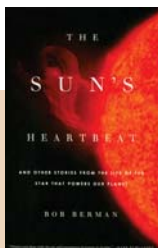


field's full range of physical ideas, mathematical techniques, and computational algorithms.

Nicholas Kevlahan
McMaster University
Hamilton, Ontario, Canada

The Sun's Heartbeat And Other Stories from the Life of the Star That Powers Our Planet

Bob Berman
Little, Brown and
Company,
New York, 2011.
\$25.99 (290 pp.).
ISBN 978-0-316-09101-5



For centuries, astronomers have studied the Sun—the astronomical object most observable by anybody, with or without a telescope. In fact, sunspots have the longest historical record of any directly observed natural phenomena in the universe.

But familiarity breeds contempt. Early in *The Sun's Heartbeat: And Other Stories from the Life of the Star That Powers Our Planet*, author Bob Berman, who regularly contributes to *Astronomy* mag-

azine, confesses that “it was the dark, starry heavens with their magical cobalt galaxies that pulled at my spirit, and the Sun was the night's greatest enemy.” However, a multitude of Sun-observing satellites and recent advances in understanding the influence of solar activity on our life and on society have fueled a revolution in solar physics.

The Sun is back in the public consciousness, and Berman's journey to rediscover our parent star is an entertaining testament of that. His book treads on similar subjects as does Leon Golub and Jay Pasachoff's *Nearest Star: The Surprising Science of Our Sun* (Harvard University Press, 2001). *Nearest Star* is an excellent exposition by two experts in the field, whereas *The Sun's Heartbeat*, written in an easy-going, conversational tone, is more suitable for the nonspecialist reader.

Berman's book begins with the violent birth of the Sun and ends with the story of its eventual decline to a state of oblivion as a dwarf. In between, it covers topics that include how the Sun shines, how it modulates our environment through its variable magnetic output, and what are the origins of auroras and rainbows. The author traces the his-

tory of major scientific breakthroughs in solar and stellar physics from very early sunspot observations to remote spectroscopic probing of elemental compositions. He discusses extreme solar storms and the devastating effects they could have on such space- and ground-based technologies as satellites and electric power grids. The narrative is peppered with quirky facts that highlight our intimate relationship with the cosmos; for example, the iodine in our thyroid gland traces its origin to supernovae, the most violent explosions in the universe.

By interweaving stories from the lives of those who have contributed to our knowledge of the Sun, Berman illuminates the highs and lows of scientific pursuit. He covers the infamous 17th-century controversy involving Galileo Galilei, Christoph Scheiner, and the papacy, and narrates the 19th-century romance of scientist-couple Walter and Annie Maunder, whose collaboration culminated in the elegant representation of the sunspot cycle through the now-famous butterfly diagram. The author's chronicles of modern scientists John “Jack” Eddy and Eugene Parker, whose seminal insights were questioned and



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even ridiculed when first presented, illustrate the frequent vagaries and rare rewards of scientific pursuit.

Some sections of the text are a bit drawn out and impulsive. For example, the protracted discussions of solar UV rays, vitamin D production, and skin cancer could have been more compendious. The author's narration sometimes assumes a frivolous tone and comes off as forced humor. While striving to achieve a balance in his commentary on the influence of natural solar forcing and anthropogenic forcing of global climate, Berman comes close to giving ammunition to those who are prone to sweeping generalizations that don't reflect the full nuances of climate science. That should not be regarded as a serious flaw in the book, but rather as a cautionary reflection on how it might be misused.

In other instances, *The Sun's Heartbeat* is elevated to that rare category of writing in which the reader becomes one with the writer and an emotional bond is formed. Berman's raw, organic description of the phenomena of solar eclipses and totality—that magical moment when the Moon blocks out the Sun's disk entirely—is such an instance of brilliant artistry.

In his quest for the light of the Sun, Berman takes his readers on a fantastical journey through the birth, life, and demise of the Sun. On that quest, the reader will travel through Manhattan-henge, where the edges of the streets of New York City glow with the rays of the setting Sun, and will chase solstices and eclipses to Newgrange in Ireland, and the Konark Sun Temple in India. Through time and across continents, you are invited to take this journey with *The Sun's Heartbeat*.

Dibyendu Nandi

*Indian Institute of Science Education
and Research
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