

finding of innate circannual clocks: endogenous seasonal rhythms that persist even in constant temperature and day length with a usual cycle length of around 300 days rather than 365 days. Circannual clocks were first found in hibernating ground squirrels by Eric Pengelley in 1966, and in seasonally migrating songbirds in 1967 by Ebo Gwinner, the influential ornithologist to whom the book is dedicated. In the 40 years since then, significant progress has been made by only a few labs. The physiology of the

circannual pace-maker in the Soay sheep, for example, is becoming better understood through studies by Gerald Lincoln and David Hazlerigg at the Centre for Reproductive Biology in Edinburgh, UK.

Foster and Kreitzman have produced a tantalizing account of the facts behind seasonality. Its occasional nickname, 'nature's contraceptive', reflects the key function of seasonal organization: thousands of species across the globe, including those in the tropics, use seasonality to turn off reproduction at times

of year when low food supply is expected and individual fitness is better served by waiting for the next season. *The Seasons of Life* is a joy to read, and a compelling text on the importance of seasonality in the evolution of life on Earth. ■

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Unmeasurable verse

Physicist and author Alan Lightman's latest work is a book-length poem. In *Song of Two Worlds*, he writes from the perspective of a man reassessing his life after a tragedy. Lightman splits his epic into two sections; in the first, he marvels at the measurable world, the glory of geometry and fact. In the second, he explores the unmeasurable, the pleasure and pain of love, the beauty of a sunset and the night sky. An excerpt from the latter section is reproduced here.

Excerpt from *Song of Two Worlds*

I am a fragment
That hurtles through space
While the breeze of the universe
Ruffles my hair.

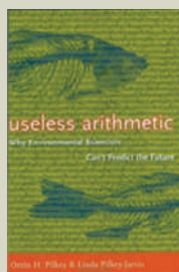
Evening. I gaze
Through my telescope,
Searching the colors of stars.
Some are the hues of goats' wool,
Some ochre olive,
Or pink bougainvillea.

In chasms of space
I see stars born from gases,
Great thrumming furnaces oozing their heat,
Convective motions, electron opacities —
Elsewhere stars dying,
Cold cinders
Or giant explosions, eruptions of light,
Cities consumed in a nuclear blast,
Billions of years dimmed in a second.

I have learned
That the heavens are violent and fragile
And doomed to destruction,
Just as this thimble the earth.
All in the cosmos is failing,
And nothing remains,
And we measure the hour of the stars,
As I measure one morning's light.

Here, in the glass of this eyepiece.

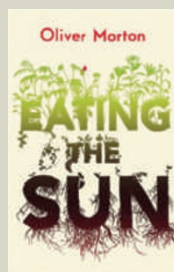
Song of Two Worlds
by Alan Lightman
A. K. Peters: 2009. 112 pp. \$24.95



Useless Arithmetic: Why Environmental Scientists Can't Predict the Future

by Orrin H. Pilkey and Linda Pilkey-Jarvis (Columbia Univ. Press, £15.50)

Reviewer Roger Pielke Jr wrote: "The authors have identified a critical challenge confronting the modern scientific enterprise: our ability to produce model-based predictions seems to have outpaced our ability to use such tools wisely in decision-making." (*Nature* **447**, 35–37; 2007.)



Eating The Sun

by Oliver Morton (Fourth Estate, £9.99)

There are few books on photosynthesis for the non-specialist. *Eating the Sun* fills that gap, covering the history of its discovery and its processes. "Morton's account of the ubiquitous importance of photosynthesis is an original viewpoint for looking at the world. It is written with verve and an eye for detail. His breadth of scholarship could leave other science writers green — with envy," wrote reviewer Richard Fortey (*Nature* **449**, 284–285; 2007.)