assuming) the functional efficiency of a structure in a single animal, and then imagining how natural selection would have shaped it. This is a good approach up to a point, but how do you know if you are wrong? One way is to check whether your hypothesis matches the phylogenetic pattern. But there is not a single phylogeny in this book to provide an independent test, even though that would provide a pictorial 'flow chart' to clarify the proposed direction of evolutionary change.

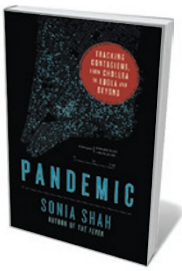
In the chapter on flight, on which he has published original research, Wilkinson begins by discussing some of the physical parameters (such as lift and drag) that constrain flight. This is straightforward and well written, although he does not sufficiently distinguish the kinematic and aerodynamic differences between gliding, flapping and other modes of flight. He assumes that all flying animals had gliding ancestors. But gliders such as the colugo and flyers such as bats are on completely different branches of the vertebrate tree — and their ecologies are completely different. Moreover, no one has convincingly shown how to transform a gliding wing into a flapping one, or that this ever happened. It cannot be assumed that stiff-limbed, quadrupedal gliders evolved the specialized flight stroke. This is why phylogeny matters.

Wilkinson acknowledges that opinion differs on the evolution of feathers, but he ignores the literature that has placed early feather types and their inferred functions — insulation, colour, brooding, inclined running and flight — in phylogenetic order (see R. O. Prum and A. H. Brush *Sci. Am.* **288,** 84–93; 2003). He does not explain the anatomy and functional morphology of flying animals, and pays little attention to kinematic studies of living animals that describe the uses of forelimbs and feathers (see, for example, K. P. Dial *et al. Nature* **451,** 985–990; 2008).

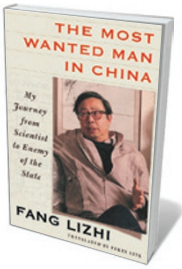
Restless Creatures runs the gamut from microorganisms to climbing primates (anthropoids, not clerics), although these are presented in no particular order. Wilkinson shows how locomotion is intimately related to breathing, metabolic rates, habitat and developmental genetics in a variety of groups. I was pleased that he also discusses the locomotion of pollen and seeds, because animal biologists so often ignore plants (see I. T. Baldwin *Nature* **522,** 282–283; 2015), even though they provide an alternate universe of evolutionary possibilities. There is a great deal in this book that is enjoyable and informative, but ultimately, I found it a less than satisfying guide to the evolutionary biology of locomotory studies. ■

Kevin Padian *is in the Department of Integrative Biology and the Museum of Paleontology of the University of California, Berkeley.*
e-mail: kpadian@berkeley.edu

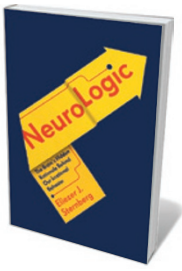
Books in brief



Pandemic: Tracking Contagions, from Cholera to Ebola and Beyond
Sonia Shah SARAH CRICHTON *(2016)*
Cholera — the acute bacterial infection that can kill in hours — serves as a lens on new pandemics in this grounded, bracingly intelligent study. As science journalist Sonia Shah reveals, more than 300 infectious diseases have emerged or re-emerged in the past half-century, and epidemiologists predict a catastrophic pandemic in the next. Shah lucidly layers history into a tour of transmission hotspots, from incubators of 'spillover' animal-borne illnesses such as China's wild-animal markets to globalized transport and hyperdense cities.



The Most Wanted Man in China: My Journey from Scientist to Enemy of the State
Fang Lizhi, translated by Perry Link HENRY HOLT *(2016)*
This memoir by late Chinese astrophysicist and dissident Fang Lizhi is a trenchant explication of science under siege. Fang learned English partly by studying Paul Dirac's 1930 *Principles of Quantum Mechanics*, and carved out a career at the University of Science and Technology of China. Although his youthful love for Communism withered during the forced labour and expulsions of the Cultural Revolution and beyond, Fang's "awe at the colossal thing called the universe" never waned, surviving surveillance and exile. Inspiring.



NeuroLogic
Eliezer J. Sternberg PANTHEON *(2016)*
A man stumbling around in a brightly lit room insists it is dark. When a scan shows damage to his brain's visual monitoring as well as its processing system, his internal 'logic' is revealed. This case study is just one of many marshalled by neurologist Eliezer Sternberg for his research-rich study of the neurological circuitry behind the narratives we use to make sense of things. Sternberg cracks open the brain's "black box" to examine its parallel conscious and unconscious systems, and explores states from dreaming and acts on 'autopilot' to memory, hallucinations and trauma.

Privacy: A Short History
David Vincent POLITY *(2016)*
Have the reports of privacy's demise been greatly exaggerated, or is it the dodo of our digitized world? Social historian David Vincent examines that question in this deft study of privacy in houses, cities, correspondence and surveillance, from 1300 to today. We peer into the "fugitive spaces" where medievals scratched epistles; the Victorian dichotomy of fortress-like abode and sociable public transport; and today's paranoia-soaked debates over digital media. Whether linked to ideas of sanctuary, secrecy or intimacy, privacy is a flashpoint in the charged relationship of individual to society.

Snowball in a Blizzard: A Physician's Notes on Uncertainty in Medicine
Steven C. Hatch BASIC *(2016)*
How do you pinpoint a tumour in a mammogram? About as easily as you find a snowball in a blizzard, writes medical academic Steven Hatch in this penetrating examination of uncertainty in diagnoses and treatment. It is both constant, he shows, and ignored by physicians at their, and their patients', peril. He also shows why, looking in turn at issues such as false positives, mammography, hypertension treatments, drug trials and media reportage. **Barbara Kiser**