



SUMMER BOOKS

With the annual exodus from labs and lecture theatres on the horizon, *Nature's* regular reviewers and editors share some gripping holiday reads.

EDITORS' PICKS



Survival of the Beautiful: Art, Science and Evolution

DAVID ROTHENBERG
Bloomsbury: 2011.

What to do about beauty? Charles Darwin worried about the excess of the peacock's tail, but he invoked "endless forms most beautiful" to affirm the truth of his evolutionary theory.

Beauty is integral, not incidental, to the evolutionary process, says philosopher David Rothenberg in his rich account of the ways in which creatures make art. Evolution produces beauty as well as practicality. Moths, squid, elephants, proteins and birds produce individual as well as generic patterns.

Look at the variety of structures made by bowerbirds. Satin bowerbirds decorate their designs with blue items (plastic spoons will do). Golden bowerbirds use "two kinds of flowers: fresh olive-green ones and dried cream-coloured blossoms".

The resultant artwork is an end in itself, as well as a medium for reproductive behaviour, Rothenberg argues. Sexual selection requires flaunting, display, theatre, extravagance, scents and song. It demands excess, beyond what is necessary for survival.

Yet Rothenberg seeks laws that underlie performance in art and in science. He argues that human exposure to abstract art has helped us to find new patterns in scientific domains.

Gillian Beer is professor emeritus of English literature at the University of Cambridge, UK.



Everyday Information: The Evolution of Information Seeking in America

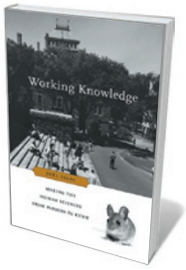
EDITED BY WILLIAM ASPRAY
AND BARBARA M. HAYES
MIT Press: 2011.

Everyday Information is an important book for anyone who has wondered how we got through life before the Internet. Without a web browser or smart phone, how did we find information? Why did we trust it? And what have global information networks altered?

For transactions such as purchasing a car or buying aeroplane tickets, the authors explain, we have switched from relying on local, trusted networks (such as travel agents) to depending on distant information networks (such as magazines and websites). But not all local networks are trusted: no one likes used-car salesmen.

We increasingly consume and create online information, sharing our interests in fantasy sports or comic books. Vibrant subcultures can result, and the Internet is changing who takes part. Online ecologies have restored female comic-book readership, for example, outside the male enclaves of specialist shops. So the demise of the corner shop has a silver lining. The book's US focus invites comparative studies.

Thomas Misa is director of the Charles Babbage Institute at the University of Minnesota in Minneapolis.



Working Knowledge: Making the Human Sciences from Parsons to Kuhn

JOEL ISAAC
Harvard University Press: 2012.

Unlike physics, chemistry and biology, which took on their modern forms in the nineteenth century, the social sciences coalesced only during the twentieth. The tale of their consolidation, rise and subsequent slide is often narrated as a clash of ideologies: scientific versus humanistic. In *Working Knowledge*, historian Joel Isaac reveals how institutional circumstances shaped the field.

He does so by putting its pioneers, including sociologist Robert K. Merton, psychologist B. F. Skinner and philosopher of science Thomas Kuhn back into the contexts in which they learned their crafts. He explores Harvard University in Cambridge, Massachusetts, where each spent formative periods.

Isaac documents brilliantly how they made their ways on the margins of departments. Elders of the university aimed to restrict specialization, so rising fields such as psychology and sociology were pursued in informal, interdisciplinary groups.

Isaac's elegant study shows how debates over method spring from efforts to embed new types of inquiry in the classroom.

David Kaiser is professor of the history of science at the Massachusetts Institute of Technology in Cambridge.



1493: How Europe's Discovery of the Americas Revolutionized Trade, Ecology and Life on Earth

CHARLES C. MANN.
Granta: 2011.

European exploration and exploitation of the new world in the fifteenth century changed the world. Journalist Charles Mann relates how the 'Columbian Exchange' altered cultures and transformed much of the Americas, Asia and Africa into ecological copies of Europe.

The book's scope is vast. It ranges from US tobacco to Bolivian silver, the collapse of the Chinese and Spanish economies as a result of commodity-exchange feedback loops, and malaria's role in the creation of the United States.

When humans move, they take food and drugs with them. Plants form the matrix in which the rest of life operates, so their exchange has profound and often unanticipated consequences. The introduction of the potato to Europe, for example, led to over-dependence on it, resulting in famine, mass emigration and political and economic consequences that seem far from the humble spud.

Mann demonstrates the paradoxical nature of the ecological effects linking the world. Globalization is nothing new.

Sandra Knapp is a botanist at the Natural History Museum in London.



Biomedical Computing: Digitizing Life in the United States

JOSEPH NOVEMBER
The Johns Hopkins University Press: 2012.

Computers changed research in the life sciences in the 1950s and 1960s. Historian Joseph November engagingly relates how. The shift was far from inevitable, but was partly a result of a deliberate effort by the US National Institutes of Health (NIH).

The effort was inspired by Robert Ledley, a dentist turned operations researcher turned computer specialist whom James Shannon, then director of the NIH, brought in to overcome hostility to computing.

The life sciences also changed computers. November argues that the Laboratory Instrument Computer (LINC) was the first personal computer. This was developed for biomedical research by Wesley Clark and his colleagues at the Massachusetts Institute of Technology (MIT) in Cambridge. In 1963, the NIH funded researchers to take LINC's back to their labs, provided that they spent six weeks that summer at MIT. Participants helped to assemble their LINC's, which were behind schedule in production.

November is now working on a biography of Ledley. That is good news: November's style is convincing and compelling.

Paula Stephan is professor of economics at Georgia State University in Atlanta, and author of *How Economics Shapes Science* (2012).



Travels with a Tangerine: A Journey in the Footnotes of Ibn Battutah

TIM MACKINTOSH-SMITH
Picador: 2003, reissued 2012.

The Tangerine in the title is Ibn Battutah, who was born in Tangier, Morocco, in 1304. Between 1325 and 1354, he travelled three times as far as Marco Polo, following the Silk Road across central Asia and visiting India, Indonesia, the Philippines, China and Zanzibar. He also crossed the Sahara Desert to Timbuktu, an oasis city emerging as a centre of scholarship that would rival Paris and Oxford.

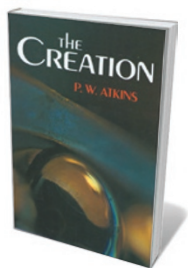
Arabist Tim Mackintosh-Smith was so enthralled by those journeys that, 650 years later, he retraced Ibn Battutah's first great trip to Mecca. This book is a delightful account of his experiences. Two further volumes span Ibn Battutah's later journeys.

Ibn Battutah was insatiably curious and wrote extensively on ethnography, geography and botany. In 1348, he provided one of the best contemporary accounts of the Black Death.

I first 'met' him 50 years ago on the Malabar Coast of India, which he described, including mention of black sand (containing ilmenite and monazite ores). This was helpful to my research on the effects of exposure to high local background radiation.

I highly recommend Mackintosh-Smith's trilogy.

Robin Weiss is professor of viral oncology at University College London.



The Creation

PETER ATKINS
Freeman: 1981.

In 1981, chemist Peter Atkins summed up evolution by natural selection: “Once molecules have learnt to compete, and to create other molecules in their own image, elephants, and things resembling elephants, will in due course be found roaming through the countryside.”

That is one of the more verbose moments in Atkins’s elegant, laconic and consequently short book, *The Creation*. In it, he relates how a creator who produced the world’s infinite variety of life forms could have been “infinitely lazy” — so the act of creation itself needs no explanation. The accumulation of changes arising from unguided movements within the space of possible forms can produce objects whose complexity baffles the best scientists.

But it gets even better. To update Atkins, once evolution creates a human mind in which ideas compete, tools such as spear throwers, computers and space shuttles will also, in due course, appear. Humans conduct tournaments of natural selection among ideas, so cumulative cultural adaptation will produce objects of ever-greater complexity. No light bulbs need switch on in our minds.

We could have been as ‘lazy’ as Atkins’s creator, and still iPads and things resembling iPads would have been destined to be part of our future.

Mark Pagel is professor of evolutionary biology at the University of Reading, UK.



The Copernican Revolution

THOMAS S. KUHN
Harvard University Press: 1957.

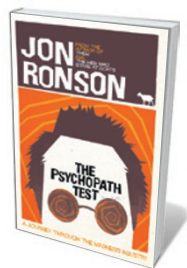
Before philosopher Thomas Kuhn debuted the idea of paradigm shifts in *The Structure of Scientific Revolutions*, he wrote *The Copernican Revolution*, published in 1957, the year when Sputnik went into orbit. Reading this book in the current age of extrasolar planets, genetics and string theory is eye-opening.

More than 500 years ago, Nicolaus Copernicus displaced Earth from the centre of the Universe, beginning profound changes in scientific thought. After following the thread of astronomical minutiae that led to that bold move, Kuhn argues that Copernicus didn’t foment a revolution himself, but rather hit on a way to mesh the world view of the past with the astronomy of the future. The true revolution swelled slowly, bursting onto the world centuries later.

Kuhn’s tale resonates with modern discoveries about planetary systems other than our own. The book opens our minds to how differently the history of astronomy could have played out had we lived on a world with twin suns, on a moon around a Jupiter-like planet or in a system packed with gas giants looping inside our planet’s orbit.

As we learn about other worlds, Kuhn’s analysis reminds us that we are poised for our own scientific revolution.

Caleb Scharf is director of astrobiology at Columbia University in New York.



The Psychopath Test

JON RONSON
Picador: 2011.

Several years ago, I interviewed a psychologist who studied people who believed that they had been abducted by aliens. She argued that, although deluded, they were not crazy.

I found myself wondering about the science behind labels of madness, as journalist Jon Ronson does in *The Psychopath Test*. Ronson delves into the madness industry to explore this question, travelling from a UK criminal psychiatric facility to New York, where he meets a former death-squad leader who says he just wants to be liked.

The Psychopath Test’s main subject is a checklist for psychopathy that is widely used by the criminal-justice system. It was developed by Canadian criminal psychologist Robert Hare. It has been attacked for leading to imprisonment of people who are deemed psychopaths, a label that is not included in the current edition of the *Diagnostic and Statistical Manual of Mental Disorders*. Ronson finds that the checklist criteria, such as ‘grandiose sense of self-worth’, can be applied flexibly.

Ronson’s gift is his ability to illuminate impenetrable worlds. Hare’s checklist is already the subject of criticism, but Ronson details many studies showing how bad psychiatry has been at diagnosing mental illness.

Sharon Weinberger writes on national security issues from Washington DC. Her most recent book is *A Nuclear Family Vacation* (2008).



Sightlines

KATHLEEN JAMIE
Sort Of Books: 2012.

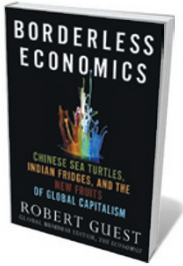
All too often, whatever our discipline, we are prone to tunnel vision. It takes a poet to stand back and show us the world as it is. *Sightlines*, Kathleen Jamie’s astounding series of essays, makes us look anew at the familiar and the strange.

From the whirling madness of a Scottish gannetry, Jamie narrows her focus to a pod of orca whales, circling silently below the cliffs where she is perched. In a hospital pathology lab, she surprises the clinical consultant with her desire to see other species — not dolphins, but “the bacteria that can pull the rug from under us” as she peers through an electron microscope.

Jamie visits Bergen, Norway, to see the Whale Hall museum under restoration. She joins the team scrubbing the leviathans’ bones with toothbrushes. Sitting in the ribcage of a blue whale is “like being in a very strange taxi, caught in traffic”.

Hers is a vital sense of being. She takes us from a teenage stint as an archaeologist digging up the long dead, to her triumph as she makes it to the abandoned Scottish archipelago of St Kilda and tells of its vanished inhabitants, who built “small dark closets, just to get some seclusion, some corrective to the sky, the sea and wind and each other”. Rejoicing in Jamie’s economy of words, we are never less than alive, bursting out of our cells and into the light.

Philip Hoare is a writer based in Southampton, UK. His latest book is *Leviathan* (2008).



Borderless Economics

ROBERT GUEST
Palgrave Macmillan: 2011.

Humans have been spreading around the globe for economic reasons for 50,000 years, since the earliest people in Africa chased animals for food. Now, movement across borders is more restricted than ever, yet this basic economic pursuit continues because disparity among nations is at a historical peak.

When individuals migrate to pursue opportunity, the places they leave behind and those they reach all gain. Mobile people bring cheap labour, consumers and dynamism. They send back money and information; some return physically.

In *Borderless Economics*, journalist Robert Guest has written — with data, anecdotes, and humour — an optimistic account of the state of this age-old pursuit, adapted to the political, economic and technological possibilities of today.

He travels from the United States to closed North Korea to explore immigrants' economic adaptation. Guest sheds light on concepts such as micro-multinationals: small-scale collaborations that span the globe, perhaps starting with a few university friends who source technologies in one country, serve markets in another and manufacture products in a third.

This is splendid book, but could have given more attention to diasporic low-skilled workers.

Iqbal Quadir is founder and director of the Legatum Center at the Massachusetts Institute of Technology in Cambridge.



Victorian Science and Literature Part 1: Negotiating Boundaries

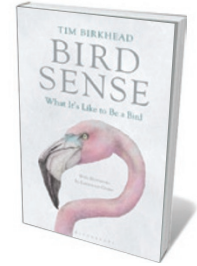
EDITED BY PIERS J. HALE AND JONATHAN SMITH
Pickering & Chatto: 2011.

How does scientific knowledge affect poetry? This question preoccupied many Victorian writers. *Negotiating Boundaries*, the first in an eight-volume edition of writings on Victorian science and literature, shows scientists, poets, novelists and critics in collaboration and passionate competition.

Poetry, wrote priest John Henry Newman in 1858, “is always the antagonist to science”. As science advances, poetry recedes. Nonsense, riposted geologist Hugh Miller: only feeble poets are put off by knowledge. For a “great poet”, science is not an enemy, but a “devoted friend”.

The Victorians used poetry to grapple with science. Scientific and literary writers tried to broker a relationship between fact and emotion. Photochemist and statistician Robert Hunt, for example, wrote in *The Poetry of Science* (1848) that “to rest content with the bare enunciation of a truth, is to perform but one half of a task”. The other half is to communicate that truth, surrounding it with impulses of feeling that “pass from soul to soul”. Science needs poetry, just as much as poetry needs science.

Alice Jenkins is professor of English literature at the University of Glasgow, UK.



Bird Sense: What It's Like to be a Bird

TIM BIRKHEAD
Bloomsbury: 2012

Tim Birkhead is more than your average twitcher. His fascinating book attempts to put us inside birds' eyes, ears, minds and even hearts, in seven chapters covering sight, hearing, touch, taste, smell, magnetic sense and emotions.

A behavioural ecologist, he specializes in sperm studies and avian infidelity; his chapter on touch focuses almost incidentally on bird sex. He takes us on adventures to find his subjects in the wild and rehabilitates little-known but prescient nineteenth-century naturalists.

Birkhead offers irresistible snippets. In addition to the conventional visible spectrum, many birds see the world in ultraviolet; wading birds can taste the presence of worms in wet sand; robins can ‘see’ Earth's magnetic field through their right eyes but not their left.

Birkhead generally avoids anthropomorphizing birds, although he comes close to crossing this line in the chapter on emotions. I know the feeling, having watched penguins in Antarctica hug their mates.

And although we will never really know how it feels to be a bird, Birkhead still leaves us with astonishing insight into how they sense their own ways through the world.

Gabrielle Walker is a writer based in London. Her latest book is *Antarctica* (2012).

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