SUMMER BOOKS

With the yearly exodus from labs and lecture theatres imminent, *Nature's* regular reviewers and editors share some tempting holiday reads.

EDITORS' PICKS

An Epidemic of Absence: A New Way of Understanding Allergies and Autoimmune Diseases

MOISES VELASQUEZ-MANOFF
Scribner: 2012.

The balance of power is key to the body politic. So is the power of balance to the human body. *An Epidemic of Absence* is filled with the myriad ways in which this balance can be disturbed.

Bacteria outnumber our cells by an order of magnitude. Moises Velasquez-Manoff looks at the implications of an even more diverse inner menagerie, linking parasite and microbe eradication to the onset of modern ills. He shows how exposure to malaria may prevent multiple sclerosis, and how the bacterium *Helicobacter pylori* may reduce the risk of developing certain cancers, while increasing that of others.

Inspired by this beautifully reasoned and meticulously researched account, I am adapting my clinic to accommodate its insights. We have much to learn about the therapeutic potential of symbiotic organisms. Velasquez-Manoff has opened a new door on “old friends” — that extraordinary world in each of us that could transform modern medicine.

David Katz is the founding director of Yale University Prevention Research Center in Derby, Connecticut, and author of *Disease Proof*.

Space Chronicles: Facing the Ultimate Frontier

NEIL DEGRASSE TYSON
W. W. Norton: 2012.

Basic science research often feels the axe in times of austerity — yet it spurs the very innovation and inspiration that can lift an economy out of the doldrums. Astrophysicist and supremely entertaining science popularizer Neil deGrasse Tyson is on a crusade to convince everyone of the political, economic and security benefits of space-science research and exploration.

The thoughtful essays in *Space Chronicles* are updated from Tyson's past speeches, articles and columns in *Natural History* magazine. His provocative yet pragmatic messages often focus on how space scientists and their advocates fail to communicate the importance of their work. We may be able to deflect budgetary cuts by demonstrating the relevance of science to our knowledge and to political and societal agendas such as literacy, security and national prestige. “What an ivory-tower luxury it is,” writes Tyson, “to lament that NASA is spending too little on science. Unimagined in these complaints is the fact that without geopolitical drivers, there would likely be no NASA science at all.”

Jim Bell is a professor at the School of Earth and Space Exploration, Arizona State University, Tempe, and president of the Planetary Society based in Pasadena, California.

Poor Numbers: How We Are Misled by African Development Statistics and What to Do About It

MORTEN JERVEN
Cornell University Press: 2013.

Increasingly, scientists turn to the large statistical databases of international bodies when testing favoured hypotheses to control for growth and economic development. They might hesitate after reading *Poor Numbers*.

Morten Jerven demystifies the production of statistics for gross domestic product (GDP) in developing African nations, and investigates why these statistics are inaccurate and systematically biased. He relates chilling tales of how his attempts to access raw data behind international institutions' statistics met with evasion, if not outright refusal. He concludes that GDP figures arise from negotiations among national statistical offices, central banks, ministries of finance and donors — all of which agree that measurement takes a back seat.

This book offers fascinating, disturbing insights for anyone interested in the role of numbers in the social sciences. For those using global economic databases, it should be required reading.

Monique Borgerhoff Mulder is professor of anthropology at the University of California, Davis, USA.

Arming Mother Nature: The Birth of Catastrophic Environmentalism

JACOB DARWIN HAMBLIN
Oxford University Press: 2013.

We should look to the past when responding to anthropogenic climate change. As shown in Naomi Oreskes and Erik Conway's *Merchants of Doubt* (Bloomsbury, 2010), cold-war ideology led to climate denialism. Jacob Darwin Hamblin goes further in *Arming Mother Nature*, arguing that Soviet and US plans to unleash environmental disasters on each other's blocs have contributed to today's lack of political will over climate change.

The schemes ranged from herbicide-spraying in south-east Asia to punching holes in the ozone layer with nuclear weapons, with the US (and British) proponents of these measures claiming they would do little long-term harm. So by the 1970s — when green diplomacy became a theatre of East-West competition — these proponents were dismissing the Soviet 'nuclear winter' scenario as propaganda. A few years later, they deployed identical arguments against Western warners of eco-catastrophe, such as climate scientist James Hansen.

Once communism fell, a few prominent cold warriors shifted easily towards blanket scepticism about human-driven environmental change — and, finally, to complete denial.

Cyrus C. M. Mody is assistant professor of history at Rice University in Houston, Texas.

Frankenstein's Cat: Cuddling Up to Biotech's Brave New Beasts

EMILY ANTHERS
Oneworld: 2013.

It is surprising enough that someone invented prosthetic gonads to alleviate the 'anguish' of castrated dogs. It is even more surprising (and unsettling) that there is a thriving market for them, with more than 250,000 pets around the world the happy recipients of fake balls. "One pet owner's silly silicone sac is another's medical miracle," concludes science journalist Emily Anthes in this witty exploration of the many ways in which humans are reshaping animal bodies in the twenty-first century.

Anthes gives us dozens of expertly crafted biotech vignettes: zebrafish beautified with sea anemone genes that produce fluorescent protein; transgenic 'pharm' animals that produce medicines in their milk; and remote-controlled live insects capable of reconnaissance in areas that are difficult for humans to access. As she flits from one animal encounter to the next, she weaves in historical attempts to change animals to meet our ends, and ponders the philosophical and ethical questions they raise. *Frankenstein's Cat* is hard to fault: an entertaining, intelligent book that casts new light on the shady gulf between man and beast.

Henry Nicholls is a writer based in London. His forthcoming book is *The Galapagos*.

The Music of Life: Biology Beyond Genes

DENIS NOBLE
Oxford University Press: 2006.

In the modern classic *The Music of Life*, physiologist Denis Noble explains simply and profoundly why the 'self' is the most hidden, and important, metaphor governing existence. Without it, we believe, there would be no legal system for lack of a culprit, no health system for lack of a patient, and no politics, culture or education — at least not as we know them. Yet the scientific metaphor of self, inherited from the Enlightenment, comes at a price: it entails an understanding of 'higher' levels of organization by appealing to the behaviour of constituent 'lower' elements.

Modern systems biology begs to differ: the self is a process, the integration of proteins, genes, tissues and systems in constant interaction and devoid of hierarchy. Searching for an illusory 'self' in the brain is pointless. And we must not believe that *sans* self, society crumbles. Descartes wrote, "I think, therefore I am"; we can graduate to "thinking, therefore being". As science continues its incessant, marvellous march, this realization will save us from mischief ahead.

Oren Harman is professor of the history of science at Bar-Ilan University in Ramat Gan, Israel, and author of *The Price of Altruism, a biography of geneticist George Price*.

Global Crisis: War, Climate Change and Catastrophe in the Seventeenth Century

GEOFFREY PARKER
Yale University Press: 2013.

Global cooling takes centre stage in Geoffrey Parker's masterful account of the famines and wars that killed one-third of humanity from 1590 to 1700. Every major dynastic state in Europe was brought to the edge by upheavals such as Russia's Time of Troubles and the Thirty Years War.

Historians have long searched for common variables in this cruel century, with climate change (the Little Ice Age and the Maunder Minimum of solar activity) the prime suspect in the bad harvests that so often instigated revolt or amplified military disasters. Following recent books by historian Emmanuel Le Roy Ladurie, Parker exploits information on contemporaneous weather, from archived records and natural proxies, to expose repeated local and global subsistence crises. His thesis is simple: the soaring costs of warfare led to the increasingly punitive taxation of farmers who were trapped growing cereal monocultures vulnerable to the cold springs and cool, wet summers. Climate did not dictate the overreaching geopolitical ambitions of the age, but it shaped their costs and outcomes.

Mike Davis is a writer and historian based in San Diego, California.

Paleofantasy: What Evolution Really Tells Us About Sex, Diet, and How We Live

MARLENE ZUK
W.W. Norton: 2013.

Evolutionary explanations for human health and behaviour abound. Some argue that living more like our ancestors will make us healthier; others say that we must overcome primitive impulses encoded in our DNA. Who to believe?

In *Paleofantasy*, Marlene Zuk takes us through what is known about human evolution, how it is known and how confident we can be about it. Zuk points out flaws in popular ideas about our evolutionary legacy, saying for example that we are not necessarily genetically doomed to be philanderers. Yet she also argues compellingly that evolutionary thinking can aid our understanding of human conditions: lactose tolerance in adults evolved recently and is therefore highly variable; other genetic conditions predate human ancestors and are relatively invariable.

I first consulted *Paleofantasy* when I offended someone by maligning the evolutionary arguments behind the 'Paleo diet'. But this rigorous book is not about whether to eat wheat: it is an entertaining synthesis of the hard science on human evolution.

Suzanne Alonzo is an evolutionary biologist at Yale University in New Haven, Connecticut.

The Book of Barely Imagined Beings: A 21st Century Bestiary

CASPAR HENDERSON
Granta: 2012.

Pliny the Elder's *Natural History* (AD 77) includes sciapods, creatures with a single monstrous foot. In the film *Avatar* (2009), dragon-like toruks rule the planet Pandora 150 years from now. Bestiaries have a long history and a confident future. *The Book of Barely Imagined Beings* is a beautiful work that celebrates Earth's extraordinary species, with the look and feel of a Victorian treatise.

From axolotls to zebrafish, the book revels in behaviour, ecology and design. Some creatures are so bizarre, their lives so exceptional, who can fault earlier naturalists for embracing the fantastical? Quetzalcoatlus, a pterosaur with a 10-metre wingspan, would terrify a toruk had they met. And even Pandora had no snails flying through the water by flapping their feet, like the sea butterflies of Chapter 19. From microscopic foraminifera to right whales, only evolution constrains this bestiary, and is clearly more accommodating than human minds. Caspar Henderson confirms Pliny's insight: observing nature, no statement about her seems incredible.

Stuart Pimm is professor of conservation at Duke University, Durham, North Carolina, and author of *The World According to Pimm: A Scientist Audits the Earth*.

The Nature of Technology: What it is and How it Evolves

W. BRIAN ARTHUR
Free Press: 2009.

In *The Nature of Technology*, Brian Arthur provides the most persuasive explanation yet of the origins and evolution of technology. Calling this a "subject of great beauty" with a "natural logic behind it", Arthur has written a classic of evolutionary epistemology.

We are shown how technologies and economic systems co-evolve, and how an economy is an expression of its technologies. We are brought face to face with our creations: robots, for example, which extend our capabilities but also pose challenges such as job displacement. Arthur argues that we more easily adopt technologies that enhance our humanness. He also explains what underlies resistance to innovation, such as controversies over genetically modified crops.

This is an antidote to pessimism that belongs with the works of Joseph Schumpeter, Thomas Kuhn and Ilya Prigogine. It has universal appeal as a source of insight into how creativity can solve our most pressing economic, social and environmental challenges.

Calestous Juma is professor of the practice of international development at Harvard Kennedy School in Cambridge, Massachusetts, and author of *The New Harvest: Agricultural Innovation in Africa*.

Beyond Human Nature: How Culture and Experience Shape Our Lives

JESSE J. PRINZ
Allen Lane: 2012.

In this invigorating look at what shapes human judgement, philosopher Jesse Prinz comes down solidly on the side of nurture. He critiques 'nativist' explanations that attribute cognition, language, emotion, morality and behaviour to hard wiring.

For instance, genetic influence is often cited as a reason for greater similarity in the traits of identical twins compared to non-identical ones. But Prinz points out that people treat identical twins more similarly and that twins raised separately often spent early childhood together.

One wishes Prinz had subjected his views on infant cognition and language to the stringent standards he demands from others. He does not, for instance, mention the invented 'home sign' communication systems of deaf children whose hearing parents know no sign language. In short, he oversells his nurturist alternative to an innate basis for language. Yet, however you lean in the nature-nurture debate — or even if you think it has gone away — you will enjoy the challenges here.

Virginia Valian is a distinguished professor of psychology and linguistics at Hunter College and the Graduate Center of the City University of New York.

Philosophiae Naturalis Principia Mathematica (Mathematical Principles of Natural Philosophy)

ISAAC NEWTON
1687.

I was prompted to reread Isaac Newton's great *Principia* on discovering that the first time he tried to track a comet, he took careful measurements — but in the wrong part of the sky. This howler only makes his masterpiece seem more extraordinary.

The *Principia* is no transparent prism of truth. Its abstract diagrams and legalistic prose conceal years of painstaking data collection. Inspiration may have struck beneath the apple tree, but this bookish scholar was also a skilled craftsman who ground his own mirrors and built furnaces for his alchemical experiments. He pictured himself looking out over the ocean of truth, but never saw the English coast and worked creatively with unreliable observations sent from all over the world.

"I feign no hypotheses," boasted Newton in the *Principia*'s second edition of 1713. This swipe at French rationalism was disingenuous. Convinced that God was present throughout our divinely ordered universe, Newton hammered the facts to fit his preconceptions.

Patricia Fara is senior tutor of Clare College, University of Cambridge, UK.

The Arch Conjuror of England: John Dee

GLYN PARRY
Yale University Press: 2011.

Life was hard for a poor Renaissance polymath. For John Dee — mathematician, astrologer, philosopher and alchemist — advancement depended on patronage. That meant negotiating the political and religious minefield of Elizabethan England, where a hint of scandal or treason could spell disaster.

Glyn Parry puts Dee at the heart of the Tudor court. Here, astrology, magic and alchemy offered potentially game-changing tools for those manoeuvring for position. A well-timed royal horoscope might counteract a politically dangerous prophecy. Yet Dee was no Thomas Cromwell. Outgunned by rivals and tainted by the slur of 'conjuring', Dee struggled to convert opportunities — such as consulting on the reform of the English calendar — into lasting security. His quest for patronage and intellectual recognition eventually took him to Poland and Bohemia, and renewed competition for the ears of princes.

Crammed with fresh evidence and sometimes boldly speculative, this book offers a new portrait of a fraught age — and of an astrologer unable to predict the rise and fall of his own star.

Jennifer Rampling is a research fellow in the Department of History and Philosophy of Science at the University of Cambridge, UK.

REVIEWS: SEE OVERLEAF

Spillover: Animal Infections and the Next Human Pandemic

DAVID QUAMMEN
W. W. Norton: 2012.

Stories of how infectious diseases jump from animals to humans never lack drama. From AIDS, SARS and the Ebola virus to this year's coronavirus, discovered in Saudi Arabia, and the emergence of H7N9 avian influenza in China, 'zoonoses' both fascinate and frighten.

In tackling tales of inter-species leaps, David Quammen is much too curious and concerned merely to opt for the thrill of the chase. In his gripping, authoritative account from material gathered over five years, this masterful writer follows scientists around the world — from bat caves in Guangzhou, China, to monkey shrines in Bangladesh. The richly contextualized result brings out a deeper understanding of what links such diseases together, why they emerge and how we have learned about them.

Quammen mixes travel writing and humour, and he has an enviable talent for carefully explaining scientific uncertainty. What happens after researchers raise the alarm on a new infection, he notes, depends on how citizens respond — "intelligently or doltishly". If you want to learn how science is responding to the threats, read this book.

Richard Van Noorden is assistant news editor at Nature in London.

The Burning Question: We Can't Burn Half the World's Oil, Coal and Gas. So How Do We Quit?

MIKE BERNERS-LEE AND
DUNCAN CLARK
Profile Books: 2013.

Jutting lighthouse-like among the offerings of science publishing this year is this handbook on climate change and what we need to do about it. Mike Berners-Lee and Duncan Clark have lit a beacon for the wayward, listing ships of climate thinking.

They lay the choice on the line. By burning carbon at current rates, we start up the global barbecue; by leaving fossil fuels in the ground, we save people and planet. Yet vast stores of unextracted coal, gas and oil are viewed as prime assets by fossil-fuel interests. And they contain 2,795 gigatonnes of carbon — five times the amount that would keep global temperature rise below the key 2 °C, as called for by the United Nations Framework Convention on Climate Change.

This is number-crunching and synthesis at their best, richly informed by realities political and psychological as well as scientific. Berners-Lee and Clark are clear-eyed, for instance, on the reasons for our slumberous lack of response, such as sabotage perpetrated by energy companies. And their strategy for action is nuanced and evidence-based. For those who, like me, witnessed the climate stalemate at Copenhagen in 2009, this is a book we have been waiting for.

Barbara Kiser is Books and Arts editor at Nature.

The Genius of Dogs: How Dogs Are Smarter Than You Think

BRIAN HARE AND VANESSA WOODS
Dutton Adult: 2013.

You may not be able to take your dogs to the beach, but you will enjoy taking *The Genius of Dogs*. Whizzing entertainingly through more than a century of experiments on animal cognition — including many carried out by the authors, evolutionary anthropologists Brian Hare and Vanessa Woods — it demonstrates the extraordinary extent of canine cerebral skills.

We get to know unsung hero Dmitry Konstantinovich Belyaev, who dodged the ideological ban on Mendelian genetics in Stalin's Soviet Union and conducted groundbreaking behavioural-genetics experiments on Siberian silver foxes. And we learn the context in which pioneering animal behaviourists such as Ivan Pavlov and Burrhus Frederic Skinner developed their theories through experimentation.

These pioneers paved the way for modern analysis of canine brain power, and the insight that a dog's intelligence and status as man's best friend are evolutionarily linked. The term 'genius' wildly overstates dogs' special ability to read human emotions and intentions. But that doesn't detract from this book's fascination, which draws on strong, cutting-edge science.

Alison Abbott is senior European correspondent at Nature.

The Secret Museum: Some Treasures Are Too Precious to Display...

MOLLY OLDFIELD
HarperCollins: 2013.

Sixty museum objects that are too rare or fragile to display, from Francis Crick's pencil sketch of DNA to Moon-dusted spacesuits, fill *The Secret Museum*. They hail from around the world. This book reveals a conundrum of unobserved existence as mysterious as Schrödinger's cat: for instance, the taxidermied paw of Charles Dickens's feline companion, made into a letter-opener handle, lies hidden in the New York Public Library.

Throughout, this book provides the primal scientific thrill of discovering something otherwise unseen. "To know that no one before you has seen an organ you are examining ... all this is so enticing that I cannot describe it," novelist and lepidopterist Vladimir Nabokov wrote about his microscope studies of butterflies, featured here.

This book beautifully frames Molly Oldfield's discerningly curated choices. Whimsical anecdotes are counterbalanced with serious discussion on topics such as the question of who owns indigenous peoples' treasures. Fragile they may be, but these objects embody stubborn, improbable endurance and the survival of ideas.

Mary Abraham is a biological sciences subeditor at Nature.

Far From the Tree: Parents, Children and the Search for Identity

ANDREW SOLOMON
Scribner: 2012.

Disability, as *The New York Times* best-selling author Andrew Solomon reveals, is contested territory. He cites two well-known essays on what parenting children with special needs is really like: one comparing it to arrival in flat, damp Holland after expecting Italy; the other to being dumped in the Beirut war zone. Solomon has travelled much further, interviewing more than 300 families with children dramatically different from their parents — metaphorically, apples fallen “far from the tree”. They include young people with conditions such as dwarfism and schizophrenia, prodigies and children conceived in rape, from Baltimore, Maryland, to Rwanda.

The result is a marvel of precision, lucidity and, despite its 962 pages, concision. The writing is eloquent, never maudlin. Solomon argues that disability is universal, declaring that “everyone is flawed and strange”. He debunks many clichés peddled by professionals, from clinicians to caregivers. If you are just a scientist, healthy and with no disabled person to look after, this book will change your view of your own species.

Tanguy Chouard is a senior biology editor at Nature.

On a Farther Shore: The Life and Legacy of Rachel Carson

WILLIAM SOUDER
Crown: 2012.

“A large share of what’s wrong with the world is mankind’s towering arrogance — in a universe that surely ought to impose humility”: so wrote Rachel Carson in a 1958 letter to an intimate friend. William Souder’s *On a Farther Shore* is studded with such revealing nuggets about the biologist, whose 1962 masterwork *Silent Spring* launched the environmental movement. With intelligence and lyricism, Carson depicted how the indiscriminate use of chemical pesticides was damaging ecosystems. *Silent Spring* turned a science-writing star into a prophet.

Souder’s biography is a highly readable, meticulously documented tour through the life of a dirt-poor Pennsylvania girl who, after years as a writer and biologist at the US Fish and Wildlife Service, publicly confronted the chemical industry’s heedless, profiteering drive. As she fought breast cancer — and withering attacks by the industry — Carson continued to passionately proclaim her views. She died at 56.

Souder’s biography lacks any deep probing of the challenges Carson’s gender posed in a male-dominated era. There could also have been more detail on her family life, as she spent decades supporting her near-penniless relatives. But this book still inspires a revisit to the source: *Silent Spring*, a work which remains alarmingly relevant.

Meredith Wadman is a biomedical reporter for Nature.

Zoobiquity: What Animals Can Teach Us About Health and the Science of Healing

BARBARA NATTERSON-HOROWITZ AND KATHRYN BOWERS
Knopf: 2012.

What do you call a veterinarian who treats only one animal? A doctor. Barbara Natterson-Horowitz, a cardiologist, and science writer Kathryn Bowers relate vets’ favourite joke, as well as dozens of other colourful anecdotes, in *Zoobiquity*, their playful call-out to comparative medicine.

Jaguars may carry mutated BRCA genes similar to those that increase a woman’s risk of breast and ovarian tumours. Some Dalmatians suffer heart attacks upon hearing loud noises, a phenomenon seen in both factory workers and an okapi at Copenhagen Zoo that died after a nearby classical music concert. And a chlamydia outbreak is racing through hypersexual koalas.

The authors use these stories to make the case that physicians could learn a lot about treating their *Homo sapiens* patients if they took the ailments of the animal world more seriously. No joke.

Ewen Callaway is a reporter for Nature.

Inside the Centre: The Life of J. Robert Oppenheimer

RAY MONK
Jonathan Cape: 2012.

According to his friend and fellow physicist Isidor Rabi, J. Robert Oppenheimer was a man “who was put together of many bright shining splinters”. In this weighty biography, Ray Monk teases out the spiky and colourful shards in the character of the ‘father of the atomic bomb’. We see Oppenheimer’s wit and high spirits on a youthful first trip to the American Southwest. In 1945, he sombrely accepts becoming “destroyer of worlds” when the US bombs Japan. Later he reacts in extreme and sometimes inexplicable ways when pursued by the US government over his communist sympathies.

Along with such much-chronicled moments, Monk goes beyond previous biographers. He details Oppenheimer’s scientific work, including his obsessive quest to understand mesons and the strong nuclear force, and the physics of neutron stars and black holes. And he weaves in the physicist’s many loves — poetry, literature, Hindu scriptures and Sanskrit — and his intense relationships with his family, friends and students.

Joanne Baker is senior comment editor at Nature.

Nuclear War and Environmental Catastrophe

NOAM CHOMSKY AND LARAY POLK

Seven Stories Press: 2013.

Trailblazing linguist Noam Chomsky is no stranger to the political arena. Here he issues a stark warning that society is careering towards a dual Armageddon of nuclear conflict and catastrophic climate change.

In this book, composed from interviews with writer Laray Polk, Chomsky first addresses the looming issue of our collective carbon load. He details how indigenous communities, such as some in Bolivia, have passed laws granting rights to nature. Such acts set a precedent in environmental protection and show the West how it can improve its track record in this area.

Chomsky also reminds us how close we have come to nuclear war since 1945 and the potential for it to ignite today in Iran. Highlighting attempts to create a nuclear-weapon-free zone in the Middle East, he criticizes corporations and countries that resist the plan, yet are not held to account. Chomsky argues that, unchecked, our collective denial will only ramp up this double threat concocted by humanity over the past century and a half.

Roseann Campbell is front half administrator and Books and Arts assistant at Nature.

The Examined Life: How We Lose and Find Ourselves

STEPHEN GROSZ

Chatto & Windus: 2013.

This beautifully written collection of stories about psychoanalyst Stephen Grosz's patients is drawn from 20 years of practice. For many, the insights here will cut close to the bone. Under headings that relate to everyday problems, from loneliness and change to loss and lies, we discover personal histories of damage understood but not always healed.

Some headings are chilling ('Why parents envy their children'), some puzzling ('On being boring') and some enlightening ('How praise can cause a loss of confidence'). These compressed analyses are filled with the psychoanalyst's empathy and are described accessibly, demystifying some aspects of this little-understood profession.

As the stigma surrounding mental health slowly dissipates, perhaps the capacity of psychoanalysis to help us examine our everyday yet disabling problems will become more apparent, thanks to books such as this one.

Dinah Loon is a physical sciences subeditor at Nature, London.

The New York Times Book of Mathematics: More Than 100 Years of Writing by the Numbers

EDITED BY GINA KOLATA

Sterling: 2013.

The past 100 years has been a golden age for mathematics. Two monumental problems — Fermat's last theorem and the Poincaré conjecture — have been conquered in the past 20 years, and a few weeks ago number theorists claimed to have solved two more long-standing questions, one dating as far back as the ancient Greek mathematician Euclid (see go.nature.com/zfhvbw).

During this period, mathematics has continuously sprouted new branches, and new theories have increased its conceptual depth. These factors have broadened the power of maths to explain the real world, as the backbone of physics; and to change it, as the foundation of information technology and computer science. Most of these developments have been reported as they happened in *The New York Times*. Here, editor Gina Kolata has assembled a spectacular collection packing tremendous intellectual heft, with writers of the calibre of James Gleick and George Johnson. There are plenty of thrills, from witnesses to John von Neumann's invention of game theory to the discoverers themselves — from fractals evangelist Benoit Mandelbrot to couch-surfer extraordinaire Paul Erdős. Brilliant writing, notorious eccentrics and a golden century.

Davide Castelvecchi is deputy online news editor at Nature.

The Panda's Thumb: More Reflections in Natural History

STEPHEN JAY GOULD

W.W. Norton: 1980.

In *The Panda's Thumb*, late palaeontologist Stephen Jay Gould revels in the bizarre and fortuitous wonders of nature. These 31 essays from his column in *Natural History* magazine cover everything from the origins of the titular digit (actually a sesamoid bone) to the agreements and disagreements between Charles Darwin and Alfred Russel Wallace.

Thirty-three years on from the first publication of this classic, our understanding of the processes that define the variety and distribution of species and morphologies on Earth has advanced significantly. We now have genetic evidence on the relatively recent colonization of Ascension Island in the South Atlantic by the charismatic green turtle from populations in the Americas, perhaps disappointingly. The 1974 Carr–Coleman hypothesis used by Gould suggested a turtle population that had followed continental drift — a more amusing, if evolutionarily incongruent, notion.

Far from discrediting the work, this adds a new dimension to Gould's reflections in a way only possible for books burnished by the passage of time. The ideas in *The Panda's Thumb* educated today's evolutionary biologists, whose minds were then only starting to open up to the world. Those ideas and minds have since evolved, but a return to scientific roots still illuminates.

María Luisa Ávila-Jiménez is assistant editor of Nature Communications.