

Children's edition

# Books in brief

ends with the ominous words, “However, this question would carry us too far.”

Mathematicians laboured over the problem for 99 years. Most tried to solve it in the affirmative; some attempted to find counterexamples. It was left to Perelman to prove that the answer to Poincaré’s question was “Yes” — after which he refused both the US\$1-million Millennium Prize from the Clay Mathematics Institute and the Fields Medal.

Like many, Gray wonders why the Nobel Prize in Physics was never awarded to Poincaré for his work in, say, electromagnetism, optics or thermodynamics. As Gray tells us, Poincaré was ahead of Albert Einstein in speculating about a truly relativistic theory of gravity. Quoting Maurice de Broglie, who pioneered X-ray spectroscopy, Gray writes that the reason Poincaré did not take the decisive steps that Einstein did may have been his “too hypercritical turn of mind, due perhaps to his having first been a pure mathematician.” Another reason that Poincaré did not win the prize, Gray suggests, was that he was a theorist in mathematical physics, and Nobel prizes at the time were awarded mainly for experimental discoveries. After all, even Einstein was awarded the Nobel prize only in 1921 — for the discovery of the law of the photoelectric effect.

It would be petty to find faults in a work of this calibre, but some reference to Louis Bachelier would have been welcome. He was the visionary of the Black–Scholes options pricing formula of modern financial theory — which gives the correct price of financial derivatives — and one of Poincaré’s handful of doctoral students. And the bibliography seems to have omitted Perelman’s postings to the Internet.

On the whole, however, this book is an achievement in its own right. Gray keeps the tone light and embeds each of the equations in explanatory text.

Fortunately, Gray also tells it like it was, warts and all. Poincaré’s work could contain errors, and often lacked rigour. Aside from his initial, incorrect attempt at his conjecture, his first stab at a prize question — posed to honour the 60th birthday of Sweden’s King Oscar II — contained a serious flaw. All copies of the journal that published it were pulped. But most of Poincaré’s fumbles are there for all to see; and by studying such blunders, we may observe the meanderings of science as it advances by trial and error. Presenting only the finished product, as Isaac Newton did when he concealed his discovery of calculus, does injustice to the scientific process. ■

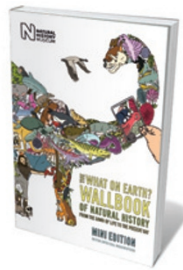
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## Lift-the-Flap Questions and Answers

Katie Daynes and Marie-Eve Tremblay USBORNE 14 pp. £9.99 (2012). Age 3+

This interactive board book by Katie Daynes is food for enquiring minds, answering questions from ‘How deep is the sea?’ to ‘What makes a car go?’ and the age-old ‘Why do I have to go to sleep?’ Questions are divided into types — How? What? Why? — and each has a flap to lift to solve the mystery. Marie-Eve Tremblay’s quirky cut-out illustrations give this the feel of a scrapbook, packed with drawings and detail. Simple and accessible, it could prove a boon to a parent asked for an early-morning explanation of how fish breathe.



## The What on Earth? Wallbook of Natural History: From the Dawn of Life to the Present Day (MINI EDITION)

Christopher Lloyd and Andy Forshaw NATURAL HISTORY MUSEUM 16 pp. £6.99 (2012). Age 5+

Christopher Lloyd shows that Earth’s entire history can be folded down to the size of a postcard. Once the timeline is unfurled, Andy Forshaw’s 1,000-plus illustrations capture key events. On a backdrop divided into land, sea and sky, life forms from single-celled organisms to humans appear according to where they live and when they evolved, in a harmonious interplay of large evolutionary concepts and detailed examples.



## How We Make Stuff: The Story Behind Our Everyday Things

Christiane Dorion and Beverley Young TEMPLAR 18 pp. £14.99 (2012). Age 7+

The latest in the *How It Works* series traces the journey that natural resources take as they are transformed into food, clothes, phones and ‘things’. By revealing, say, that a cheeseburger can involve combined efforts from four continents, Christiane Dorion and Beverley Young could inspire thinking about the planetary impact of our need for stuff. The tabs, flaps and fold-out sections tell the stories of particular items; one of the most interesting is an interactive mix-and-match game to create an environmentally friendly outfit.



## Deadly! The Truth About the Most Dangerous Creatures on Earth

Nicola Davies and Neal Layton WALKER 64 pp. £9.99 (2012). Age 8+

Zoologist Nicola Davies takes a spin on the hilarious side of death in a book that reveals the ingenious methods animals use to kill each other. The comedy comes from Neal Layton’s cartoons, which deploy exaggerated expressions and amusing speech bubbles to puncture the killer beasts’ fearsomeness. Davies’ text goes into gruesome detail to describe killer whales’ team hunts, the ‘death roll’ performed by crocodiles and much more. She also raises challenging and important concepts, such as the value of predators to biodiversity and the danger of humans viewing them simply as threats.



## Eve & Adam: And Girl Creates Boy

Michael Grant and Katherine Applegate EGMONT 320 pp. £6.99 (2012). Age: 12+

Teen meets gene in this creation myth for the modern age. Evening Spiker’s billionaire-geneticist mother gives her a computer program and a challenge: design the perfect boy. But it soon becomes clear that the project extends beyond the computer screen — Adam can become real. This portrayal of a world in which humans have “taken the reins of evolution” is unsettling, but at its heart lies a touching exploration of love and why perfect isn’t always good enough.