

undistributed in his safe. Eventually, Briggs was moved aside and his safe opened to reveal its treasures.

In Britain, Farmelo reports, the problem was more serious because the gatekeeper was Winston Churchill's personal scientific adviser, Frederick Lindemann. Lindemann did not quite believe in the bomb, and in any case thought it should be built in Britain or, if that proved impossible, Canada.

At a crucial point in Churchill's ongoing negotiations with Roosevelt, in October 1941, a message arrived from the US president offering to coordinate "or even jointly conduct" a bomb programme. British official opinion still favoured consultation between parallel projects, Farmelo notes, rather than full collaboration. Discouraged by Lindemann and other advisers, Churchill delayed his response. Almost two months passed before he answered the president's note, and even then he did so only tepidly.

Those two months were crucial: the US programme officially expanded to full industrial scale on 6 December 1941, and the following day the Japanese bombed Pearl Harbor, shocking the United States into joining the war. The atomic-bomb programme was soon assigned to the US Army Corps of Engineers and, a few months later, now renamed the Manhattan Project, put under the command of a big, dynamic, no-nonsense engineering general named Leslie Richard Groves, a combative Anglophobe.

Curiously, Groves and his government superior, the science czar Vannevar Bush, worried as much about giving Britain a leg up on post-war nuclear-power development as they did about sharing the 'secrets' of the bomb. Early in 1943, Farmelo writes, Groves blocked British participation almost entirely after Imperial Chemicals' Wallace Akers was chosen to run the British programme. A secret Anglo-Russian agreement to share new and future weapons further soured Groves and Bush when they learned of it, although Farmelo argues that Churchill would have repudiated the agreement instantly had he thought it would quash collaborations with the United States. By the time all these misunderstandings had been sorted out, the British lead was buried in the dust of Groves' multi-pronged, multibillion-dollar race to an almost all-American bomb.

Farmelo's book sometimes falters on technical details. Breeding plutonium in large uranium-graphite reactors in eastern Washington state becomes "the production of chemicals containing weapons-grade plutonium". The bomb tested in the New Mexican desert in July 1945 was not, as he writes, "the first nuclear bomb" — that was the uranium gun bomb, Little Boy, already sailing towards Japan — but rather the first plutonium implosion assembly, the 'Gadget', its technology so radically new it needed ▶

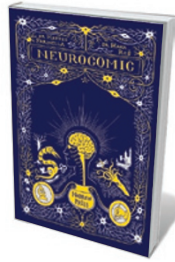
## Books in brief



### Command and Control: Nuclear Weapons, the Damascus Accident, and the Illusion of Safety

Eric Schlosser PENGUIN (2013)

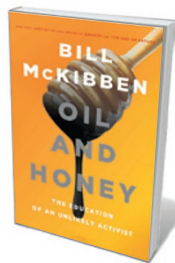
After dishing the dirt on junk food in *Fast Food Nation* (Houghton Mifflin Harcourt, 2001), Eric Schlosser tackles another weapon of mass destruction: the US nuclear arsenal. His propulsive narrative alternates between a history of nuclear arms and an account of a near miss: the explosion of a Titan II ballistic missile in Arkansas. Invoking sociologist Charles Perrow's finding that such "tightly coupled", interactive systems can be undone by trivialities, Schlosser calls for new thinking on this legacy — and soon.



### Neurocomic

Matteo Farinella and Hana Roš NOBROW (2013)

Illustrator Matteo Farinella and neuroscientist Hana Roš have crafted a graphic introduction to the human brain that seethes with many-layered invention. Boy meets girl, and is propelled into the *Alice in Wonderland* world of her brain — where, for example, Camillo Golgi and Santiago Ramón y Cajal grapple in a forest of neurons. Morphology and plasticity, for example, are distinct regions of 'Brainland', in which greats in each field are tour guides, and neural phenomena appear as anything from key-wielding superheroes (neurotransmitters) to a haunted castle (consciousness).



### Oil and Honey: The Education of an Unlikely Activist

Bill McKibben TIMES BOOKS (2013)

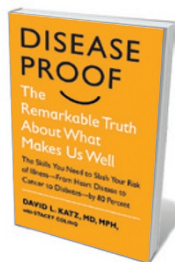
Environmental writer Bill McKibben set off shock waves in 1989 with *The End of Nature* (Anchor), the first popular treatment of climate change. Two years ago, with the impacts of oil-industry 'business as usual' biting, McKibben moved on to full-time climate activism. In this eloquent memoir, he interweaves reportage on deluges, heatwaves and melts with demonstrated solutions to "malfunctioning modernity". High-profile protest is only part of that, he argues. A revolution in local sustainability is also essential — and achievable, as the story of a Vermont bee-keeper reveals.



### Life Beyond Earth: The Search for Habitable Worlds in the Universe

Athena Coustenis and Thérèse Encrenaz CAMBRIDGE UNIVERSITY PRESS (2013)

Is the biosphere that so astounds us one of thousands? In this packed primer on exoplanetary life, distinguished astrophysicists Athena Coustenis and Thérèse Encrenaz summarize the science and speculation. Kicking off with planet formation, life's origins on Earth and extreme environments, they boldly go into areas such as potential habitats in the outer Solar System and far-future ideas such as "terraforming" Mars for human habitation.



### Disease-Proof: The Remarkable Truth About What Makes Us Well

David L. Katz and Stacey Colino HUDSON STREET PRESS (2013)

We are living longer, chronic disease rates are rising — and the trade-off is a dubious one, argues medic David Katz. With writer Stacey Colino, Katz presents a research-based approach to increasing the chances of reaching a healthy old age that brims with intelligent suggestions for behavioural change. The discipline involved is workable, from eliminating 'stealth' sources of sugar to exercising in the 'nooks and crannies' of a busy day; and Katz's vision for wellness encompasses societal change. [Barbara Kiser](#)