

► companies quickly followed with their own SSRIs. It seemed to be the revolution psychiatrists had been waiting for. But it soon emerged that only a modest subset of patients benefited (estimates based on trials vary widely). That is unsurprising in retrospect, with the new appreciation that depression can have many causes. Bullmore holds that the emergence of SSRIs bypassed scientific logic. The serotonin theory, he writes, is as “unsatisfactory as the Freudian theory of unquantifiable libido or the Hippocratic theory of non-existent black bile.” He notes that, after SSRIs failed to live up to the hype, time once again stood still for psychiatry.

Bullmore recalls a teleconference in 2010, when he was working part-time with British pharmaceutical giant Glaxo-Smith Kline. During the call, the company announced it was pulling out of psychiatry research because no new ideas were emerging. In the following years, almost all of ‘big pharma’ abandoned mental health.

Then a window seemed to open — one that shed a different light on the plight of Mrs P. Some of the textbook certainty that Bullmore had learnt by rote at medical school started to look distinctly uncertain.

In particular, the blood-brain barrier turned out to be less impenetrable than assumed. A range of research showed that proteins in the body could reach the brain. These included inflammatory proteins called cytokines that were churned out in times of infection by immune cells called macrophages. Bullmore pulls together evidence that this echo of inflammation in the brain can be linked to depression. That, he argues, should inspire pharmaceutical companies to return to psychiatry.

It seems unfair that someone struck down by infection should have depression too. Is there a feasible evolutionary explanation? Bullmore hazards that depression would discourage ill individuals from socializing and spreading an infection that might otherwise wipe out a tribe.

Other brain disorders might turn out to be prompted or promoted by inflammation. An exciting link with neurodegenerative diseases, including Alzheimer’s, is also being studied (see *Nature* 556, 426–428; 2018). But we need to learn from the rollercoaster history of brain research, and keep expectations in check. Beneath his bombastic enthusiasm, Bullmore acknowledges this, too. ■

**Alison Abbott** is *Nature’s* senior European correspondent.

*“After SSRIs failed to live up to the hype, time stood still for psychiatry.”*

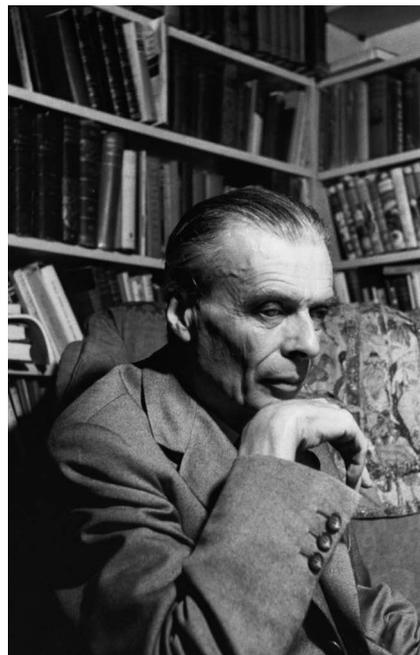
## IN RETROSPECT

# Ape and Essence

Richard Rhodes finds resonance with today’s uneasy nuclear age in Aldous Huxley’s satirical dystopia.

The atomic bombings of Hiroshima and Nagasaki in August 1945 shocked the world. More than 70 years on, these events have not been repeated — evidence that it was the United States’ temporary nuclear monopoly that made them possible. Yet few observers in the immediate postwar years foresaw the development of an uneasy nuclear truce, enforced by the certainty of mutual destruction. Fears of an arms race culminating in nuclear war were widespread. Such fears have now re-emerged, with North Korea’s burgeoning arsenal and the United States’ abrogation of its agreement with Iran.

J. Robert Oppenheimer, who directed the development of the first bombs, was among those who feared nuclear conflict, and worked for international control after the Second World War. Physicist Richard Feynman (whom I interviewed for my 1987 book *The Making of the Atomic Bomb*) recalled sitting in a bar in New York in 1946, watching the crowd passing outside and thinking: “You poor fools, you have no idea that in a few more years you’ll all be dead.” Aldous Huxley seems to have leapt to the same conclusion in his hybrid novel and film scenario *Ape and Essence*, published 70 years ago.



Aldous Huxley in the 1950s.

### *Ape and Essence*

ALDOUS HUXLEY  
Harper & Brothers  
(1948)

The prolific novelist and essayist had been formulating his thoughts on the bomb since the end of the

war. In 1947, Huxley published the extended essay ‘Science, Liberty, and Peace’, a prelude to the novel. There, he wrote that the power-hungry and nationalistic “boy-gangster” in us all would easily prevail over the reasonable adult, exulting: “Press a few buttons and bang! the war to end war will be over, and I shall be the boss of the whole planet.” Huxley knew better. If more than one nation had such weaponry, he believed, the outcome of “the war to end war” would be world-scale destruction. And because that would be a kind of singularity, it seemed to him that almost anything might follow.

*Ape and Essence* is Huxley’s imagining of a post-nuclear world. The title is from William Shakespeare’s *Measure for Measure*: Isabella speaks of the proud man’s “glassy essence, like an angry ape”, which “plays such fantastic tricks before high heaven/As make the angels weep.” The angels have flown in Huxley’s novel, set in what remains of Los Angeles, California, in 2108 — a century after a third world war, which would have taken place around now, in Huxley’s fictional timeline.

In one of the book’s set pieces, intelligent baboons fight this twenty-first-century war, with scientific luminaries (Michael Faraday and two opposing Albert Einsteins) as leashed mascots. So much for scientists, Huxley insinuates — “good, well-meaning men, for the most part. But... they ceased to be human beings and became specialists.” Of the two opposing cultures described by scientist and novelist C. P. Snow in 1959, Huxley was clearly on the side of the humanities, as if locked in debate with his distinguished scientific kin — his biologist brother Julian, physiologist half-brother Andrew and zoologist grandfather Thomas Henry, known as Darwin’s bulldog.

Having introduced the baboons, Huxley kills them off: it’s a second false start to the novel’s stuttering story, a metafictional concoction as multilayered as an onion. The first storyline sees two screenwriters tracking down a legendary colleague, only to find him dead. The deceased’s abandoned screenplay (I suspect one of Huxley’s own unsold efforts, repackaged) is the book’s centrepiece. It is

here that the baboons rise and fall. The script then moves on to an improbable love story set in the world of an irradiated rump of humans who survived the war but have forgotten how to make things. They live by scavenging leftovers from the pre-war days, burning books for heat and assigning crews to rob old graves of suits and jewellery. Eunuch priests of the devil-figure Belial squat at the top of the caste system in this stunted world, dominating a society of near-slaves.

*Ape and Essence* parallels Huxley's 1932 *Brave New World* (see P. Ball *Nature* **503**, 338–339; 2013), yet offers an even darker vision. A young botanist, Alfred Poole, has arrived by ship from New Zealand, which survived the atomic war and is now exploring what's left of the world. So, as with *Brave New World's* Savage, a *Candide*-like hero appears from outside society and finds himself appalled. And what appals both heroes is the indiscriminate sexuality that the society's leaders encourage to replace family and human love.

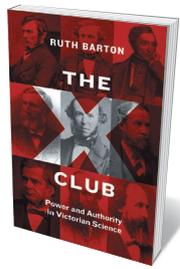
The twist this time, as Huxley wrote to his fellow screenwriter Anita Loos, is that “the chief effect of the gamma radiations [has] been to produce a race of men and women who don't make love all the year round, but have a brief mating season”. This manifests as mass gropings; any progeny deemed too monstrous, the result of radiation-damaged genes, are then slaughtered on Belial Eve. (Huxley probably knew that Hermann Muller had received a Nobel prize in 1946 for the discovery that X-rays can cause mutations.) The ceremony, called the Purification of the Race, mimics the blood sacrifices of the Aztecs. It also alludes to eugenics, the British–American pseudoscience embraced by Adolf Hitler.

What all this sexualized barbarity has to do with nuclear war isn't clear. Born in 1894, Huxley brought a scolding Victorian sensibility to the loosened morals of the war-torn twentieth century, excoriating its hedonism in satires and science fiction. Sun-drenched, beauty-obsessed southern California, where he lived and worked from 1937 until his death in 1963, proved the ideal locale for his dystopias: a seeming paradise that was also the end of the frontier.

Appropriately enough, *Ape and Essence* culminates in a Hollywood happy ending, at least for Poole and Loola, the young woman he falls in love with. The lovers escape to northern California, where a colony of “hots” — hold-outs with conventional sexuality — are cobbling together a new life. However disdainful Huxley might have been of our core boy-gangsters, in the end, he was too humane for a truly relentless apocalypse: his dystopias had escape hatches. Would that the same could be said of a real nuclear war. ■

**Richard Rhodes's** latest book, *Energy: A Human History*, will be published in the United States in late May.  
e-mail: richardrhodes1@comcast.net

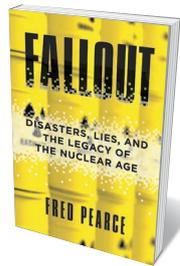
## Books in brief



### The X Club

Ruth Barton UNIVERSITY OF CHICAGO PRESS (2018)

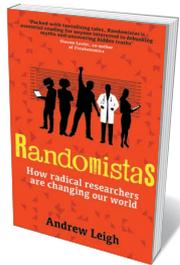
For decades in the late 1800s, nine scientific luminaries (among them biologist Thomas Henry Huxley and botanist Joseph Dalton Hooker) dined together as members of the ‘X Club’. This socio-economically diverse group, formed in part to promote Charles Darwin's achievements, is a telling case study in the dynamics of Victorian class and science. Historian Ruth Barton's magisterial chronicle traces the careers of the “X-men” and their agile promotion of science; Huxley, in particular, emerges vividly as wily, belligerent, and obstructive to women entering science.



### Fallout

Fred Pearce BEACON (2018)

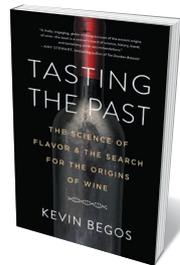
Science writer Fred Pearce casts a cool and measured eye on an explosive legacy: the atomic age. Launched by Winston Churchill's nuclear ambitions (realized by the US Manhattan Project), this era lingers on in plutonium stockpiles, arsenals and ageing power plants. Pearce roams with intent from Sellafield, “Britain's brooding nuclear nightmare”, to radioactive steppes in Kazakhstan, blighted by 619 atomic tests in the 1950s. His nuanced conclusion is that, together, alarmist protestors and a secretive nuclear industry create a different sort of fallout: the spread of disinformation and fear.



### Randomistas

Andrew Leigh YALE UNIVERSITY PRESS (2018)

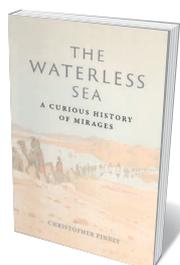
Randomized testing, economist Andrew Leigh reminds us, has vanquished scurvy, improved wildfire response — and proved key to better feedback loops in medicine and crime prevention. The trove of case studies in his insightful study includes the 1960s Perry Preschool Project, which exposed the long-term positive impact of early education among African American children living in poverty. Leigh also explores the work of pioneering ‘randomistas’ such as social-policy expert Judith Gueron, and outlines handy guidelines on aspects of randomized testing, such as sample splitting and ethical oversight.



### Tasting the Past

Kevin Begos ALGONQUIN (2018)

If you can tell Sauvignon blanc from Sémillon, you might feel that you ‘know’ wine. Science journalist Kevin Begos blows that idea to smithereens. He travelled from the Caucasus Mountains to Israel and beyond, and rifled through archives, to unearth ancient ‘founder’ grape varieties. En route, he consults archaeobiologist Patrick McGovern and grape geneticist Shivi Drori; reads papers on the DNA of “wild yeasts that live symbiotically with wasps”; and contemplates the oldest grape fossil found. A book that froths with data on half-forgotten vines, from Hamdani to Gros Manseng.



### The Waterless Sea: A Curious History of Mirages

Christopher Pinney REAKTION (2018)

The illusory seas observed in sere deserts are not the only form of mirage, notes Christopher Pinney in this alluring tour of the phenomenon in science and culture. Created by light refracting as it moves through atmospheric regions with differing temperatures, mirages can also appear as imposing and mysterious ‘castles in the air’. Pinney ranges from the old Japanese belief that these “phantom paradises” were exhaled by clam monsters, to an 1898 *Nature* report detailing mirage effects on flagstone pavements. A paean to a sublime apparition, “real, but not true”. [Barbara Kiser](#)