A poster from the 1920s reflects the era's fashion for drug-taking.

HUMAN BEHAVIOUR

Bending minds, building medicine

Andrew Robinson assesses two studies on the culture, biology and chemistry of psychotropic substances.

From drinking espresso to shooting heroin, the human impulse towards altered mental states is universal. Now two books explore the history of individual and social attitudes to psychotropic drugs, and the science of pharmacology.

In *Demons*, science historian Virginia Berridge focuses on drug cultures, primarily in Britain and to a lesser extent in the United States, Europe and Asia. She chronicles the consumption of opium, alcohol, tobacco, cocaine and cannabis, from the nineteenth

century onwards, and examines attempts at official control. Berridge points out that a drug's acceptability to mainstream society fluctuates more owing to social and cultural trends than to medical knowledge. The periodic reclassification of drugs is "not a 'rational' process", she concludes.

Drugged, by pharmacologist Richard Miller, offers the biochemical research absent from *Demons*. We visit university and industrial laboratories, learn about medical trials and clinical applications, and explore

Demons: Our Changing Attitudes to Alcohol, Tobacco, and Drugs

VIRGINIA BERRIDGE

Oxford University Press: 2013.

Drugged: The Science and Culture Behind Psychotropic Drugs

RICHARD J. MILLER

Oxford University Press: 2013.

the structures of organic molecules and their functions. Despite copious diagrams, much of the technical detail will be impenetrable to the generalist, unlike the accessible *Demons*. However, Miller casts his net wider than does Berridge, covering everything from tea and coffee to LSD (lysergic acid diethylamide) and Prozac (fluoxetine hydrochloride), and not limiting himself geographically. He also makes lengthy and lively excursions into culture.

Opium gets the most attention in both books. The latex from the opium poppy *Papaver somniferum* (from which opium and opiates such as morphine come) has been cultivated and used medically and recreationally for millennia, and began to seep into the West in the sixteenth century. As both Berridge and Miller discuss, the opium wars of the mid-nineteenth century, which pitted China against the French and British, played a key part in international regulation of drugs in the twentieth century. Opium was ubiquitous in Victorian Britain, almost like aspirin today, notes Berridge. Prized as a painkiller and stimulant, it was prescribed for everything from heart disease to gallstones, and taken as pills, lozenges, powder and even enemas. In the marshy Fens of eastern England, opium-spiked beer soothed fevers, chills and rheumatism. Prime Minister William Gladstone is said to have taken opium in coffee before big speeches.

By mid-century, the tincture laudanum was the most widely used form of opium. Medicinal use often led to addiction, as with early adopters such as Thomas De Quincey, author of the autobiographical *Confessions of an English Opium-Eater* (1821). Wilkie Collins, whose detective novel *The Moonstone* (1868) featured opium addiction, became so dependent on laudanum that he eventually took it in quantities large enough to kill an unhabituated person, and suffered paranoid delusions. Even Arthur Conan Doyle's fictional detective Sherlock Holmes, created in the 1880s, injected himself with morphine and cocaine for "mental exaltation", although in the final stories Holmes has been

Laudanum (opium tincture) was a Victorian panacea.

Laudanum (opium tincture) was a Victorian panacea.

SCIENCE MUSEUM, LONDON/WELLCOME IMAGES

weaned off the habit, presumably in deference to growing social disapproval.

Opium, alcohol and cocaine were also active ingredients in many US patent medicines in the nineteenth century. By 1900, the modern concept of addiction was beginning to emerge and the tide began to turn against cocaine and opium. In 1913, the last officially traded chest of opium was shipped from British India to China. In 1914, the US government passed the Harrison Narcotics Tax Act to limit the use of all opiates and coca products to medicine. In the 1920s, the influential International Opium Convention heralded the start of global drug control.

Cannabis (hemp) features more prominently in *Drugged* than in *Demons*. Although the drug was available in the United States long before, in the 1930s Mexican migrant labourers introduced North America to the practice of marijuana smoking. Marijuana was adopted first by black jazz musicians, and then, from the 1950s, by white society. Its demonization by the US government began with the federal Marihuana Tax Act of 1937, which made it prohibitively expensive for any purpose, including medicinal use. As Miller powerfully describes, the legislation was the result of racist scare tactics against Mexicans and black people by Harry Anslinger, the commissioner of the Federal Bureau of Narcotics from 1930 to 1962. He was supported by leaders of the synthetics industry, who wanted to end nascent US hemp production.

As for alcohol, the United States' nationwide prohibition from 1920 was repealed in 1933, during the Great Depression. The federal government needed the tax revenue. Moreover, attitudes had changed: prohibition had not solved industrial issues such as absenteeism, yet it had encouraged organized crime, political corruption and a trade in poisonous illicit alcohol. However, as Berridge stresses, prohibition also significantly reduced US drinking and alcohol-related disease, and might have worked had it been less restrictive. It would have failed in Britain, she argues, because of the complex British attitude to drunkenness. Norman Kerr, a physician and founder of the Society for the Study and Cure of Inebriety in 1884, asked whether inebriation was "a sin, a crime, a vice or a disease". This is a question that many are still attempting to answer in binge-drinking Britain.

However the use and abuse of specific drugs may shift over time and space, the need to bend the mind seems tightly tied to human culture. Berridge and Miller ably unpick the threads of that universal urge. ■

Andrew Robinson is the editor of *The Scientist: An Epic of Discovery*.
e-mail: andrew.robinson33@virgin.net

► **NATURE.COM**
W. F. Bynum reviews
an exhibition on
mind-altering drugs:
go.nature.com/uciqym

Books in brief

Aid on the Edge of Chaos: Rethinking International Cooperation in a Complex World

Ben Ramalingam OXFORD UNIVERSITY PRESS (2013)

Many see international development aid as in thrall to linear, mechanized thinking, and champion approaches in which local people solve their own challenges with intelligently tailored backing. Complex adaptive systems thinking, argues Ben Ramalingam, offers a scientific model for that path. Awareness of real-world dynamics would, he avers, promote fine targeting of aid efforts and foster a new aid paradigm: an "open innovation network, catalysing and leveraging change in countries around the world".

Owning the Earth: The Transforming History of Land Ownership

Andro Linklater BLOOMSBURY (2013)

Historian Andro Linklater hinges his layered chronicle of the past five centuries on land ownership, a growing concern on a crowded Earth. Arguing that land claims work only when yoked to public interest, he shows they were also rare up to 1800: before then, much of Europe was jointly 'owned' by peasants and royalty, for instance. The tide had begun to turn centuries before, however, when English freeholders gained unprecedented power. A brilliant treatise on the social and political shifts in our journey from indigenous 'commons' to the subprime-mortgage catastrophe of 2007 and beyond.

Pure and Modern Milk: An Environmental History since 1900

Kendra Smith-Howard OXFORD UNIVERSITY PRESS (2013)

From cream and cheese to milk bottled, dried and lurking in everything from cake to glue, 'dairy' is ubiquitous. Yet getting the highly perishable, machine-pumped product of lactating cows to consumers has been a hugely complex technological, cultural and political saga. Kendra Smith-Howard deftly traces that trajectory in the United States since 1900. Initially rife with bacteria such as *Salmonella typhi*, milk became today's 'natural' staple through scientific manipulations — in bovine breeding, bacteriology, processing technology, and refrigerated bulk storage and transport.

In Meat We Trust: An Unexpected History of Carnivore America

Maureen Ogle HOUGHTON MIFFLIN HARCOURT (2013)

In 2011, Maureen Ogle informs us, the United States produced 42 billion kilograms of pork, poultry and beef. The downsides are considerable: US livestock production and the meat industry have drawn fire for everything from pollution to overuse of pharmaceuticals. Ogle delivers a well-researched history of the US meat habit in the past 200 years. Although she decries twenty-first-century feedlots and "manure lagoons", Ogle argues that the culprits are not solely industrial agriculture and government laxity: US consumers' sense of entitlement to cheap meat is the real issue.

The Ecological Hoofprint: The Global Burden of Industrial Livestock

Tony Weis ZED BOOKS (2013)

This cogent analysis of rising global meat consumption puts the blame firmly on industrial livestock production — a meat 'monoculture' that has quadrupled in the past 50 years. Agrarian political economist Tony Weis calculates that the cost to the environment and animal welfare is unsustainable, and the effect on social equity negative: livestock consume a third of all grain, while one person in seven remains malnourished or hungry. **Barbara Kiser**