

heart. In chronological order, she discusses the impact of human heart transplantation on the development of artificial hearts; considerations of technology and risk (focusing on the nuclear-powered atomic heart); the seemingly triumphant Jarvik-7 heart (despite the seizures, strokes, and memory loss patients suffered, some of them becoming household names); and the invention of simpler ventricular assist devices, implanted alongside a patient's own heart and producing a disconcertingly pulseless blood flow.

There is much here for historians of medicine to ponder, for a wealth of research has gone into the making of this book. I was particularly drawn to three themes woven throughout. McKellar analyses the divergent interests always present in the artificial heart field – those of researchers, clinicians, patients, bioethicists, and the media – and how these changed over time. This is a story which features professional conflicts and transgressions, feuds, and accusations of device theft. Secondly, I found McKellar's analysis of the relationship between these men (and men they all were) and the media fascinating. This theme in her book joins that of historians in related fields, notably Susan Lederer's *Flesh and Blood: Organ Transplantation and Blood Transfusion in Twentieth-Century America* (Oxford: Oxford University Press, 2008), Ayesha Nathoo's *Hearts Exposed: Transplants and the Media in 1960s Britain* (Basingstoke: Palgrave Macmillan, 2009), and Duncan Wilson's *Tissue Culture in Science and Society: The Public Life of a Biological Technique in Twentieth Century Britain* (Basingstoke: Palgrave Macmillan, 2011).

Third, McKellar notes the malleable and crucial use made of the concept of 'success' in describing laboratory experiments and implant operations. Key actors maintained these had succeeded, despite animal and human suffering and deaths. So, success was claimed when a laboratory dog survived with a pneumatically driven plastic heart for ninety minutes before the device failed, and when the atomic heart implanted into a calf kept the animal alive for eight hours before a kink in an inflow tube 'terminated the experiment' (pp. 33, 104). Operations were deemed to have succeeded despite patients dying within a matter of hours or days, cast as having been doomed due to their parlous pre-operative state. 'Success' was crucial in a young and highly competitive field which needed to attract research funding and political support. It showed that knowledge had been gained through the experiment, and maintained individual motivation and confidence in the 'grand pursuit' (p. 51).

Artificial Hearts is an excellent contribution to our knowledge about the search for a high-technology solution to end-stage cardiac disease. By grounding that pursuit within a decades-long historical context, Shelley McKellar shows how those undertaking this high-stakes endeavour fought for and gained authority, funding and public acclaim in the face of others' scepticism that an artificial heart might, one day, be the perfect substitute for the real thing.

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Matthew Oram, *The Trials of Psychedelic Therapy: LSD Psychotherapy in America* (Baltimore, MD: Johns Hopkins University Press, 2018), pp. 288, £37.00, hardback, ISBN: 9781421426204.

It is difficult to explain to a seven-year-old why some drugs are legal, some are legal only when a doctor says they are, and some can get you arrested. I tried during a recent drive

with my son, who was firing hard questions at me, including ‘What is the Internet and what is WiFi?’ and ‘So, what’s doing drugs?’

What *is* doing drugs? My answer relied heavily on danger: riskier drugs, such as anything that can make your heart stop beating, are poisons that are illegal to buy or sell. Other drugs, such as caffeine and alcohol, freely and continuously enter homes in shopping bags and beverage cases. Not everyone agrees, I told him, that all illegal drugs *should* be illegal, or that doctors are always right about what drugs people should take.

The conversation had provoked me to draw a line between ‘doing’ and ‘taking’ drugs, a line closely examined in *The Trials of Psychedelic Therapy*. Matthew Oram’s book about the nature of drug regulation follows LSD’s career through numerous clinical trials during the 1950s and 1960s, as psychiatrists endeavoured to find therapeutic uses for its profound and unpredictable effects. Many previous accounts of how LSD was outlawed explain that when young people started doing the drug on their own in the 1960s, a moral panic ensued and the federal government shut research down. But Oram lays out a more universal, if less ideologically satisfying, truth. Federally supported research actually continued into the 1970s in spite of the moral panic, he writes, and the federal government took extraordinary steps to support this research. The real problem with finding an approved way to take LSD was the inability of researchers to design studies that satisfied emerging regulatory demands. It makes sense that such routines as controlling for a placebo effect or measuring responses would be difficult with LSD. Oram demonstrates this problem beautifully and situates it in the broader history of psychiatric research.

The hopeful 1950s, when LSD research commenced, was an era of light regulation of experimental drugs, or what Oram calls ‘freedom of research’ (p. 19). Hundreds of studies were conducted within a psychiatric field moving away from inpatient treatment of severe mental illness, mostly at large state hospitals, toward outpatient treatment that included promising new drugs such as tranquillisers, or that combined other drugs – including narcotics, amphetamines, and mescaline – with talk therapy in order to help patients access their subconscious. With LSD, at least three areas of investigation seemed to hold promise: it could be administered *psycholytically*, alongside talk therapy; it could be taken as a *psychomimetic* to create a ‘model psychosis,’ aiding understanding of schizophrenia, for example; or as part of *psychedelic* therapy, which sought a profound mental breakthrough for solving problems such as alcoholism and anxiety, often by incorporating mystical or philosophical perspectives. For a decade, the volume and breadth of LSD research suggested it could be a wonder drug.

But when the U.S. Food and Drug Administration (FDA) imposed a regulatory framework for drug research in 1962, LSD proponents faced the problem of making the drug look good on paper. This development was not inspired by the on-going LSD studies, but reflected the FDA’s larger concern about the pharmaceutical industry’s rushing drugs to market, most notoriously thalidomide. Rather than freely continuing to ship experimental samples to lightly vetted researchers, LSD’s manufacturer, Swiss pharmaceutical company Sandoz, would have to apply to sponsor drug studies. It did so, but without much enthusiasm and only until 1966, when it withdrew (around the time recreational use seemed to blossom). Oram writes that Sandoz’s decision might have put a stake in the heart of LSD research if not for the FDA’s willingness to support a small set of researchers in self-sponsorship.

Still, over the course of the 1960s, LSD research dramatically declined. Partly this was because of FDA red tape and scepticism, but it also reflected a more general debate about applying drugs to psychological problems. Where human patients and therapists were

parties to a complex and long-running therapeutic process that largely happened inside the brain, how could efficacy ever be proven? Various arguments emerged against applying to psychopharmacology the ascendant standard of the controlled, double-blind study meant to nullify, among other complications, the psychological effects of drugs. In short, with the passage of the Drug Amendments of 1962, those studying LSD were 'the first researchers required to provide proof of efficacy for a form of psychotherapy, and at a time when there was no consensus on an accurate method to do so' (p. 108).

One group of these researchers set out in 1963 to design studies that would conform to the emerging standard and establish the efficacy of the psychedelic form of LSD therapy. This pedigreed group of insiders, experienced in psychopharmacology and interested in the promise of LSD suggested by earlier studies, coalesced around Spring Grove State Hospital in Baltimore, MD for a series of rigorous clinical trials that spanned a decade. They earnestly hoped to make progress in curing alcoholism, the stubborn ailment suffered by a large portion of the state's wards; but they would also use psychedelic therapy to treat patients for anxiety from terminal cancer, for narcotic addiction, and for various neuroses.

With some of these studies under way in 1966, an explosion of negative publicity surrounding recreational use of LSD cast a shadow, yet the FDA worked with the Spring Grove group to continue and expand their work. They gained new team members, moved into enlarged research facilities, and planned to expand LSD treatment for alcoholism to another hospital in Maryland's system. Spring Grove's study results looked promising, if not spectacularly so. But by the early 1970s, the anticipated scientific consensus on effective LSD therapy still failed to emerge. Oram attributes this outcome to many factors, including negative controlled-study results produced by a handful of other LSD researchers and design problems related to control groups, dosing, and bias. Oram succinctly describes perhaps a dozen of these fascinating studies and the problems researchers encountered as they sought, and ultimately failed, to prove how LSD could work to the satisfaction of the regulators.

Oram is aware of the emerging law-enforcement framework for drug control in the 1960s and the political backlash against the counterculture's embrace of mind-expanding drugs. He points out, for example, how the FDA fielded its own enforcement that included undercover investigations by agents with sidearms; and how Timothy Leary's drug evangelism helped to sour public opinion at an inopportune moment. But he downplays these factors and concludes that the primary reason for the 'slow and quiet death' of LSD studies by 1976 was essentially procedural (p. 203). If this explanation seems mundane, the book certainly is not, as it introduces many key figures in LSD research and provides convincing new analysis of studies that are fascinating in themselves. Now that psychedelic therapy is again drawing interest, it is worth fully exploring why research faltered the first time around.

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Suman Seth, *Difference and Disease: Medicine, Race, and the Eighteenth-Century British Empire* (Cambridge: Cambridge University Press, 2018), pp. 336, £29.99, hardback, ISBN: 9781108418300.

Difference and Disease is a very interesting intervention in the history of medicine which has a great temporal as well as spatial coverage. Seth demonstrates his careful, detailed