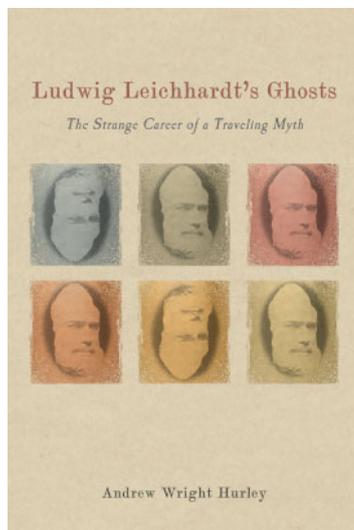


Reviews

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Andrew Wright Hurley (2018) *Ludwig Leichhardt's Ghosts: the Strange Career of a Traveling Myth*, Camden House: Rochester. 345 + ix pp., illus., ISBN: 9781640140134 (HB), £75.00.

In 1842, Prussian scientist and explorer Ludwig Leichhardt arrived in Australia. In 1846, he and his companions returned to a hero's welcome in Sydney after successfully completing an overland journey of some 4800 km from Moreton Bay (now Brisbane) to Port Essington near present-day Darwin. In

1848, he departed Cogoon Station on southern Queensland's Darling Downs to attempt another overland crossing, this time aiming for the Swan River Colony (now Perth). Neither he nor his fellow travellers arrived. Despite numerous searches and ongoing speculation, the precise fate of Leichhardt and his expedition party remains a mystery. (For a recent overview of these fruitless inquiries, see the review of Darrell Lewis's 2013 monograph *Where is Dr Leichhardt?* in *Historical Records of Australian Science*, 24(2), pp. 339–340).

In *Ludwig Leichhardt's Ghosts*, Andrew Wright Hurley has chosen not to continue this speculation. Instead, his aim is to disrupt 'the notion of disappearance by undertaking an afterlife biography or "mortography"'. Leichhardt, Hurley argues, has 'posthumously haunted people and been sought and textually found countless times', in Australia, Germany, and elsewhere. As such, Leichhardt 'remains a significant mythical presence' two centuries after his birth. To trace his 'powerful afterlives', Hurley draws on a range of scholarly insights, including the transnational turn in cultural history, memory studies, and literature; critical scholarship on exploration; recent work in metabiography, especially Nicolaas Rupke's 2008 study *Alexander Humboldt: a Metabiography*; and work on 'hauntology', myth, the uncanny, and the social history of ghosts. In addition, he makes use of two key concepts: the idea of cultural biography, applied to both objects and myths, and the

notion of an 'International Republic of Leichhardt'. The resulting monograph is fresh, compelling, and often surprising in its insights.

The book is divided in two parts, each consisting of four chapters ordered chronologically. The first part, 'Colonial Entanglements', deals with the years between Leichhardt's initial, short-lived disappearance in 1845, and the centenary of his birth in 1913. In this section, Hurley reminds us that when Leichhardt's Port Essington party returned to Sydney in 1846, they found that they had been given up for dead. Indeed, an elegiac ode titled 'Leichhardt's Grave' had been composed and set to music in their honour. The second part, 'Colonial Memories', covers the period from the First World War to the present day. The chronological structure works well and is strengthened by Hurley's regular cross-referencing of insights from earlier chapters in later ones.

Throughout, Hurley considers the various 'modes of commemoration' available: written texts, musical tributes, visual representations, and public monuments. He explores 'how ideas and myths about Leichhardt [...] came into being, what genres influenced them, and what work they did, or could not do, in different geographic locations and spheres'.

This last point is particularly important. Hurley's assessment of the way in which Leichhardt was instrumentalized in the former East Germany—'[h]istory was never just history in the GDR'—could equally be applied to all of Leichhardt's afterlives. History was never just history anywhere; Leichhardt offered different things to different people at different times and in different places. He enabled the women forming the Ladies Leichhardt Search Committee to show an active interest in, and even influence, 'geographical exploration and scientific enquiry, regarded by many [in 1860s Australia] as the primary domain of men'. Later in the nineteenth century, his memory was put to work by German scientist Georg von Neumayer to promote national scientific endeavour and 'feed the mood of German colonial enthusiasm'. The Nazi regime, attempting to erase the presence of ethnic minorities (Slavic Wends and Sorbs) in Leichhardt's home region of Lusatia, used his surname as a Germanic alternative to place names derived from Slavic languages. He has variously been repackaged as 'a negative example of weak [non-Anglophone] manhood', a proto-socialist, a harbinger of multiculturalism, an ecological visionary, and an avenue for Indigenous Australians to advance Indigenous-run tourist initiatives.

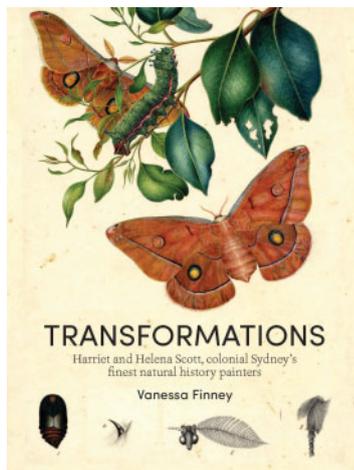
On the one hand, readers are likely to encounter familiar figures in unexpected new guises; on the other, they can expect to become acquainted for the first time with unfamiliar ones.

For example, I have read Patrick White's 1957 novel *Voss*, 'probably the best-known representation, literary or otherwise, of Leichhardt', but had not previously been aware of its differing reception in East and West Germany. Australian journalist and ornithologist Alec Chisholm's name was familiar from his book *Mateship with Birds*, but I was surprised to learn that he had also been responsible for *Strange New World*, a trenchantly negative, explicitly anti-German biography of Leichhardt. Other authors were completely new to me, notably German ethnologist Alfred Kötze and Australian geologist Louisa Drummond Cotton, both of whom foregrounded the centrality of Indigenous guides to Leichhardt's expeditions.

Ludwig Leichhardt's Ghosts is an ambitious book, covering almost two centuries of Australian, German, and transnational history. The breadth of its topic necessitates some omissions; I admit that I was slightly surprised to find no explicit mention of the various local, national, and bilateral initiatives developed to commemorate the bicentenary of Leichhardt's birth in 2013, many of which focused on promoting scientific research and collaboration. However, the diverse range of Leichhardt's afterlives selected for consideration are certainly handled skilfully. Hurley weaves them into a coherent and readable whole with apparent ease. *Ludwig Leichhardt's Ghosts* will be of value to many students and scholars of history, literature, and culture, including those interested in cultures of commemoration, imperial and colonial history, Indigenous-settler relations, migration, social history, transnational history, and women's history.

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Vanessa Finney (2018)
Transformations: Harriet and Helena Scott, Colonial Sydney's Finest Natural History Painters,
NewSouth Publishing:
Sydney. 220 pp., illus.,
ISBN: 9781742235806
(HB), \$44.99.

Transformations is a book about two women who excelled in a scientific field dominated by men. As such, it is an important publication for our time. Vanessa Finney provides a lively, accessible

text that matches the animated and detailed drawings produced by her subjects in the nineteenth and early twentieth century. While it covers both the personal and professional lives of the Scott sisters, this book also offers fascinating historical insights into what it was like to work in the natural history field in the second half of the colonial century. It also illuminates the flora and fauna of Ash Island in the Hunter River estuary, how the Australian Museum developed and operated, the development of printing and publishing in Australia, and how the contributions of women artists were often concealed or ignored.

At the heart of the book is a story of meticulous collecting, pinning, preserving, drawing and painting butterflies and moths for the major work of Helena, Harriet and their father, A. W. Scott. These were created for the two-volume *Australian Lepidoptera*, published in 1864 and 1890–8. Collecting was often carried out 'in leech-ridden mudflats and mosquito-infested mangroves' where the sisters clambered in long, heavy dresses, using muslin nets and digging tools to catch grubs in tree bark or underground.

Their drawings and paintings were always created life-size on the best quality paper, using premier paints, with collections numbered and cross-referenced. Illustrations of butterflies, moths, larvae and body parts included their situation, such as the plants the insects frequented and sometimes a view of their habitat in the background. The prominent artist and entomologist William Swainson's review of *Lepidoptera* is effusive: 'Whether, in short, we look at the exquisite and elaborate finishing, or the correct drawing, or the astonishing exactitude of the colours, often most brilliant, and generally indescribably blended, there is no poetic exaggeration in saying the force of *painting* can no further go'.

Many of these full-page images are included in *Transformations*, with descriptive entries by A. W. Scott. Details added by Finney include: the places the insects were collected, where the original specimens now reside, and explorations of the wider historical moment. Thus the reader's understanding is constantly extended and illuminated. Of particular interest are the author's descriptions of Ash Island, where the Scotts lived and collected for twenty years. About 9.5 km in length and 2.5 km wide, it was wild place with all kinds of faunal life, a profusion of snakes and rare flora. Finney notes that their simple house contained a grand piano, artworks, books, a study and a veranda all around.

Helena and Harriet Scott benefitted from their extended family's enthusiasm for, encouragement of and involvement in natural history. Their father, 'erratic genius' Walker Scott, publicly promoted his daughters' talent and had their names printed above his on the title page of *Lepidoptera*. On the other hand, Finney notes, Victorian government botanist Ferdinand von Mueller had hundreds of females working for him, but always retained publication rights to their drawings and naming rights to their finds. Later, as Harriet struggled to support herself from her art, she wrote 'if I were only a man'.

However, in Sydney in 1866, the sisters were among the most sought-after professional artists, producing work for scientists connected to the Australian Museum that included paintings of snakes, shells, bats, birds and their eggs, as well as scenes of the colony. My first encounter with Helena's work was her drawing of a handsome thylacine for Museum director Gerard Krefft's, *Mammals of Australia* (1871)—a large-format book then used in New South Wales schools.

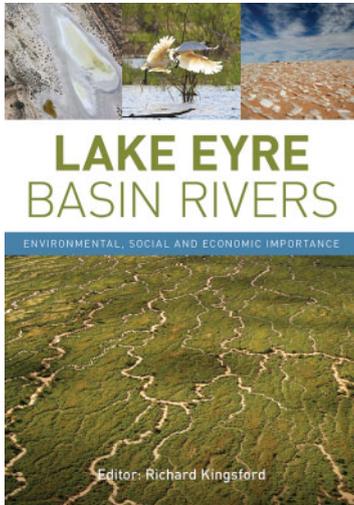
My only criticism of *Transformations* is that historical details range so widely that it is sometimes difficult to recognize who is who, despite the list at the beginning of the text. Furthermore, some information about Sydney society networks seems trivial or irrelevant. On the other hand, it was important to include influences in the scientific and artistic community at the time, such as Ludwig Leichhardt, Conrad Martens, Richard Baker and Edward Ramsay.

As curator and manager of the natural history archives and rare books collection at the Australian Museum, Vanessa Finney is in a

position thoroughly to understand and appreciate her subject, and she conveys the personalities of the Scott sisters with intelligence, warmth and enthusiasm. And it seems the material she describes was only brought to public attention by the determined efforts of two more women: Nancy Gray at the State Library of New South Wales and writer Marion Ord. The book includes a useful ‘list of characters’ and details of the Scott family collections—manuscripts, drawings, specimens, notebooks, indexes and correspondence—and where they are now held. Of the many other sources Finney quotes, the frank and personal letters written by the sisters to Edward Ramsay offer unique insights into the thoughts and feelings of these outstanding women.

The title *Transformations*, as Finney points out, is relevant to the book’s content in many ways. It exemplifies the metamorphosis of caterpillar to butterfly, the progress of the women to professional natural history artists, the transition of specimens to accomplished scientific drawings and paintings, then finally to a beautiful book. The images are now transformed again into digitised collections and a useful app called ‘The Science of Art’, which links the insects to current scientific data and locations.

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Richard Kingsford (ed.)

(2017) *Lake Eyre Basin Rivers: Environmental, Social and Economic Importance*,

CSIRO Publishing:
Melbourne. 272 pp.,
ISBN: 9781486300785
(PB), \$59.95

In early 2019, floods devastated northern Queensland thanks to a low-pressure system, followed closely by rains courtesy of ex-Tropical Cyclone Trevor moving across the south of the state from the Northern Territory. Months later,

these flood waters are finally finding their way into Kati Thanda-Lake Eyre in South Australia. The slow accumulation of water there may mean that this year will rival the last big flood of 1974.

How destructive floodwaters in the north of the continent make their way south, giving life to floodplains and communities along their way is just one of the fascinating characteristics of this ‘great natural icon’ that Richard Kingsford and his team of twenty-five contributors reveal in *Lake Eyre Basin Rivers*. Theirs are river stories, shared first at a conference in Longreach, Queensland in 2013, and then brought together in this remarkable collection. The catalyst for the conference had been the threat that the policies of Queensland’s Liberal National Party Government (2012–5) posed to the rivers of the Lake Eyre Basin. Then, as now, the troubled Murray-Darling Basin served as a cautionary

tale of unchecked development and its toll on an iconic water system.

With contributions ranging from local pastoralists and Indigenous peoples to ecologists and economists, each chapter reveals the different ways the contributors are invested in the sustainable management of the Lake Eyre Basin for future generations. For them, sustainable management does not preclude development; rather they stress the need for transparent and collaborative governance based on Indigenous and scientific knowledge. The collection comprises three sections, focusing on the basin’s natural history and ecology; its cultural and socioeconomic dimensions; and lastly, the sustainable management of the basin. Historical perspectives pervade each section, with insights into how this basin formed; the different ways that local peoples understand and value its ecologies; and finally, how the basin’s more recent history differs so starkly from the other river systems in Australia and elsewhere.

In his opening chapter, Kingsford introduces his ‘obsession’—the desert river system of the Lake Eyre Basin. Straddling the Northern Territory, Queensland, South Australia and New South Wales, it is about one million square kilometres in size. Covering about a seventh of the continent, the basin’s span is equivalent to the combined area of Germany, France and Italy, and overlaps with the even larger Great Artesian Basin, which lies beneath.

The deep geological and human history of the Lake Eyre Basin is Kingsford’s focus here. Formed over millennia, what is now a vast salt lake was once a much larger and deeper freshwater body, Lake Dieri. As the climate dried and the deserts formed, a boom and bust ecology formed in the basin, where rivers are among the most variable in the world with periodic floods thanks to the summer seasonal rains of the Northern Australian Monsoon. The ‘full extent of the dynamics of arid Australia’, as ecologists Chris Dickman, Aaron Greenville and Glenda Wardle explain, still require further study after several decades of ‘rigorous science’. Nevertheless, the wisdom of the late Peter Cullen—that ‘by the time they get the science right, the patient will be dead’—appears to guide these river champions. They cannot afford to wait.

For the Aboriginal peoples that established themselves in central Australia some 50,000 years ago, the basin belonged to a network of trade routes to other river basins and waterholes that have helped to sustain generations on country. For Mithaka man, Scott Gorringe, and Indjalandji-Dhidhanu man, Colin Saltmere, these remain ‘sacred waterways’ that ‘are the basis for the strong relationships between land, plant, animal and humans over thousands of years’. Their river stories hint at the tensions and conflicts that have troubled the basin since European explorers ventured into the arid interior seeking the elusive inland sea from the mid-nineteenth century. That the many peoples of the basin, Indigenous and settler, have found common ground in its sustainability is a testament to their shared belief that ‘prevention is better than cure’.

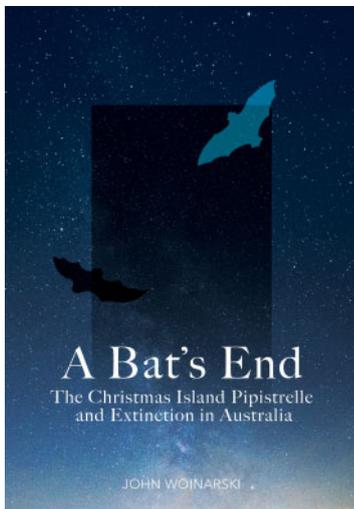
For all its size, the Lake Eyre Basin remains largely unaltered and unregulated—one of the last such water systems in the world. But that hasn’t been for want of trying. Pastoralist Bob Morrish remembers the ‘battle for the Cooper’ in the mid-1990s, which pitted locals from the Cooper and Diamantina Channel Country against a plan to develop a large irrigated cotton farm on the floodplain of Cooper Creek. *Lake Eyre Basin Rivers*, meanwhile, was conceived in the wake of the repeal of Queensland’s Wild

Rivers legislation in late 2014, which its contributors feared would endanger the basin. Environmental engineer Gavin Mudd suggests they are right to be wary: ‘the cost-benefit analyses for such [mining] developments are rarely comprehensive, seldom including economic values of the environment’. In the Murray-Darling Basin, the evidence for Mudd’s assessment is plain to see. Pastoralists Ed Fessey, Pop Peterson and Gary Hall each share the ways in which the development of cotton irrigation and large dams from the 1970s proved to be ‘disastrous—economically, environmentally and emotionally’ for downstream ecologies and communities.

As this review suggests, a keen sense of the past infuses the collection, whether in the contributors’ scathing treatment of the tragic history of the Murray-Darling Basin, or in their stories of the personal and community significance of the Lake Eyre Basin rivers. Pastoralist Leonie Nunn describes this spirit. ‘This river is integral to our lives. It affects us physically and spiritually. Its dry years and flood years determine what we do and how we live. Our stories and memories are woven together by its booms and busts’.

The contributors emphasize the vital significance of shared responsibility, stewardship, custodianship, community and wise use to the catchment’s management. As champions of this culture in the basin, this collection is a declaration of their willingness to fight to protect its future, for it is their future too. Insightful and poignant, *Lake Eyre Basin Rivers* shows just what’s at stake in an election year; when the spectres of climate change and the Murray-Darling haunt the nation’s water policies and show just how wanting they have been.

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John Woinarski (2018)
A Bat's End: the Christmas Island Pipistrelle and Extinction in Australia, CSIRO Publishing: Collingwood. 280 pp., illus., ISBN: 9781486308637 (PB), \$59.99.

Avoidable extinctions are tragic events, deeply distressing and the most damning manifestation of our nation’s policy failures in conservation and environmental management. Australia is now in the unenviable position of

being one of the world leaders in contemporary extinctions. This shame is made all the more galling by the fact that our actions are causing the extinction of plants, animals and other organisms found nowhere else on Earth. *If* we had the will, we have more than adequate resources—and scientific and management expertise—to prevent most of these extinctions.

The Christmas Island pipistrelle, *Pipistrellus murrayi*, suffered just such a terrible fate. This species—a diminutive microbat smaller in size but about the same weight as an empty matchbox—most likely disappeared forever on 26 August 2009. The events leading up to the demise of this bat species are documented in meticulous detail and rich emotion by John Woinarski in *A Bat's End*.

Readers familiar with Woinarski’s many contributions will know he is an exceptionally gifted writer. This book well evokes the sadness, frustration and anger that this extinction caused him, alongside many in the conservation community who cared for this bat in various ways.

A Bat's End is essentially divided into three sections. First, the background social, economic and geographic context to the pipistrelle’s extinction. Second, how the ecology of the species and the island were ineptly managed because of poor conservation strategies and political decision making. The third section is arguably the most important in this age of environmental doom. It asks what lessons we can learn from this terrible event and what we must do to address Australia’s abominable conservation record.

I thoroughly enjoyed this book. Chapter two outlines why islands are such challenging conservation ‘assets’, typically with diverse and often endemic species. Their isolation, which can drive the evolution of new species, also makes them vulnerable to threats, particularly introduced organisms. This chapter is an excellent synthesis for anyone with a general interest in island ecology and conservation.

The early human history, industry, biodiversity and ecology of Christmas Island are outlined in chapters 3 and 4, also proving very informative. However, I did find some of the historical accounts overly detailed and somewhat dry at times. Chapters 5, 6 and 7 summarize the pipistrelle’s ecology, taxonomy and pattern of decline. They also lay out the human failure to act that heralded this bat’s extinction.

It is hard to imagine the extinction timeline and date being so well documented for any other species. Woinarski makes palpable the protracted and growing fear of this seemingly inevitable result. ‘It was the extinction point, bringing to reality the outcome predicted consistently and with increasing alarm by those who knew most about this species’, he writes. ‘It was the point at which the graph of unremitting and consistent decline hit the *x*-axis’.

Chapter 8 is truly insightful. It draws upon the personal experiences of ten people, including ecologists, the minister for the environment (2007–10), decision makers and government agency staff, all of whom had varying degrees of responsibility for this bat. Woinarski demonstrates how critically the fate of a species rests on too few people and their particular motivations. As someone who deeply values and advocates for the conservation of species, I was enraged at times to read of key actors deflecting responsibility or appearing insufficiently concerned by what transpired. It is fair to say that Peter Garrett and Tim Flannery have a very different view on who should be held responsible, and why, for the pipistrelle’s extinction!

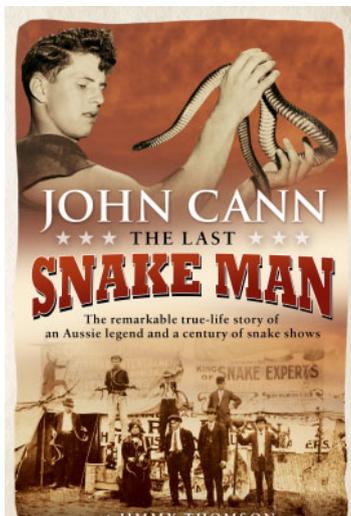
One criticism I have of this book, is its presentation. CSIRO Publishing has opted not to include any colour photos, maps or charts. Given the photogenic nature of this species and the island, this is regrettable, and it detracts from the rich written content within *A Bat's End*.

The key messages I took from *A Bat's End* were of our failure in environmental stewardship and why this must change—urgently. More positively, the book drove home that there are also many energetic, passionate people fighting hard every day to conserve species, often against great odds. This challenge is captured well in chapter 9. As Woinarski points out, we all have responsibility for the extinction of species, albeit to varying degrees. Unless we make genuine changes to the way we live that are more sustainable and aligned with this continent's prevailing conditions, there are likely to be many more irreversible tragedies.

In the last chapter, the author offers ten salient lessons from the pipistrelle's story. His final words in *A Bat's End* should be used by all for personal reflection and as a positive call to arms to protect what remains of Australia's remarkable species. 'The pipistrelle did not have to be large, or beautiful, or appealing, or well known, or important for us to be the poorer for its loss; nor should its apparent insignificance exonerate us from the mismanagement that led to its oblivion'.

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John Cann and Jimmy Thomson (2018) *The Last Snake Man: the Remarkable True-life Story of an Aussie Legend and a Century of Snake Shows*, Allen and Unwin: Sydney. 306 pp., illus., ISBN 9781760630515 (PB), \$32.99.

Education and entertainment have long formed the intertwined attractions of live animal shows. As heir to Australia's longest-lived snake display, John Cann excelled in both spheres; I was fortunate to catch one

of his final performances in 2010. Unlike many fellow 'snakeys', Cann himself has also proven durable. In a career spanning six decades, he contributed significantly to public understanding of Australia's reptiles. Moreover, Cann's fieldwork and handling expertise substantively furthered taxonomic, ecological and medical knowledge of our snakes, lizards and turtles.

Although often referred to the 'The Snake Man of La Perouse', the author affords that sobriquet to his father. George Cann took up showing snakes at Sydney's La Perouse tram terminus in 1919, claiming the site left vacant by infamous snakey 'Professor' Frederick Fox, who died after a krait bite in India bested his 'antidote'. As Cann remarks, the death toll amongst men and women who showed venomous serpents was prodigious. Yet, he adds, 'many of the snakeys had developed immunity from bites over the years and pop was clearly among them'. The author, on the other hand, became allergic both to venom and to antivenom.

A combination of acquired immunity and animal handling expertise saw many snakeys participate in Australian scientific endeavours. George Cann became curator of reptiles at Taronga Zoo in 1939. There he furthered the collection of snakes for antivenom production while fostering the careers of other budding handlers, notably Eric Worrell. Both George and his sons contributed innumerable snakes for milking at Worrell's Australian Reptile Park. Indeed, as Kevin Markwell and Nancy Cushing suggest in their history of Worrell's career, *Snake-bitten*, the expertise of 'amateurs' and commercial operators has proven critical to local venom science for over a century. Yet, observes Cann, while pragmatic and academic experts can craft enduring working relationships, tensions over authoritative knowledge may sour others.

Performers and professionals differ by more than their qualifications. 'It wasn't enough to be able to work with snakes'; snakeys 'also had to work the crowd'. Cann's own career paired canniness with confidence. He worked a series of arduous jobs, competed in the 1956 Melbourne Olympic Games, represented New South Wales in rugby league—and still found time to mount extensive reptile-catching forays in Australia and overseas.

While his initial target was snakes, by the 1960s Cann had also developed an enduring passion for turtles. Illustrating both his doggedness and his networks, the author spent decades pursuing the 'pet shop turtle'. This unprepossessing species was sold at pet stores around Australia, yet its ecological origins remained elusive. Despite deceptions, disappointments and dead ends, Cann persevered in eliminating potential sites and fending off competitors. Hunting for nearly 30 years, in 1990 a carefully cultivated contact finally led Cann to a site on the Mary River near Brisbane. At last he had found the home of *Elusor macrurus*, 'the most elusive'.

Half the book, nevertheless, is devoted to stories and observations about Australian snakes. From childhood, Cann has been attuned to their habits and behaviours, particularly intuiting where snakes choose to live. Successful handlers, he adds, evaluate the disposition of individuals rather than making assumptions based on species. Because snakes tend to become more placid with handling, snakeys face an ongoing imperative to collect fresh specimens. Not only are they more lively for displays; they also serve a pedagogical function by demonstrating how snakes are likely to respond when encountered in the wild.

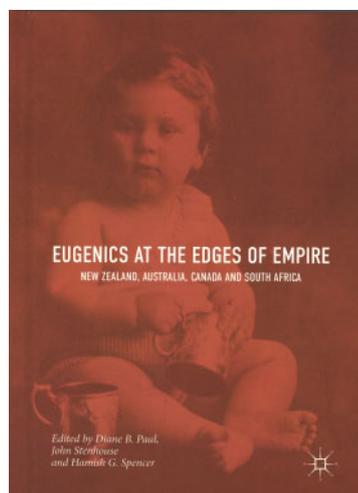
Cann believes that those who show snakes inevitably become their victims. 'And they all say the very same thing when they get bitten: "he got me".' His own experience of being envenomed six times, 'with a good number of close shaves', means that Cann also appreciates the diversity of snakebite syndromes and the potency of antivenom.

Despite the risks—and his family's commitment to public displays—the business of showing snakes proved less rewarding as the twentieth century progressed. While the Vaudeville trappings gradually gave way to ecological messages, live performances were usurped by television and takings dwindled. Ironically, some of Cann's most lucrative work proved to be venomous animal wrangling for film and television productions.

Having authored nine books on Australian snakes and turtles, Cann admits that his favourite works are his two volumes documenting the history of his vocation, *Snakes Alive!* and *Historical Snakeys*. Indeed, this memoir also includes an appendix capturing the careers of notable performers. The author is certainly not shy of

his own achievements, with over a third of the text devoted to his work life and sporting prowess. *The Last Snake Man* features few firm dates and lacks a bibliography, but the firm editorial hand of Jimmy Thomson has kept the pace and structure strong. The book's large type and clear prose are well targeted to general readers, and the volume is produced to Allen & Unwin's typically high standards. Like the author, it offers both entertainment and education for anyone seeking a more expansive understanding of Australian science.

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Diane B. Paul, John Stenhouse and Hamish G. Spencer (editors) (2017)

Eugenics at the Edges of Empire: New Zealand, Australia, Canada and South Africa, Palgrave Macmillan: Cham.

320 + xvii pp., ISBN: 9783319646855 (HB), €84.99.

A foreword by Alison Bashford suggests great things of *Eugenics at the Edges of Empire: New Zealand, Australia, Canada and South Africa*. And indeed, the collection lives up to

expectations. Consisting of fourteen well written, researched and referenced chapters, it sets out to show that 'nothing about the history of eugenics is simple'.

In particular, with over half of the essays focussing on New Zealand, *Eugenics at the Edges of Empire* does much to dispel the assumption that the country was an 'inhospitable terrain for eugenics'. Other chapters offer important insights into eugenic practices in Australia, Canada and South Africa. While the geographical scope is large, so too is the broad range of themes discussed. All consider, in one way or another, attempts to 'improve' demographic standards through practices pertaining—to name a few—to reproduction, education, marriage and public health.

As the editors Diane B. Paul, John Stenhouse and Hamish G. Spencer admit, structuring the collection proved challenging precisely because many of the essays could fit into more than one of the three sections. These are arranged by the themes of sterilization, policy and practice, and the contested meaning/demarcation of eugenics. This latter conundrum is raised most interestingly in essays which, as Charlotte Macdonald puts it, revisit established topics to offer 'new perspectives to be gained by distance'.

For instance, while attempts to enforce compulsory sterilization of those seen as 'unworthy' through Mental Deficiency/Defective/Hygiene Acts are rightly dealt with as 'negative' measures across the collection, some pertinent questions are raised. Seemingly eugenic practices, like sterilization, were actively

chosen by some individuals in the absence of contraception. Finding such instances in the case of Alberta, Erika Dyck suggests that the topic therefore 'might sit more comfortably with the history of birth control'. Susanne M. Klausen's chapter dealing with South African eugenic measures highlights how the Department of Public Health prioritized 'birth control for poor white and mostly coloured women'. Personal agency and power structures are the key here.

Other authors deal with public health provisions perhaps less contentious in nature. In 'revisiting three eugenic moments in New Zealand', Macdonald argues that national fitness campaigns had more to do with the healthy body than the 'defective' one. Accordingly, such 'positive' initiatives were perceived as eugenic only in retrospect. Likewise, Caroline Daley, in her chapter on 'baby shows', wants us to reconsider them as an 'entertaining part of popular culture', and related more to consumerism and entrepreneurialism, than eugenics.

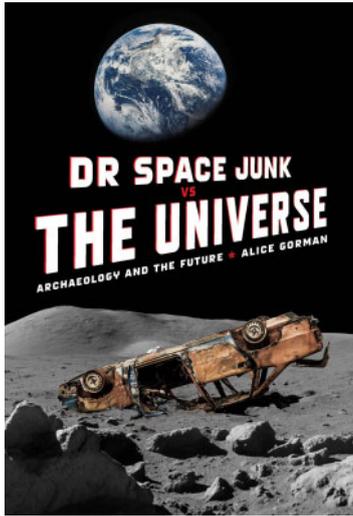
By including a broad range of eugenic topics delivered by historians of genetics, science, medicine, race and gender, the editors are correct in their assertion that the volume makes 'a distinct contribution' to the history of eugenics in British colonies by 'looking at the margins of empire'. However, apart from John Stenhouse's illuminating chapter which deals with New Zealand's 1894 Undesirable Immigrants Bill, more could have been said on eugenic border controls at these very margins. Australia's 1912 *Immigration Act*, for example, was overtly eugenic. Two years later, New Zealand attempted to enact border controls against those deemed unsuitable because of their 'standards or habits of life', a phrase copied from the Union of South Africa's 1913 *Immigration Act*.

This opinion is admittedly based on my own research interests, and should not detract from the essays which recognize that eugenic anxieties in these regions did focus on 'external threats'. Stephen Garton describes how a 'quarantine ethos was integral to the emerging national culture' in Australia and New Zealand. In her chapter on Canadian eugenic practices, Dyck recognizes that anti-immigration solutions were part of dealing with social degeneration. In Saskatchewan, as pointed out by Alexander Deighton, racial anxieties were high, manifesting more in the fear of non-Anglo immigrants than the 'mentally defective'.

A strength of this collection is how the authors expose the range of historical actors involved in contesting or advocating eugenic practices. Individuals or organisations are shown as diverse, whether in terms of gender, ethnicity, political or religious beliefs. Still, as Ross L. Jones rightly concludes, it only took 'small groups of individuals to significantly influence eugenic policy'. Biographical examination of some of these individuals highlights contradictions in their beliefs. Robert Stout, a key New Zealand 'eugenics enthusiast', is exposed by Emma M. Gattey as hiding—literally and figuratively—his epileptic daughter in an asylum. Such a paradox is evidence of what Gattey describes as an 'awkward, politically loaded subject'.

In tacking this contested subject effectively, *Eugenics at the Edges of Empire* is an essential contribution for researchers across humanities and social science disciplines interested in the history of eugenics.

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Dr Alice Gorman (2019)
Dr Space Junk vs the Universe: Archaeology and the Future, NewSouth Publishing, University of New South Wales Press: Sydney. 275 + xiv pp., ISBN: 9781742236247 (PB), \$29.99.

In this new book, archaeologist Alice Gorman offers a deeply personal and at times whimsical reflection on the objects that humanity has placed into space over the last seven decades, how they came to be there, and

what they say about us.

Gorman, a senior lecturer at Flinders University, has an international reputation as a pioneer and leader in the field of space archaeology. While not the first person to turn her mind to material, cultural and social history of space objects, she may reasonably be credited as a person who has popularized the pursuit. She has made it, if not mainstream, then at least an obligatory part of the space conversation.

Gorman's usual written medium is online; in addition to her blog, she is well known on Twitter as @drspacejunk. With a clear homage to her online activities in the title, *Dr Space Junk v. the Universe*, it is not surprising that this book is conversational in tone. The eight core chapters are broken into sub-chapters, with titles including 'The archaeology of the not-quite-there' and 'The cane toads of space'. Clearly carefully chosen, these sub-titles are descriptive of both content and form.

In the section heralded by 'Valley of the cable ties', for example, Gorman takes the reader on a fascinating diversion through the history of the Orroral Valley as told through an analysis of the cable ties found there. The Orroral Valley was part of the Satellite Tracking and Data Acquisition Network (STADAN) and housed many satellite tracking antennas until it was demolished in the 1990s. Gorman describes conducting an archaeological survey with a group of students, and discovering the wide variety of cable ties that had been removed from the antennas and left behind. She tells the story of how the group catalogued these pieces of 'junk' and discussed how they

may have come to be where they were. Gorman then takes us through the history of the cable tie, describing its origin, and how it came to be an integral, yet often invisible, part of our society and culture. From the history of its development, to its common uses hanging election posters, to its appearance in *Fifty Shades of Grey*, the humble cable tie will never be quite the same again.

It is in these diversions and deep, often personal discussions that the book particularly shines. Her analysis of gravity as an object of archaeological study is as fascinating as it is intimate. It's a risky approach, but what makes it work for Gorman is that, unlike some historians of science and technology, she does not shrink from communicating the emotional side of her work. A particularly poignant section in which Gorman discusses why she became an archaeologist rather than an astrophysicist will resonate with many readers.

Gorman also sensitively navigates exploring the likely emotions of others. In a compelling chapter 'Shadows on the Moon', Gorman introduces the moon as 'a battlefield of competing ideologies'; a 'strategic military base v. a romantic lovers' lamp; a scientific triumph v. government hoax; a resource to be exploited v. spiritual icon'. Through the pages, the reader is taken through Gorman's own thoughts in a functional, loosely structured stream of consciousness. Most interesting for this reader is Gorman's nuanced perspective on the potential cultural impact of lunar mining for humanity on Earth, which draws on her experiences working with mining companies and first nations people as an archaeologist assessing mining sites in Australia.

Dr Space Junk v. the Universe is part history, part autobiography. If Gorman's twitter feed is the very tip, this book gives her audience the iceberg beneath it. Those looking for information on historical events or particular items of orbital debris will find the index a helpful addition, while a popular audience looking for a general introduction to space debris, space archaeology, or the history of space technology will enjoy the narrative style.

My only quibble is to wish that it had a more extensive referencing system. There are many fascinating allusions to events or objects that do not appear in the list of selected references.

Then again, perhaps it was never meant to be that kind of book. It is, instead, a meditation on space debris by one of the world's foremost thinkers on the subject. That, if nothing else, surely makes it worth a read.

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