

Book Reviews

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Neil Chambers (ed):
Endeavouring Banks: Exploring Collections from the Endeavour Voyage 1768–1771.
 NewSouth Publishing: Sydney, 2016. 304 pp., illus.,
 ISBN: 9781742235004 (HB), \$69.99.

The cover of *Endeavouring Banks* indicates the wide array of material this book considers, including subject matter only marginally related to its subtitle. In fact, the 1773 satirical cartoon in which Joseph Banks appears as The Fly-

catching Macaroni—‘an amateur collector and dandy’—belies the intense detail and seriousness with which the book deals with the material collected by the young naturalist who accompanied James Cook on his voyage to the Pacific, Tahiti, New Zealand and Australia.

This volume, featuring a foreword by David Attenborough, arose from an exhibition of the collections from that voyage that are held in widely dispersed UK institutions. The exhibition gathered the items together for the first time and the book develops its themes in introductions to each section of Cook’s journey. Lengthy essays deal with the background, detail and associated subjects, followed by an extended discussion of individual items displayed, including extracts from the journals of Banks and artist Sydney Parkinson. The exhibition included a wide variety of ethnographic objects, drawings and paintings. In this book they are always viewed through the lens of the *Endeavour*’s voyage, and the artists and naturalists who recorded its findings.

As the title implies, the volume is primarily a homage to and celebration of Banks. His portraits were the centrepiece of the exhibition that was held in his hometown of Lincoln. Incongruously, it begins with Bank’s portrait as a 71-year-old President of the Royal Society and ends with a painting of him at 29, a few months after returning from the *Endeavour* voyage. The book’s consideration of these portraits is thought-provoking—it compares the paintings while discussing the artists, the objects included in each and their versions and copies, as well as commenting on the historical timing and the significance of the period in which each was executed.

Essays by scholars and curators including editor Neil Chambers, John Gascoigne, Jeremy Coote, Philip Hatfield and Anna Agnarsdóttir—editor of Banks’ Iceland correspondence—take the text of the book into some surprising areas. Indeed, they lift it from a catalogue to a substantial history. Collectively, they delve into myriad thoughts and events associated with the voyage, from advice by the Admiralty regarding the transit of Venus to instructions regarding mapping, commerce and the possession of territory. But rather than telling a coherent story there is frequent repetition, excessive detail, or superfluous information concerning intrigue and minor characters. The contributors are deeply absorbed in their subject and the history of British exploration, sometimes at the expense of the general reader.

Items pictured include a model of the *Endeavour*, plans and sketches, a nautical almanac, a Gregorian telescope, a quadrant, a clock, a chart of the South Pacific, a hummingbird’s nest, shells, botanical specimens, breadfruit, drums, canoes, spears, fish, belts, pendants and instruments. Sketches of the inhabitants of Tierra del Fuego are discussed in the same tone as these objects—as items of scientific interest—just as eighteenth-century voyagers referred to them. This rendering is problematic as it reinforces an unfortunate attitude, rather than reflecting on it. Sadly, the perspective of indigenous Pacific islanders is not offered. Despite the fact that the ‘immeasurable impact’ on these peoples is mentioned early in the book, there is no acknowledgment of this effect in subsequent details or comments. However, in the essay ‘The Material History of the *Endeavour*: Joseph Banks at the British Library’, John Hatfield points out the value of the collections in ‘preserving and sometimes reviving elements of indigenous cultures eroded by colonisation’. Information about the location of artefacts—where they were collected, where they eventually went, where they are now held—is invaluable for researchers seeking to trace material, although the lack of an index may make this information difficult to find.

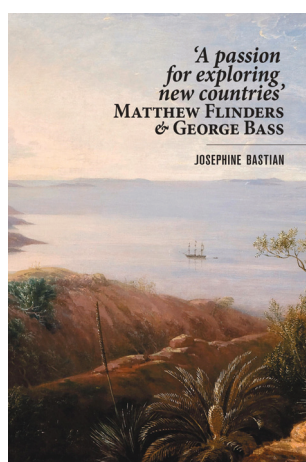
In his introduction to the east coast of Australia, Chambers mentions the Endeavour River, now modern Cooktown, where the ship sheltered for seven weeks after suffering near-disastrous damage on the Great Barrier Reef. In view of the 250th anniversary next year of the *Endeavour*’s departure from Plymouth, and recent debate about the celebration of the First Fleet’s subsequent arrival, it is apropos to mention here recent research by a Guugu Yimithirr woman, local Cooktown historian Alberta Hornsby, reported in the *Weekend Australian*. She tells the story she found in the journals of Cook and Banks about a Bama elder who offered Cook and his crew

‘the broken-tipped spear of peace’, rather than the defiance or fear depicted in *Endeavouring Banks*. With knowledge of her people’s customs, Hornsby perceives the elder’s gesture as a first ‘act of reconciliation’.

Highlights of the large volume are Gascoigne’s eloquent ‘Background to the *Endeavour* Voyage’, which provides a contemporary perspective on the voyage and the material it pictures, including a masterful summary. The details of paintings and sketches by Parkinson and other artists show their personal responses to the wonders they encountered. Of particular interest to Australian researchers is Parkinson’s iconic drawing of a kangaroo, Daniel Solander’s handwritten description, George Stubbs’ subsequent painting commissioned by Banks, and the first published engraving of the species. Executed under editors’ instructions, later images often employed different stylistic conventions and the sequence shown in the book is an important reminder of how original impressions of animals made on site are so important to understanding the evolution of representations. Much of the Australian flora and fauna collection was gathered during the ship’s long stay at Endeavour River, where Banks compiled a list of 180 words under the title ‘Language of New Holland’; one was ‘kanguru’.

An occasional concern in respect of the images is their quality—so many beautiful drawings and paintings, but some of the letters, titles and charts are unreadable. The photographs, while fascinating, often lack clarity, or contain writing that is too small to be deciphered. This is the problem with a catalogue: items were meant to be viewed on display, not as photographs. The poignancy of the illustrations, however, becomes apparent when we read that 30 of the ship’s company died on the voyage, including the artists Parkinson, Herman Spöring and John Buchan. The exhibition and this book are fitting memorials to Joseph Banks and all the men whose enthusiasm and enterprise is evident in the impressive collection of items.

Carol Freeman
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Josephine Bastian: *A Passion for Exploring New Countries: Matthew Flinders and George Bass*. Australian Scholarly Publications: North Melbourne, 2016. xiii + 303 pp., illus., ISBN: 9781925333825 (PB), \$44.00.

When I was at school in the eastern states of Australia, Bass and Flinders came as a package. I barely knew them as separate entities until the 1980s when I came to South Australia, where Flinders had a much higher profile. How-

ever, in recent years there has been much more published on Flinders than on Bass, for various reasons that Josephine Bastian’s new book makes clear.

Bastian says in her Preface that she has written this book because she feels that ‘although Flinders and Bass are well known by name and reputation, that is, as public figures, they are not known well so far as the details of their individual lives—their private faces—are concerned’. My copy of this book, which includes my name in the Acknowledgements as both an editor of Flinders’ Private Journal and as a librarian at Flinders University, comes directly from the author with her thanks. I am personally aware, therefore, that she has drawn on most of the available primary sources—letters, journals, books and contemporary newspapers—to produce a very readable account of the active careers of these two young men.

The book begins with Flinders and Bass meeting on board HMS *Reliance*, en route to Port Jackson in 1795. Their association ended with the eighteenth century, when Bass left the Royal Navy and set off on high-risk ventures. He imperilled not only his own and other people’s money, but the lives of himself and his shipmates, all of whom were lost in early 1803 when Bass left Port Jackson for South America.

The idea of yoking Flinders and Bass together in one biographical study is logical. They did, after all, become jointly famous for their *Tom Thumb* voyages and their circumnavigation of Van Diemen’s Land, finally proving in 1798–99 that Tasmania is an island. There are, as Bastian points out, some personal parallels between them. Their association lasted something short of four years and the Tasmanian voyage was their last together. They say farewell to each other in Sydney on page 50 of Bastian’s book, and in the subsequent 200 pages the protagonists apparently only meet again in London at Bass’s wedding. If this book has a weakness, it is that statements like these are sometimes unsubstantiated: no reference is given and there is no obvious source. However, most of the quotations and many of the statements of fact are footnoted, but there is no discernible pattern to what is acknowledged and what is not.

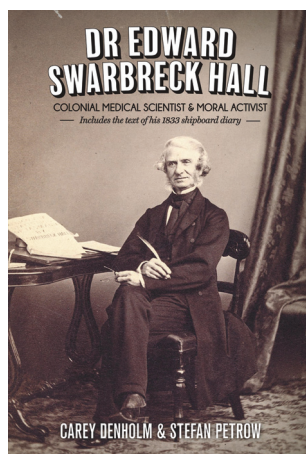
Flinders’ professional achievements are already meticulously recorded in his own publications such as *A Voyage to Terra Australis* and his recently published *Investigator* log books, entitled *Australia Circumnavigated* (edited by Kenneth Morgan). Bastian interweaves the personal with the scientific throughout: she does not just record bare facts. For example, on completion of the charting of the Gulf of Carpentaria, she writes, ‘On 17 February 1803, Flinders said what his exhausted men waited to hear. They could leave the Gulf ... After so much time and effort, he was honest enough to admit that he had not much changed the earlier Dutch charts’. There is a discussion of the difficulties naturalist Robert Brown faced in conveying his important collection of plants and seeds back to England, especially since his ‘right-hand man’—gardener Peter Good—had died.

Bastian’s book does nothing to endear George Bass to the reader. He was brilliant—or so we are always told—while Flinders was proud, reserved and sensitive. From my years of studying and editing Flinders’ own writings, I have the impression that Bass was attractive to Flinders, as to others, because he didn’t care much about other people. Bastian writes that the books in his library ‘are the best evidence we have that George Bass was a man of mature intellect and feeling—indeed the only evidence for no sign of it emerges in his letters or his intimate relationships’. His letters to his wife, Elizabeth, are occasionally affectionate in a patronising way, but

nothing like the passionate, confiding and trusting letters of Matthew to his wife Ann.

Flinders wrote a long and revealing letter to Bass (now in Sydney's Mitchell Library) which, though it was despatched three years before Bass disappeared, he (perhaps luckily) never received. Although Flinders idolized Bass, he was certainly a better friend and a more devoted husband, and he went on to make a major contribution to Australian history and science. Bastian's Flinders is a complex and believable figure, based firmly in the abundant evidence available from his own writings, and the scarcer personal accounts from those who knew him. It is this well researched and detailed portrait of Flinders, which makes this book especially valuable.

Gillian Dooley
Flinders University



**Carey Denholm and
Stefan Petrow:**

*Dr Edward Swarbreck Hall:
Colonial Medical Scientist &
Moral Activist.* Australian
Scholarly Publishing:
North Melbourne, 2016. 231 + xvi
pp., illus., ISBN: 9781925333633
(PB), \$39.95.

Australia's colonial history bore witness to many controversies, among them the continued fight of the Irish for freedom from their English oppressors. This struggle

continued for many after they were sentenced to transportation to Van Diemen's Land. Difficulties in the new colony particularly afflicted convicts: poor diet, cramped accommodation and—for Catholic prisoners—regular access to the Roman Catholic Mass. *Dr Edward Swarbreck Hall*, authored by Carey Denholm and Stefan Petrow, offers a very rare insight into the life of a colonial medical doctor and epidemiologist, who was also an activist for Roman Catholic convicts, a champion of sanitation reform, an advocate for smallpox vaccination and custodian of orphaned children. He was, in the truest sense of the word, a utilitarian and 'just' doctor.

The book comprises two parts. The first consists of a narrative based on a transcription of Hall's diaries, which tell of his voyage from England to Australia, and his various trials and tribulations while working in the colony as medical officer for convict patients. A Catholic himself, Hall was witness to many personal setbacks when buying land and securing employment. The second part of the book contains the transcription of the diary, rendering it a valuable primary resource, and a must-read for anyone interested in or professionally researching history of colonial medicine or social history of medicine. While recent historiography addressing convicts' living conditions paints a more benign situation than portrayed by earlier historians, this work outlines the patent shortcomings within the convict medical services, such as poor provisions

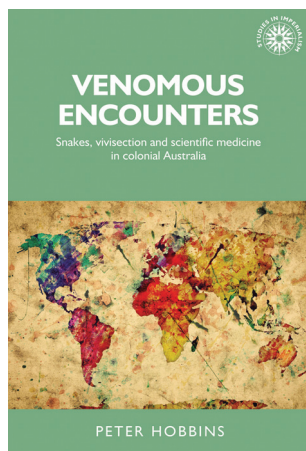
for food and ventilation. In this sense Denholm and Petrow's book is a refreshingly honest account of the real lived experiences of convicts.

The book details Hall's work in epidemiology: how he published in the *Australian Medical Journal* on an outbreak of influenza in Hobart Town in 1860, which he attributed to high levels of ozone in the Tasmanian atmosphere. What is interesting for the medical historian is some of the detail of Hall's use of therapeutics. Hall had an inclination not to bleed the influenza patient, and only to use chemical depletive therapies such as Dover's powder, ipecacuanha and the sedative opium. In this sense, Hall recognized progressive treatments of the day. Hall contributed regularly to the Epidemiological Society of London when in 1872 his paper 'Climate and Statistics in Tasmania' bore him the international reputation as a keen advocate for sanitation reform in Hobart. In 1875 he was appointed Health Officer by the Municipal Council. This book brings to life the work of a man who was a keen scientist as well as medical practitioner.

The writing style is highly engaging, and an easy read. We feel as if we are travelling with Hall on his various pursuits and adventures. We also gain insight into his perspectives on life in general, and what influenced his morals. What this book represents is someone who rose to be a respected man in the colony, amid clashes with politicians, other doctors and the protestant clergy. During this time support for Irish protestors such as Thomas Paine and John Mitchell was gaining momentum among the Catholic poor and working classes. Although such activism was illegal in England and in colonial Australia, Hall befriended many an Irish protestor. As Denholm and Petrow make clear, colonists antagonistic to Catholic convicts and free settlers were not difficult to find in Hobart Town. Shortly after Hall's arrival in Van Diemen's Land, his responses to the political climate of the day gave him a reputation as a 'professional uncompromising for moral fairness'. This sort of historical work is a refreshing change from the norm: all too often we read histories of convicts and colonies where the focus is on how the victims suffered. In this biography of a doctor trying to achieve 'justice for the vulnerable'—whether convict or orphan—we find a historical actor trying to provide workable solutions in an environment of government despondency and religious sectarianism.

One drawback of the work is that the narrative in the first chapter tends, at times, to simply mirror what is detailed in the transcription. Occasionally it also contains unsubstantiated suppositions by the authors. But once the book moves on to Hall's time in Van Diemen's Land, it is very difficult to put down. The authors acknowledge in an epilogue that there are many questions regarding Hall's life left unanswered. In this sense it has paved the way for further biographical research, and research into the plight of Irish Catholic prisoners in general. Either way, any minor shortcomings within this work are very easily overlooked, when one considers what the whole work offers: a message of hope. Even when the governing powers of the day are against you, Hall's tale reminds us, there should always be someone willing to fight for you. In this day and age, where freedom of speech is often equated with permission to hate or offend minorities, revisiting histories like this are so much more important now than ever before.

Angeline Brasier
University of Melbourne



Peter Hobbins: *Venomous Encounters: Snakes, Vivisection and Scientific Medicine in Colonial Australia*. Manchester University Press: Manchester, 2017. 202 + xiii pp., illus., ISBN: 9781526101440 (HB), £70.00.

The injection of venom into sentient animals has been carried out for centuries to investigate how to prevent death by snakebite. In colonial Australia, the deaths of settlers and their animals was

not a major clinical problem, yet indigenous snake venoms were believed to be highly fatal. This disjunction led the author to investigate how the practice of vivisection—as exemplified by the artificial envenomation of conscious animals—became prevalent across the Australian colonies. Moreover, he asks how research into antidotes and the mode of action of venoms became a potent force in colonial medicine.

The introduction states the aims and mission of the book. The reviewer had difficulty with understanding the language of the philosophical approach but what came across was that the author, ‘a repentant vivisectionist’, wishes to redress the frame of mind that saw animals involved in investigating venoms as pieces of laboratory apparatus, rather than as sentient creatures. Exploring how this frame of mind became established over the course of the nineteenth century, the monograph covers the period from the arrival of the first white settlers in 1788 to the start of the World War 1 in 1914.

The first chapter introduces human–animal interactions up to 1820. It outlines the concept of a ‘colonial animal matrix’ in which cattle and sheep were ranked of high importance to settlers, yet snakes occupied a low rung. This hierarchy changed as deaths mounted following accidental encounters between snakes and animals—and occasionally with humans. By 1840 the settlers realized that direct observation of deliberate venomous encounters between captive snakes and dogs could provide useful information about the effects of snakebite. Treatment was often the same for both settlers and Aborigines: ligature, cutting and sucking the bite site. However, the settlers believed that a remedy lurked in the native flora, which would provide an antidote for all venoms. Lay people took on the role of testing putative antidotes and through the 1850s and 1860s, two travelling pedlars were noted for their vivisection spectacles watched by the public.

The next phase involved institutions, particularly when Professor George Halford came on the scene. London trained, the inaugural Professor of Anatomy, Physiology, and Pathology at the Melbourne Medical School was interested in how venoms caused death. Through his research, the nature and action of snake venom became mainstream. Using microscopy, Halford noted millions of unusual cells in the blood of an envenomed dog and in 1867 he proposed the germ theory of snake envenomation. Snake venom was conceived to contain germinal matter, which, after entering the

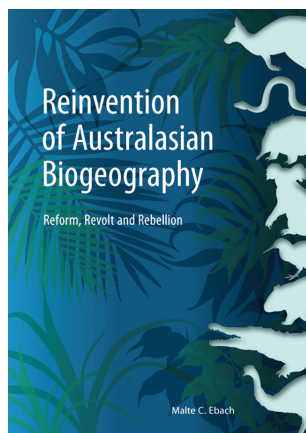
victim’s body, induced the formation of parasitical cells, which overcame the host’s ‘animal power’. International interest was aroused but laboratory workers in both Calcutta and Philadelphia failed to find evidence of such cells, so in time the theory was discarded.

Halford’s next interest lay in ammonia as an antidote to envenomation. Drops of ammonia in brandy had long been used as a stimulant for human victims, but Halford proposed intravenous injection of ammonia. Apparent success was reported in both domesticated animals and human patients. However, ammonia as an antidote was tested in Calcutta and pronounced ineffective, resulting in a war of words as to the relative deadliness of Indian versus Australian snakes. In the reviewer’s opinion this 1870s controversy ignored the eighteenth-century work of Abbé Fontana studying Italian vipers and Patrick Russell studying Indian venomous snakes, which established that snakes do not always eject a lethal dose of venom. Nevertheless, a protocol carried out in both Calcutta and in Melbourne—using Indian and Australian snakes—required injecting a lethal dose of venom intradermally, followed by intravenous ammonia injection. Ammonia was found to be ineffective in all cases and could cause significant pain. However, such was the populist belief in Halford that the Medical Society of Victoria voted against the animal data and intravenous injection of ammonia was recommended as the best stimulant for snakebite. Into the 1890s, countless animals died in the course of this and other controversies, such as the use of subcutaneous strychnine as an antidote.

Following the passage of the British *Cruelty to Animals Act* of 1876, Victoria became the first colony to pass legislation controlling the use of animals for experimental purposes. An important omission in the legislation and lapses in control are described. The interlinked field of vaccines and antitoxins opened up in the 1890s, with detailed accounts given of work in the colonies. Snake venom research remained mainstream with Charles Martin investigating proteins in black snake venom through the 1890s. The antivenom that Albert Calmette raised against Indian cobra venom proved to be species specific and, in 1902, Frank Tidswell raised antivenom to the Australian tiger snake. Now established as distinct biochemical mixtures, snake venoms increasingly became discrete research tools.

As the very large number of references attest, the author has read widely to cover his chosen fields and marshalled his material well. This research formed a prize-winning PhD from Sydney University and the style of the book remains academic. Many uncommon words are frequently used, which, presumably, give a precise meaning but make reading hard at times. The approach is unique with its great emphasis on human–animal interactions (highlighting the death of countless numbers of animals and the lack of any human moral awareness), human–human interactions (with populist pressures driving events) and early ideas as to the nature of disease and poisons. The book is a fund of information and references covering events, attitudes and findings in the colonial period. It is an invaluable source of material and a classic of its kind.

Barbara Hawgood
London, England



Malte C. Ebach: *Reinvention of Australasian Biogeography: Reform, Revolt and Rebellion*. CSIRO Publishing, Clayton South, 2017. 180 + xii pp., illus., ISBN: 9781486304837 (PB), \$69.95.

The term ‘biogeography’ was first coined in the 1880s by the German animal physiologist Hermann Jordan. His work, followed by others in the 1890s, attempted to unify the fields of plant and animal geography, which had been practiced separately since the

eighteenth century. For a long time biogeography has encompassed a diverse multidisciplinary field practiced by an equally wide variety of scientists. At the same time it has remained difficult to define. One of its main characteristics might be the continuous cycle of narratives calling for reinvention or reform. According to Malte Ebach, in his provocative new monograph *Reinvention of Australasian Biogeography*, it is high time for this cycle to come to an end.

This book closely analyses the practice of biogeography in historical context. Ebach is a biogeographer from the University of New South Wales and deserves praise from historians of science for the sustained effort he has applied to unearthing the roots of the discipline. Anyone seeking a more thorough historical treatment should look first to Ebach’s earlier work, particularly his *Origins of Biogeography* (Springer, 2015). *Reinvention of Australasian Biogeography*, his most recent offering, continues this larger historical project in unearthing the roots of his discipline. But readers should be warned: at each turn in this new book, Ebach has a specific agenda in mind. Ultimately, his intentions are to promote cladistic biogeography as an overarching analytical concept that will reform biogeography into an evidence-based science.

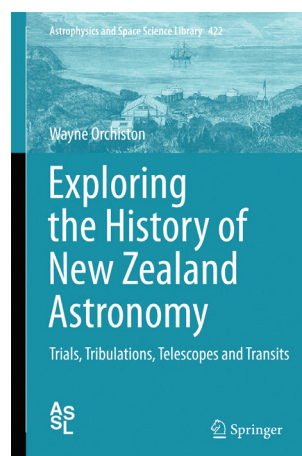
Explaining the geographical distribution of plants and animals in Australasia has enjoyed a long tradition in biogeography, commencing with global figures such as Charles Darwin and Joseph Hooker. In surveying developments in local context, the first two of the book’s seven chapters will be of particular value to historians. Chapter 1 offers an excellent introduction to the problems of the field and how to undertake cladistic biogeography, or as Ebach puts it, ‘how to start reforming’. Chapter 2 also makes for insightful reading, offering a solid overview of the history of biogeography and the many interesting Australians and New Zealanders who have transformed the discipline. Chapters 3 and 4 consider how ‘natural areas’ were identified, alongside the arrival of cladistics in Australia. The panbiogeography revolt, discussed in Chapter 5, is an entertaining story on how phases of meta-narratives come and go in the discipline. Finally, Chapter 6 delves into another antipodean debate—the full or partial drowning of New Zealand 23 million years ago—and the subsequent conceptual rise of neodispersalism.

Rather than summing up, Ebach outlines three passable meta-narratives that might help in the ultimate goal to establish a biogeographical program to define the natural regions of Australasia. As he writes, the ‘tools, methods and theory to do biogeography within the analytical phase are all available, so too are biogeographical hypotheses. There is no longer any need to start

new cycles of reinvention’. It seems fitting (or ironic) that for a book so focussed on understanding the reinterpretive imperatives of writers in the past, Ebach himself ultimately offers yet another reinvention narrative.

Beyond the individual chapters, historians will find other elements in this book of benefit. The many breakout boxes shed light on several important scientists who have contributed to the field. These include Donn Eric Rosen, who first proposed cladistic biogeography; botanist Nancy Tyson Burbidge, who published a landmark study of biogeography in 1960; or the self-taught naturalist Charles Hedley, who rejected land-bridges and sunken continents as possible explanations for Australasian biogeography. While this book is engaged historically, ultimately it is a methodological provocation, prompting deep questions for practitioners of biogeography.

Luke Keogh
Arnold Arboretum of Harvard University



Wayne Orchiston: *Exploring the History of New Zealand Astronomy: Trials, Tribulations, Telescopes and Transits*. Astrophysics and Space Science Library, Vol. 422. Springer: Heidelberg, 2016. 688 + xlv pp., illus., ISBN: 9783319225654 (HB), US\$179.

There is a strong connection between astronomy and the early European encounters with New Zealand and Australia. A primary aim of the first voyage by James Cook and the *Endeavour* to the

south seas (1769–70) was to observe the transit of Venus across the solar disk. The observations were aimed at measuring the Earth–Sun distance (known as the ‘astronomical unit’) and so provide a standard measuring stick for determining the distance to other planets and nearby stars.

This book is the first comprehensive study on the history of astronomy in New Zealand. Its author Wayne Orchiston is a Kiwi and for several years he was director of the Carter Observatory in Wellington. Orchiston has, however, spent most of his career in Australia working either in CSIRO’s radio astronomy division or in academia. He is the authority on the history of astronomy in Australasia and has been an extraordinarily prolific writer on the subject for over 30 years. He has also supervised several postgraduate theses on the history of Australian radio astronomy (including the PhD thesis of this reviewer).

The book is divided into seven sections with the first devoted to Maori astronomy before the arrival of Europeans. Similar to islanders throughout Polynesia, astronomy was integral to Maori culture and was used to measure time, to predict the arrival of seasons and to enable long-distance ocean navigation.

Although Cook brought European astronomy to New Zealand, almost a hundred years elapsed before significant astronomical research developed in the colony. Most of the progress was made by

gentlemen amateurs working alone with small observatories built at their own expense and erected in their gardens at home. Separate chapters are devoted to six of the most prominent amateurs. Despite its small population, New Zealand has made more than its fair share of discoveries of comets and variable stars, alongside notable observations of eclipses and meteor showers.

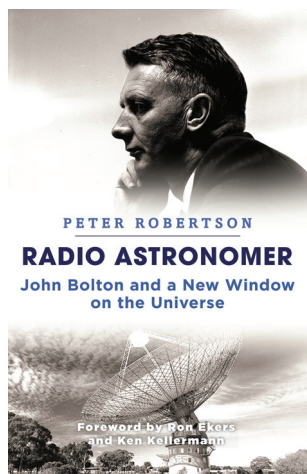
Two important events were the transits of Venus in 1874 and 1882, which saw the arrival of expedition parties from England, France, Germany and the USA. Local astronomers joined in the observations with the aim of improving the accuracy of the astronomical unit. Photography was used for the first time to record the transits, which heralded the transition from traditional positional astronomy to the 'new astronomy' of astrophysics.

Each of the 24 chapters is largely self-contained and can be read independently of the others, though on occasions this leads to some repetition. Each chapter is accompanied by a lengthy reference list featuring, in most cases, many of Orchiston's own publications on the subject. The book is generously illustrated with almost 400 photos and diagrams, about a third of which are in colour.

The last section deals with early work on radio astronomy in New Zealand. During World War 2, Elizabeth Alexander at the Department of Scientific and Industrial Research independently discovered radio emission from the Sun and, together with Ruby Payne-Scott in Sydney, became the first female radio astronomers in the world. Despite promising starts by others in Auckland and elsewhere, radio astronomy did not develop in New Zealand, unlike across the ditch where radio astronomy became a major postwar success story of Australian science.

The book is published under the banner of Springer's 'Astrophysics and Space Science Library'. Similar to most volumes published in this long-running series, the primary market will be institutions such as libraries and astronomical institutes and observatories. The hefty price tag (approximately AU\$230) will discourage all but the keenest individuals with an interest in the history of Antipodean astronomy. This is a pity as the book is a fine piece of scholarship, thoroughly researched, well written and will be the standard reference text on the history of New Zealand astronomy.

Peter Robertson
University of Melbourne



Peter Robertson: *Radio Astronomer: John Bolton and a New Window on the Universe*. NewSouth Publishing: Sydney, 2017. 428 + viii pp., illus., ISBN: 9781742235455 (HB), \$59.99.

The founding and flourishing of an entirely new field, radio astronomy, must rate among the most impressive episodes in the history of Australian science. Radio astronomy was as deeply symbolic of a new sense of national confidence in its early years, as it was a signal of the sweeping social

changes to economy and society that transformed the nation after the war. Prior to the war, it was nearly impossible for a graduate to find employment as a physicist. Afterwards—could there be a stronger symbol of Australian aspirations, or of investment in research, than the famous 'Dish' telescope at Parkes? Or, as it turns out, any better exemplification of the archetypal Australian hero—ingenious, laconic, humorous, astonishingly stubbornly dedicated—than its Yorkshire émigré designer and first director, John Bolton?

Peter Robertson, who has published a history of the Parkes telescope, has now produced a matching biography of Bolton. Both books have been welcomed for their public memorializing of this too-easily forgotten part of Australia's history. Hitherto, while comprehensively covered by Woody Sullivan's magnum opus *Cosmic Noise* (2009) and in the now-dated sociology of science classic *Astronomy Transformed* (Mulkay and Edge 1976), the history of radio astronomy has been the preserve of technical experts only. Written in an easy lucid prose, this book aims to reclaim Bolton for public history as well as to celebrate, for astronomers, all that one of their most important colleagues achieved.

One of the charms of the story of radio astronomy lies in its small, string-and-sealing wax beginnings, and how this nonetheless produced discovery after discovery, completely reshaping conceptions of the Universe. Bolton was a key player in this story, and one of the advantages provided by this biography is the capacity to assess Bolton's contribution coherently—something difficult to pick out of the more comprehensive historical works.

John Gatenby Bolton (1922–93) came from reasonably humble origins in Sheffield, UK. The war years in the UK introduced him to radar research, gave him hands-on electronics experience, and brought him to Australia, where he joined the small group of former radar researchers who were beginning the first radio observations of the sun.

His early determination to achieve the best possible measurements for puzzling discrete sources then thought to be 'radio stars', eventually resulted in the unexpected discovery that they were galaxies, a momentous indication of how radio study could extend and revolutionize understandings of the Universe. The search for, and identification of, such sources remained Bolton's central interest. This led—among many other achievements—to the slow, collaborative discovery of quasars, for which observations made during Bolton's six years as first builder and then director of the Ovens Valley Observatory at Caltech (the California Institute of Technology) were critical.

Bolton is remembered above all for the Parkes 'Dish' telescope, the first version of which he built with three colleagues by digging a hole in the ground and constructing a reflecting surface from steel strips formerly used for binding packing cases. Under his direction, the Parkes telescope located over 8000 sources and trained a global new generation of radio astronomers. Among other contributions to NASA Apollo missions, the Dish famously relayed Neil Armstrong's first steps on the moon in July 1969.

Scientists are not easy subjects for biography, since the core dramas of their lives tend to be technical rather than personal, and choosing what details to leave out is a challenge. The primary source materials for the book are extensive, being gathered in multiple libraries and archives, and supplemented by several interviews. Robertson has gone to some lengths to be even-handed, and

in fact this is the dominant stylistic feature of the book. He prioritizes accessibility over depth and technical detail, which makes him brief, though well rounded, in mentioning the personalities, politics and personal matters relevant to Bolton's interests and choices. And accordingly, the story is engaging, and allows a lay reader to grasp the fundamentals of how radio astronomy developed, what the main puzzles and challenges were, and why Bolton's contributions mattered. Astronomers will enjoy it too.

However, by aiming for balance and pleasant reading, Robertson sacrifices something of Bolton's own boldness. Thus he mentions, but does not probe, the complexities and sometimes distressing aspects of Bolton's relationship with various colleagues; while his retelling of scientific insights made—or missed—are not deepened by analytic discussion. Those familiar with the technical details of the early years—now extensively covered in journal publications as

well as in Sullivan's book—may well feel that some episodes are oversimplified. For example, Bolton's role in the identification of a source in Sagittarius is arguably overstated.

Nonetheless, a likeable, amusing and quietly impressive figure emerges from the anecdotes strung through the pages. Robertson's eye for what is essential in his story is nowhere better exemplified than in the many quite wonderful epigraphs that surmount the chapters. These almost provide an analytic frame just by themselves, and help the reader gain a rounded grasp of this key figure in scientific history.

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