

THE PACIFIC CIRCLE



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PACIFIC CIRCLE NEWS

Circle Member Awards and Honors

Congratulations to Nathan Sivin, recipient of the 2011 Donald E. Osterbrock Book Prize of the Historical Astronomy Division of the American Astronomical Society for *Granting the Seasons: The Chinese Astronomical Reform of 1280, With a Study of Its Many Dimensions and an Annotated Translation of Its Records*, New York: Springer, 2009.

Recent and Forthcoming Publications and Scholarly Activities by Circle Members

Hans Konrad Van Tilburg, *A Civil War Gunboat in Pacific Waters: Life on Board USS Saginaw*, Gainesville, FL: University of Florida Press, 2010.

Ricardo Roque, *Headhunting and Colonialism: Anthropology and the Circulation of Human Skulls in the Portuguese Empire, 1870-1930*, New York: Cambridge Imperial and Postcolonial Studies Series, Palgrave Macmillan, 2010.

Gary J. Tee, "The Elusive C. D. Voy," *Geoscience Society of New Zealand Journal of the Historical Studies Group*, No. 39 (September 2010), 17-50.

James Rodger Fleming, Roder D. Launius, and David H. DeVorkin, eds. *Globalizing Polar Science: Reconsidering the International Polar and Geophysical Years*, Palgrave Studies in the History of Science and Technology, New York: Palgrave Macmillan, 2010. (Please note: this volume contains individual contributions from several Circle members.)

Herbert, Sandra, "A Universal Collector: Charles Darwin's Extractions of Meaning from his Galapagos Experience," *Proceedings of the California Academy of Sciences*, Series 4, Volume 61, Supplement II, No. 5 (2010), 45-68.

Milton Lewis and K. L. MacPherson, eds. *Public Health in Asia and the Pacific: Historical and Comparative Perspectives*, Routledge, paperback edition available in April 2011 (original edition in 2008) and Lewis and MacPherson, eds. *Health Transitions and the Double Disease Burden in Asia and the Pacific: Historical Responses to Noncommunicable and Communicable Diseases*, Routledge, forthcoming in 2011.



Proposed Sponsored Conference Papers and Panels

Members of the Pacific Circle have respectfully submitted for the 2011 annual meeting of the North American Conference on British Studies in Denver next November a proposal for a roundtable on 19th- and 20th-century Australian and New Zealand science. Proposed papers include: Ruth Barton, "Geologists, Judges and Missionaries: The Scientific Men of Colonial New Zealand;" Simon Andre Thode, "An Account of Some Enormous Fossil Bones: British Scientific Exchange and Narratives of Discovery of the New Zealand Moa, 1839-1956;" Roy MacLeod, "Imperial Science under the Southern Cross: Reflections on the Practice of Anglo-Australian Science" and Janet Bell Garber, "John Gould, 'Bird Man' of Australia." Peter H. Hoffenberg will serve as Chair and Moderator.

HSS NEWS

The History of Science Society invites nominations for its various prizes. To submit a nomination, please visit the HSS Web site at <http://hssonline.org> or contact the Executive Office: info@hssonline.org, 440 Geddes Hall, University of Notre Dame, Notre Dame, IN 46556. Phone: (574) 631-1194.

Pfizer Award

The Pfizer Award, established in 1958 through the generosity of the Pfizer Company, honors an outstanding book dealing with the history of science. The book must be published in English during a period of three calendar years immediately preceding the year of competition (books eligible for 2011 were published in 2008, 2009, or 2010). Edited volumes, as well as works with more than two authors, are not eligible. A multi-volume work by one or two authors may be nominated only after the publication of all the volumes.

Watson Davis and Helen Miles Davis Prize

The Davis Prize, established through the generosity of Miles and Audrey Davis, recognizes books in the history of science directed to a wide public (including undergraduate instruction). Books published in 2008, 2009, or 2010 are eligible for the 2011 prize. Eligible books should be introductory in assuming no previous knowledge of the subject and can introduce an entire field, a chronological period, a national tradition, or the work of a noteworthy individual. Multi-authored or edited books are eligible, whereas unrevised reprints of previously published works are not.

Margaret W. Rossiter History of Women in Science Prize

The History of Women in Science Prize, renamed in recognition of Professor Rossiter's pioneering work in the field, recognizes an outstanding book (or, in even-

numbered years, article) on the history of women in science. The book may take a biographical, institutional, theoretical, or other approach to the topic, which may include discussions of women's activities in science, analyses of past scientific practices that deal explicitly with gender, and investigations regarding women as viewed by scientists. These may relate to medicine, technology, and the social sciences as well as the natural sciences. The book must have been published no more than four years before the year of award (books published from 2007-2010 are eligible for the 2011 prize).

Joseph H. Hazen Education Prize

The Joseph H. Hazen Education Prize, established through the support of the Joseph H. Hazen Foundation, is awarded in recognition of exemplary contributions to the teaching of the history of science. Educational activities are construed in the broadest sense and include, but are not limited to, the following: classroom teaching (K-12, undergraduate, graduate, or extended education), mentoring of young scholars, museum work, journalism, organization and administration of educational programs, influential writing, educational research, innovation in the methodology of instruction, preparation of pedagogical materials, or public outreach through non-print media. Nominations should include a c.v. of the nominee, a statement of not more than 1,000 words describing her or his educational contributions, and two seconding letters. All nominations remain active for three years.

HSS 2011 Annual Meeting: Call for Papers

The History of Science Society will hold its 2011 Annual Meeting at the Renaissance Cleveland Hotel in downtown Cleveland on November 3-6. The meeting will be co-located with the Society for the History of Technology (at the Cleveland Marriott Downtown at Key Center) and the Society for Social Studies of Science (at the Crowne Plaza Hotel Cleveland City Centre). All three hotels are within easy walking distance and shuttles will run on a circuit among the conference sites. Registration for one conference will entitle the registrant to attend all three conferences. Discussions are under way as to whether or not there will be additional administrative fees for any individual who appears on more than one program.

Please submit all proposals (sessions, contributed papers, and posters) to the History of Science Society's Executive Office. Poster proposals must describe the visual material that will make up the poster. The HSS will work with organizers who wish to pre-circulate papers.

Submissions on all topics are encouraged. All proposals must be submitted on the HSS Web site (<http://www.hssonline.org>) or the annual meeting proposal forms that are available from the HSS Executive Office. HSS members are asked to circulate this announcement to non-HSS colleagues who may be interested in presenting a paper or poster at the Annual Meeting (all participants must register for the meeting).

Applicants are encouraged to propose sessions that include diverse participants: a mix of men and women, and/or a balance of professional ranks (i.e., mixing senior scholars with junior scholars and graduate students). Strong preference will be given to panels whose presenters have diverse institutional affiliations. Only one proposal per person may be submitted. An individual may only appear once on the HSS program (see the guidelines for exceptions). Prior participation at the 2009 (Phoenix) or 2010 (Montréal) meetings will be taken into consideration.

To encourage and aid the creation of panels with strong thematic coherence that draw upon historians of science across institutions and ranks, the conference organizers have created a wiki at <http://hss2011.wikia.com>. Applicants with a panel or paper idea seeking like-minded presenters should post and consult the postings there to round out a prospective session. Instructions are available on the site. Before sending a proposal to the HSS Office, we ask that everyone read the Committee on Meetings and Programs' "Guidelines for Selecting Papers, Posters, and Sessions." The 2011 program co-chairs are Michael Gordin (Princeton University) and Matthew Jones (Columbia University).

For more information, please visit <http://www.hssonline.org/Meeting/index.html>.

FUTURE MEETINGS, CONFERENCES, and CALLS FOR PAPERS

4-5 April 2011. Conference on Geological Collectors and Collecting, to be held at the Flett Theatre at the Natural History Museum in London, and organized by the History of Geology Group. For information, contact Nina Morgan at ninamorgan@lineone.net.

12-16 June 2011. 92nd Annual Meeting of the AAAS, Pacific Division, including the 7th World Congress on Mummy Studies, to be held at the University of San Diego. For information, visit <http://pacific.aaas.org>.

14-18 June 2011. 22nd Pacific Science Congress, to be held at the Kuala Lumpur Convention Centre in Kuala Lumpur, Malaysia. The theme is "Asia Pacific Science in the 21st Century: Meeting the Challenges of Global Change." For more information, please visit www.22ndpsc.net or www.pacificscience.org.

27 June to 8 July 2011. 25th General Assembly of the International Union of Geodesy & Geophysics, to be held in Melbourne. For information about papers and

accommodations, please visit <http://www.iugg.org/assemblies/2011melbourne/>.

14-17 July 2011. Annual Conference of the British Society of the History of Science, to be held on the main campus of the University of Exeter, England. For information, visit bshs2011programme@bshs.org.uk.

13-19 September 2011. 17th Conference of the Australian Mining History Association, to be held in Hahndorf, South Australia. The theme of the conference is "Australia's Earliest Mining Era," which refers to the first era of metal mining in the 1840s. Details can be found at <http://www.mininghistory.asn.au/conference/>.

4-8 July 2012. Ninth International Congress of the History of Oceanography (IXHO-IX), to be held in Athens, Greece. For information, please contact Dr. George Vlahakis, the local organizer. Email: gvlahakis@yahoo.com.

2-10 August 2012. 34th International Geological Congress, to be held in Brisbane, Queensland, Australia. For information, please visit <http://www.34igc.org/>.

BOOK, JOURNAL, EXHIBITION and RESEARCH NEWS

Katherine Anderson, ed. *The Narrative of the Beagle Voyage, 1831-1836*, 4 volumes, will be available as part of "The Pickering Masters" series in May 2011. This set presents the first critical edition of the remaining texts from 1839, including Robert Fitzroy's account of the second voyage and Phillip Parker King's account of the voyage in 1826-1830.

The United States Geological Survey's Historical Quadrangle Scanning Project (HQSP) is currently scanning all scales and editions of nearly 250,000 topographic maps published by the USGS since the topographic mapping program began in 1884. This project will provide a comprehensive digital repository of such maps, available to the public at no cost. Details of the project are at <http://pubs.usgs.gov/fs/2011.old/3009/>.

The special issue *East Asian Science, Technology, and Medicine* 31 (2010) includes the plenary lectures from the 12th International Conference on the History of Science in East Asia, held in 2008. Among those lectures are: Paul U. Unschuld, "When Health was Freed from Fate: Some Thoughts on the Liberating Potential of Early Chinese Medicine;" James R. Bartholomew, "How to Join the Scientific Mainstream: East Asian Scientists and Nobel Prizes;" Ellis Tinios, "Art, Anatomy

and Eroticisim: The Human Body in Japanese Illustrated Books of the Edo Period, 1615-1868” and Kim Yung Sik, “A Philosophy of Machines and Mechanics in Seventeenth-Century China: Wang Zheng’s Characterization and Justification of the Study of Machines and Mechanics in the Qiqi Tushuo.”

The Australian National Maritime Museum recommends several helpful online resources, including:

- Museum website at www.anmm.gov.au
- The Australian register of Historic Ships at www.anmm.gov.au/arhv
- ANMM Image Library at www.anmm.gov.au/pictures/search.

Hesperian Press has released a new edition of *The Land of Gold* by James M. Price, who journeyed through Western Australia in 1895. The special artist and correspondent for the *Illustrated London News* wrote about and sketched bush life and gold mining in the Eastern and Murchison fields. Contact Hesperian Press, P. O. Box 317, Victoria Park, Western Australia 6979 or Email: books@hesperianpress.com.

The California Academy of Sciences has just published *Darwin and the Galapagos: A Symposium Held on the Occasion of the 200th Anniversary of the Birth of Charles Darwin and the 150th Anniversary of the Publication of the Origin of Species, August 14-15, 2009*, edited by Michael T. Ghiselin and Alan E. Leviton. For additional information, contact Scientific Publications, California Academy of Sciences, 55 Music Concourse Drive, San Francisco, CA 94118, USA.

The Forum for the History of Science in America recently announced the re-launching of its blog at <http://americanscience.blogspot.com/>. The blog has a new format and a wider scope for its contents and conversation.



SELECTED RECENT PACIFIC BIBLIOGRAPHY

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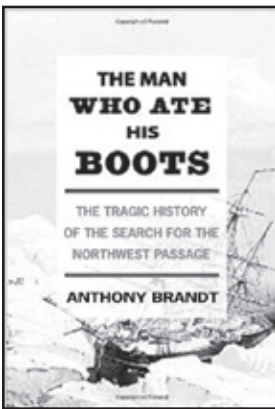
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DISSERTATIONS and THESES

Lists of recent doctoral dissertations in the history of science and allied fields, such as technology, public health, and medicine, are provided by the University of Pittsburgh at: <http://www.hsls.pitt.edu/histmed>.

BOOK REVIEWS



Anthony Brandt, *The Man Who Ate His Boots: The Tragic History of the Search for the Northwest Passage*, New York: Alfred A. Knopf, 2010, Pp. xvi-441. Chronology. Maps. B&W Illustrations. US\$28.95 and CAN\$34.00 and ISBN 9-780307-263926.

This year marks the centennial anniversary of the conquest of the South Pole. In December 1911, Roald Amundsen and his fellow Norwegians reached the Pole, with the British under Robert Scott arriving a few weeks later. As is well known, Scott and his men died on their march north, ensuring them a prominent place in public memory and leading to

a vast amount of literature dedicated to making some sense of their plight. In the history of exploration, the only tragedy of comparable impact was the final voyage of John Franklin. In 1845, Franklin and all 129 of his men perished in the Canadian Arctic while searching for an open channel – a Northwest Passage – to the Pacific. Like Scott, Franklin's death made him a martyr to the cause of exploration, as well as the focus of an extensive body of exploration literature. The most recent work is Anthony Brandt's *The Man Who Ate His Boots*. The title is a reference to Franklin's sobriquet, a name he acquired following an earlier expedition that nearly ended in starvation. Yet, despite the title of the volume, the book is not so much a biography of Franklin as it is a study of the circumstances leading to and immediately following his final expedition. Brandt explains in his introduction that the tension between nobility and folly in the exploration of the Northwest Passage is what has led to so much interest in the history, and it would seem that it is for this very reason that he has chosen to write his own account.

The volume begins with the Northwest Passage (more accurately, Passages) as it lies today, open for navigation during the summer months, with more ice melting each year. Brandt notes that the effects of global warming on the ocean landscape

would have amazed the dreamers and explorers of the past who failed time and again to discover a route through the frozen seas. He then jumps back in time and begins his narrative of these early attempts, starting with a brief survey of fifteenth and sixteenth century British expeditions under Martin Frobisher, Thomas Button, Thomas James, and others. These accounts are followed by a far more thorough look at British activities in the early nineteenth century. It is with these latter expeditions – primarily those led by John Franklin, John Ross, William Parry, and George Back – that the author spends most of his time. The stories are largely familiar. They include Ross’s “discovery” of his imagined Croker Mountains; Parry’s daring voyage that took him through this mirage, stopping just short of the Beaufort Sea; Franklin’s disastrous land journey along Canada’s Arctic coastline that ended with a diet of leather boots; and roughly a dozen other ventures by these and other men. The last section of the book (nearly a fourth of the volume) focuses on Franklin’s final journey and the many voyages that, in searching for clues to explain his disappearance, completed the mapping of the region.

Many of Brandt’s themes are well-known to readers of exploration history, including the unacknowledged dependence of British explorers on the Inuit, as well as tensions between Admiralty methods of Polar travel and those of the indigenous people. He also emphasizes several themes that are perhaps less familiar. The first is the “willingness to believe” in an open Arctic passage despite evidence and experience to the contrary. It was, according to Brandt, “religion without revelation” among many of the most well-known explorers and their key supporters. In other words, the Passage had to be there for no other reason than it had to be there. This “spirit of speculative geography” enabled the British to substitute “wishful thinking” for experience or scientific observation, and as a consequence they lost many lives, several ships, and a great deal of money in what was ultimately a futile quest

A second theme is the hunger to survive. Quoting a journal entry from the explorer George Back, Brandt writes that “there is little compassion in the human frame when it is in a state of privation.” He returns to this passage in the final pages of the book to explain the evidence of cannibalism among Franklin’s men, the last of who clearly began to feed on their friends. Though far less repugnant, it is clear that self-preservation in terms of career and reputation were also at play in the repeated attempts to discover an Arctic route. Brandt characterizes the hunt for a passage as a tragic affair that floundered between arrogance and folly. Yet, unlike several recent exploration accounts, the tone is rarely critical. Rather, Brandt presents Franklin, Parry, Ross and the others as men of their time, and he places their virtues and vices within the context of their social environment.

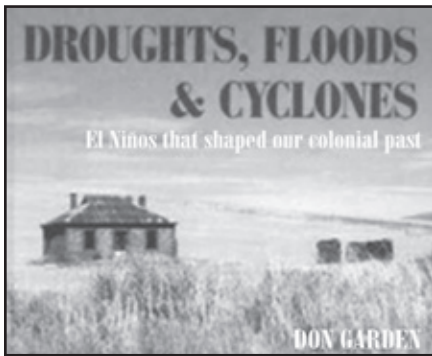
As is typical of the genre, Brandt focuses on the leaders and key sponsors of the expeditions, with only passing mention of expedition members, their families, and the general public. The nature of available sources largely explains this

approach, for most enlisted men were still illiterate in the early nineteenth century, meaning that their voices can only be heard through records left by superior officers. Unfortunately, these officers were often dismissive of the enlisted, and Franklin in particular rarely even bothered to record their names in his published works. Brandt does, however, attempt to include descriptions of the Inuit and other indigenous people, crediting them for their role in British exploration. His account of the interaction between the natives and the British are alone well worth the read.

For exploration enthusiasts who are looking for original research on the history of the Northwest Passage, it will quickly become clear that Brandt did not discover much in the way of new material. Nor, admittedly, did he consult key manuscript depositories in preparing his text. He explains this decision by writing that “to add that level of density to the book would have threatened to overwhelm the general reader, for whom the book was written.” As a volume intended for a popular audience, Brandt succeeds in finding an agreeable balance between the more riveting aspects of exploration and the larger questions of motive and meaning. His abilities as a storyteller are also first-rate. However, as a popular work, there are frustrations, such as the absence of notes. Maps are also inadequate. The first several chapters include maps, but these disappear by the middle section of the book so that readers are forced to make sense of later expeditions by jumping between earlier maps that prove inadequately labeled. The lack of a map index makes this an even more burdensome and time-consuming task. These small complaints aside, Brandt has written a thorough, well-balanced, and highly readable account.

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Don Garden, *Droughts, Floods & Cyclones: El Niños That Shaped Our Colonial Past*. Kew, Victoria: Australian Scholarly Publishing, 2009, Pp. xiv + 414. Maps. B&W Illustration. Tables. Graphs. Bibliography. Index. Paper. AUS\$44.00 and ISBN 978-1-921509-38-4.

As here, in eastern Australia, we experience many of the typical characteristics of La Niña, including heavy rainfall and large floods, professional and popular interest in El Niño-Southern Oscillation (ENSO) grows. Australian interest in ENSO gathered momentum in the 1970s and 1980s after a series of severe weather events but has accelerated during the last decade, as many parts of eastern Australia endured intense drought and El Niño was named as a major cause. While ENSO has been given greater attention because of recent events, it has also caused us to reflect on the past with new eyes.

In his new environmental history, *Droughts, Floods & Cyclones: El Niños That Shaped Our Colonial Past*, Don Garden examines experiences of three historical El Niño events in the eastern Pacific, in 1864-69, 1876-78 and 1895-1903. Garden used recent information to identify these El Niños but he analyses how people made sense of the changing conditions and severe weather events at the time. He focuses on three regions in which El Niños mostly produce particular conditions: eastern Australia (drought), New Zealand (droughts, floods, storms and heavy snowfalls) and Fiji and French Polynesia (droughts and cyclones). In the two larger regions of Australia and New Zealand, Garden focuses on case study areas, which he selected because of the sources they offer and for geographical spread. In Australia, these are: Burra in South Australia, the Riverina in New South Wales, the Murray Valley in Victoria, the Hunter River in coastal New South Wales, and the Wide Bay and Hervey Bay area in Queensland. In New Zealand he selected Canterbury and Otago in the south island and Hawkes Bay in the north island. However, he draws on examples from around eastern Australia and New Zealand throughout the book. As the title suggests, Garden specifically explores colonists' responses to extreme weather.

Garden has had a long standing research interest in the Pacific and published a more general environmental history, *Australia, New Zealand and the Pacific: An Environmental History*, in 2005. He was drawn to the subject of ENSO partly because of the lack of research on climatic phenomena by historians. His book clearly

addresses this significant gap.

A major theme of the book is the cultural dimensions of conceptions of climate (and science more generally). Garden examines the ways, for example, understandings of droughts and floods have gathered local meanings from particular environmental contexts as well as their social and economic ramifications. He focuses his discussion on four patterns in colonial experiences of El Niño in the selected regions. The first is that ENSO events tend to correlate with extreme weather events. Although extreme weather events can occur outside of El Niños and La Niñas they are much more likely during them. Second, the extreme weather caused by El Niños shaped human societies, sometimes stalling or stopping colonial projects particularly in agriculture. Third, although the affects of El Niños have general characteristics, such as cyclones and droughts in the mid latitude Pacific, each event unfolds differently and can vary greatly from event to event and even across a local area during a single event. Last, the effects of ENSO have been exacerbated by European colonisation. Changes to ecologies from colonial land use practices have lessened their capacity to 'spring back' following severe events (pp. 22-23). Garden successfully demonstrates these four points in each chapter.

Garden provides an excellent summary of ENSO, its affects and its development as a concept in the first chapter of the book, which follows a brief introduction. This chapter is succinct but accounts for the complexity of ENSO and also discusses other areas of climate research, such as the Indian Ocean Dipole. Broadly, ENSO is characterized by an inter-annual change, which is caused by interactions between changing ocean temperatures and surface pressures across the Pacific Ocean, roughly between the eastern Pacific Ocean off the coast of South America and, as a counter point, the western Pacific in the region around Indonesia. ENSO generally causes dry conditions in one of these areas and wet in the other, but the affects of ENSO vary throughout the Pacific (pp.1-8). The first chapter also sets out the major concepts that have informed the empirical research.

The eight remaining chapters address the three El Niño periods. Three chapters focus on the 1864-69 event, in turn concentrating on Australia, New Zealand and the tropical Pacific. This period actually encompasses two El Niños, separated by a short La Niña. The first chapter examines eastern Australia, where drought, then floods in 1867, then another drought caused major setbacks to colonists, particularly in agricultural regions, like the Hunter and Murrumbidgee river regions. Through these events, this chapter takes up wider issues and contexts including, overstocking, the development of coastal and inland river navigation, drought and flood mitigation, and the westward expansion of pastoralism.

At the beginning of the following chapter, which explores experiences in New Zealand, Garden explains that El Niños here can be quite complex and have highly localised effects. His research confirms the findings of a small number

of other studies which assert that although, as is commonly believed, El Niños generally cause dry periods along the east coast of the north and south islands, these are fairly short (lasting months not years) and are often interspersed with flooding rains and heavy snowfalls. On the west coast of the south island the chance of above average rainfall also increases. These two El Niños illustrate Garden's point well, as they saw oscillations between periods of little or no rainfall, flooding rains and heavy snowfalls, which varied across the islands. Garden further argues that 'a disproportionate number of New Zealand's most extreme weather events (storms, snow and rainfall) have occurred during El Niños' (p. 85). Indeed, one of New Zealand's record snowfalls occurred in 1867 while El Niño was active.

In Fiji and French Polynesia, severe cyclones and storms as well as droughts dominated the two El Niño events. Garden examines the damaging effects of these events within the context of the colonial histories of the areas. In addition he draws attention to the vulnerabilities of plantation monocultures to these events.

Two chapters are dedicated to the 1876 – 78 El Niño, one focuses on Australia and the other on New Zealand, Fiji and French Polynesia. In eastern Australia this El Niño was not generally severe, although its effects varied. This is in contrast to the millions of deaths caused by droughts and subsequent crop failures in India and China in these years. In Australia, the effects of the El Niño seem to have been more intense in places where there had been extensive environmental destruction, including from overstocking and rabbits. Garden argues that these factors weakened the resilience of the land to cope with reduced rainfall.

In New Zealand, the effects of this El Niño were more severe, causing some of the largest and most destructive floods and most intense droughts on record, as well as heavy snowfalls. During this period in Fiji, there was only one tropical storm and then erratic oscillations between dry and wet weather, while in French Polynesia, a combination of severe storms and intensely dry periods caused only a short-term disruption to Polynesian economies as well as to those of the colonial coconut and cotton planters.

The final El Niño period, 1895-1903, is similarly divided into two chapters, one concentrating on Australia and the other on New Zealand, Fiji and French Polynesia. In Australia, the three El Niños that occurred in this period caused a drought that was unparalleled in colonial history until recently. Garden argues that as in the 1876-78 El Niño, the effects of years of little or no rainfall in many areas was compounded by human changes to the environment; although more so, as more land had been cleared, overstocking had continued, and rabbits had multiplied and spread. Garden also examines how debates over ways to mitigate droughts, predominately through water storages and irrigation, shaped this period and helped to cement political support for these kind of works in the future.

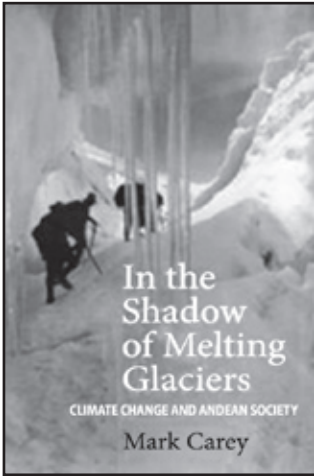
In New Zealand, the weather that accompanied these El Niños was even more complex than the previous two El Niño periods. The islands experienced floods,

heavy snowfalls, storms and drought, but also heat waves and bush fires. Again, environmental destruction from colonial land use increased the effects of these El Niños. Garden argues that the spread of farms, particularly those that grazed sheep, further heightened colonists' vulnerability. Fiji experienced a 'typical' set of El Niños, of dry periods interspersed with cyclones and severe storms. The number of European colonists in Fiji had risen and sugar plantations had also increased, aided by imported Indian labor. The sugar industry along with other export industries such as copra and green fruit, were set back by these events, but appear to have recovered quickly. Some parts of the Fijian islands were badly affected by the dry periods as well as several storms, and Garden discusses the Fijians' relief networks that operated between islands and areas, where those who were less affected sent food and water to those whose supplies were scarce. In French Polynesia, a severe cyclone in 1903 and possibly a long drought in 1899-1900 appear to be the major events to have occurred during these El Niños. However, as Garden notes, there are few sources available for examining weather in French Polynesia in this period.

Each of the chapters is supported by extensive research, undertaken by Garden and a team of research assistants. In some cases, weather data was unavailable for particular regions or time periods and Garden has used newspaper and qualitative sources, such as diaries and other historical accounts, to form an overview of events where available. Garden frequently acknowledges the limitations of these sources to substitute hard data, particularly their vulnerability to human foibles such as lapses in memory and climate boosterism. He rightly uses them with caution. However, I think Garden also demonstrates the significant potential of 'unscientific' sources to be used to examine cultural dimensions of climate and weather as well as to supplement scientific records (when used critically), many of which have gaps in this period in many settler-colonial societies. One of the significant contributions of this book is the historical documentation it adds to climate research and Garden includes a number of useful tables and graphs as appendices, which compare yearly rainfalls and agricultural exports of some the regions. In addition, these kinds of sources can be used to give alternative accounts of environmental change.

Clearly many chapters, such as that containing a summary of ENSO and some of the main concepts in climate history, will be suitable for undergraduate course readings. This book is a serious piece of scholarship and academics working on histories of particular areas or environmental events will no doubt value Garden's careful research and analysis. Overall, *Droughts, Floods & Cyclones* is a significant contribution to climate and environmental history and I suspect it will also be welcomed by other fields and disciplines.

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Carey, Mark, *In the Shadow of Melting Glaciers: Climate Change and Andean Society*, New York: Oxford University Press, 2010, PP. vii + 273. US\$24.95 and ISBN 978-0-19-539607-2.

Mark Carey begins *In the Shadow of Melting Glaciers: Climate Change and Andean Society* by listing the “catastrophic consequences” of melting ice the world over. The most worrisome item on a list teeming with calamitous events is, of course, the diminishing amount of drinking water available on earth. Despite the fact that we are all directly affected by glacier retreat, Carey argues that few studies focus on the relationship between glaciers and people. But furthermore few studies question how people respond to the disappearance of “their” glaciers. In a compelling and engrossing book Carey explores the impact that a changing landscape has on urban-rural divides, national development plans, domestic research priorities and, indeed, even the creation of citizen-scientists.

Carey’s study focuses on north-central Peru’s Cordillera Blanca where more than 600 glaciers are located and an increasing number of lakes are making their appearance – nearly two hundred new lakes in the last sixty years. In as many years, more than 25,000 Peruvians have been killed in glacier disasters. In other words, “in a country riddled by earthquakes, volcanoes, El Niño events, and landslides,” glacier catastrophes are among the deadliest. The book begins with one of the most disastrous.

On December 13, 1941 massive, melting ice plunged into Lake Palcacocha and created large, powerful waves that easily overcame the moraine dams. Within minutes most of the lake had “poured out” and made its slow but thunderous way down the mountain toward the oblivious town of Huaraz. As the mass of rocks, dirt, and trees encountered a second lake, Jircacocha, it also spilled out and veered directly toward Huaraz. Within minutes a third of the town was gone and thousands were dead.

After this initial disaster, scientists, both domestic and foreign, arrived to try to piece together what had happened and, more important, how it could be prevented in the future. In the immediate aftermath, glacier science and glacier lake engineering benefited from experts, government officials, and the knowledge of locals. But the actions taken after this were often more politically strategic than scientific. In

fact, what happens after the enormity of the Huaraz death toll forms the bulwark of Carey's book.

Carey traces scientists' initial reliance on locals to educate them about the unknown terrain of the Cordillera and the location of newly emerged lakes. This dependence, however, decreased over time as more engineers were sent to the area and aerial photos became a useful research tool. Contact with locals influenced the perception of the neediest areas and also altered how funds were distributed since the most educated and articulate residents, those who could relate to the engineers, secured disaster prevention funds for their own towns. The author makes a point of stating that locals were not passive recipients of government aid but rather that they argued, for example, to be allowed to rebuild in the same flood plains for a variety of economic, cultural, and social reasons. But scientists and politicians, in turn, also selected spaces and defined what type of research would be conducted (and where), when they assessed the economic potential of harnessing the power of retreating glaciers for, say, irrigation and hydroelectric projects.

In another chapter Carey explores the many legends, myths, and superstitious beliefs linked to the Cordillera lakes. With one tale in particular he draws parallels between peoples' anxieties that the urban-rural divide, part of a rigid, local racial and spatial hierarchy, was ruptured when nature overpowered Huaraz. In other words, the flood, originating in the rural highlands and thus considered of "Indian" origin, invaded and destroyed the modern city. Urbanites believed that with a broken boundary the indigenous locals could potentially sack and destroy the remaining city in a similar fashion. It is here where racist beliefs about the "poor and backward" indigenous of the highlands trumped scientific evidence and became entangled in its findings. In sum, the urban inhabitants of Huaraz sought solace in science and its experts as well as the government to keep nature and, especially, social borders intact.

But a few years later, in 1945, the town of Chavín suffered the same fate as Huaraz and for the next few decades dozens of small towns would also encounter the same ferocity of glacial ice. This time locals mobilized to demand relief and protection for the thousands living below the melting Cordillera Blanca glaciers. Despite their vocal demands, there was little continued government support until 1950 when another glacier flood destroyed a hydroelectric facility and, for the second time, a key railroad line. From this point forth a newly created Lakes Commission would focus (until 1971) on destruction prevention and in surveying the region as a focal point for national development. Over the years the Lakes Commission would balance the study of hazards with road building, irrigation, job creation, and tourism. This combination of catastrophe prevention and economic development would become entrenched and expected in the Cordillera.

The government's blind agenda to economically develop the region redefined

glaciers and lakes as surmountable roadblocks to Peru's modernization. As impediments to development, glaciers could, however, be tamed. To achieve this, Peruvians would master geology, glaciology, and hydrology. By the time of the 1970 avalanche that killed 15,000 Peruvians scientific knowledge was used primarily for hazard zoning but locals began to contest the power of engineers and scientists who could neither control the glaciers nor avoid the increasing death toll. Locals, in fact, occasionally hired their own scientists to contest findings and ensure that technicians from Lima were indeed being fair in their assessments. In other words, locals began to contest the government's ownership of scientific claims.

Carey has written an important book that uses the case of Andean glacier retreat to illustrate how nature, despite an army of scientific studies and technological advances, cannot always be tamed. Despite this fact and in pursuit of economic prosperity the Peruvian government continued to develop hydroelectric dams and irrigation projects in one of the country's most dangerous areas. But, as Carey illustrates, in the end it was global economics that today make the region more unstable. The book ends with a quick explanation of how the 1990s neo-liberal reforms that swept over Latin America also engulfed the Cordillera Blanca. In Peru the "neoliberalization of nature" meant that government industries linked to the glaciers were privatized and sold, in this case, to U.S.-based Duke Energy. One of Duke Energy's first actions was to end any studies that dealt with hazard prevention and focus solely on the profitability of retreating ice.

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