

THE PACIFIC CIRCLE



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PACIFIC CIRCLE NEWS

Business Matters

The Circle's email address is thepacificcircle@gmail.com. Please contact the Editor and/or Editorial Assistant should you have any questions or requests. Information about Member publications and conferences can be sent, as well.

The University of Hawai'i Foundation requests that dues or contributions made by check be made payable to "The U.H. Foundation" with "The Pacific Circle" in the memo space. The subscription and dues rates remain steady: US\$25.00 for individuals and US\$35.00 for institutions. Only contributions can be made online. Dues must be paid by check or credit card. Thank you.

The Circle web site includes past issues, documents from conferences, links to affiliated and complementary groups, and a blog with information about events and publications. Michael Kline has also recently added an option for searching previous issues of *The Bulletin*. Please visit: <http://thepacificcircle.com>.

Recent Publications, Honors & Scholarly Activities by Circle Members

Marcos Cueto, "An Asymmetrical Network: National and International Dimensions of the Development of Mexican Physiology," *Journal of the History of Medicine and Allied Sciences* 71:1 (2015), pp. 43-63.

Deepak Kumar, *The Trishanku Nation: Memory, Self, and Society in Contemporary India*, Oxford University Press, 2016.

Congratulations to Warwick Anderson, who has been awarded the 2015 Medal for History and Philosophy of Science from the Royal Society of New South Wales, the oldest learned society in the southern hemisphere.

FUTURE MEETINGS, CONFERENCES and CALLS FOR PAPERS

12-15 April 2016. IXth International Congress on the History of Oceanography, to be held at the Tonsley Campus of Flinders University, South Australia. This is the first Congress to be held in the southern hemisphere and coincides with the 50th anniversary celebrations of the founding of Flinders University, the first Australian institution to offer tertiary studies in oceanography. For information about the program and accommodations, please contact Walter Lenz at walter.lenz@dg-eeresforschung.de.

28-30 May 2016. Annual Conference of the Canadian Society for the History and Philosophy of Science, to be held in Calgary, Alberta, as part of the Congress of the Humanities and Social Sciences meeting. This meeting includes the annual meeting of The Canadian Society for the History of Medicine. This year's theme? "History Matters." For additional information, please visit: <http://www.yorku.ca/cshps1/meeting.html>.

14-17 June 2016. Annual Meeting of AAAS Pacific Division, to be held at the University of San Diego, San Diego, California. Conference theme this year is: "Engaging Science." Sessions of possible interest to Circle members include: Ecology and education in Mission Bay, San Diego; How ocean acidification and warming could influence the functional morphology and ecology of intertidal organisms; Current understanding and data gaps for Bahia de Los Angeles, an international biosphere reserve; Bahia de San Quintin: status, threats, and solutions for one of the last intact coastal organisms in Western North America; and the United States and world's fairs: the physical anthropological collections displayed at the Panama-California Exposition; conducting anthropological field studies at the fairs; and the display of Filipinos – documenting American imperialism, racism and racial stereotyping. For additional information, please contact Roger Christianson at richristi@sou.edu. A preliminary schedule of events is posted at <http://pacific.aaas.org>.

22-25 June 2016. Three Societies Meeting, to be held at the University of Alberta in Edmonton, Alberta, Canada. The gathering brings together the British Society for the History of Science, the Canadian Society for the History and Philosophy of Science, and the History of Science Society. Registration and general conference information is available at: <https://uofa.ualberta.ca/arts/research/3-societies-meeting>.

6-9 July 2016. Public Health and Society in Latin America and the Caribbean, to be held at the University of the West Indies, St. Augustine, Trinidad and Tabago. Meeting is intended to explore the complex relationships between public health and Latin American and Caribbean societies from the colonial era to the present. Papers and panels include imperialism, decolonization and public health; demography, migration and disease; mental health; tropical medicine; and new technologies and procedures. For further information, contact Dr. Debbie McCollin at publichealthandsociety2016@gmail.com.

2-3 November 2016. Workshop on Writing the Transnational History of Science and Technology, to be held at the School of History and Sociology of the Georgia Institute of Technology, the day before the annual HSS meeting about one mile away in Atlanta. If interested in participating, please submit an abstract of 200 words no later than July 30, 2016. Some funding is available. For further information and submission of abstracts, please contact john.krige@hsoc.gatech.edu.

19-23 June 2017. AAAS-PD Annual Conference, to be held on the Big Island of Hawai'i, at the Hawai'i Preparatory Academy, located in Waimea (Kamuela). Two sessions of particular interest to members will be those concerning East and Southeast Asian Anthropology and Asian and Asian-American Women, Health and Welfare. For more information about those and other sessions, please contact Alan Bain at baina@si.edu.

BOOK, JOURNAL, EXHIBITION and RESEARCH NEWS

The Journal of Natural History 49:45-48 (2015) is devoted to the 12th International Conference on Copepoda (ICOC). There are several articles of possible interest to Circle members, including ones about Tokyo Bay, the Sea of Japan and the Seomjin River estuary, in the Republic of Korea.

“Lele O Na Manu: Hawaiian Forest Birds,” a special exhibition at the Bishop Museum in Honolulu, Hawai'i, through July 31, 2016 in the J.M. Long Gallery.

Austral Entomology 54:4 (2015) includes a series of articles on Australian and Chilean topics, including viruses, fruit flies and beetles.

*Is the structure of civilization and our values driven by energy use,
or are structure and values independent of energy consumption?*

Larry Thomas Spencer
Professor Emeritus of Biology
Plymouth State University

Ian Morris in the Tanner Lecture series at Princeton (2013) and in a subsequent enlargement of those lectures in a recent book postulates that the structure of a society and its values are closely correlated to the energy captured by that society. The title of his book, *Foragers, Farmers and Fossil Fuels: How Human Values Evolve*, indicates that he breaks the evolution of human societies into those three categories. In a graph on page 95, he plots kcal/captured/day (in thousands) for Eastern and Western societies from AD 1 – AD 2000. The graph goes from essentially 30 at the start to 100 for Eastern societies and 225 for Western societies in the year 2000. In his analysis, foraging societies (hunting and gathering) usually capture less than 10, farming societies from 10 to 30, and since the start of the industrial revolution and the use of fossil fuels (coal initially, then oil, natural gas, etc.) society has increased its energy capture ten or more fold. He relates the structure of a particular society to its organization, its gender relationships, and the amount of violence in that society.

For example, he shows that foragers are: non-hierarchical with respect to political and wealth inequality, pretty much gender neutral, and tolerant of violence.

Being on the constant move, one cannot carry many goods. Male knowledge and female knowledge of the environment are just as useful. And when intruders are about, it is probably just as easy to kill them as to include them in your small group. Who knows what they might do in the dark of night? Farming societies are: strongly hierarchical with respect to political and wealth inequality, male dominant, and intolerant of violence. It takes a large work force to work the fields, but only a few to control that work force. Women don't have the strength of heavy lifting and therefore are pretty much restricted to the home. The owners have great wealth, the workers little. And unless the owners decide to go against other owners, it makes little sense to destroy the workforce in a community, unless the workforce goes against the owner.

Finally, fossil fuel societies are less hierarchical (folks can raise themselves up by their bootstraps), more gender neutral, and show lower levels of violence than farming societies. The trend from females in the kitchen to females in corner office has been a constant in the last century. And although we may have a high level of wealth inequality in the US at the present time, it is nowhere near what was present in earlier farming societies. And as Pinker has shown in his 2011 book (*The Better Angels of Our Nature: Why Violence Has Declined*), although the daily newspaper or evening broadcasts delves on those who have been killed that day, one is less likely to die of violence than by either some disease or just aging. Morris in his comparison of the three societies in his Table 4.1 on page 134 actually uses the terms bad, good and middling. Based on materials presented in the three chapters dealing with each type of society, Morris believes value systems are determined by energy capture and that there isn't some over-riding system of values that is independent of societal structure.

The book consists of ten chapters. Chapter 1 provides the general overview of what is to come, Chapters 2–4 describe the three different groups, and Chapter 5 talks about values and what the world might be like in the future based on those values. Commentators that were present at the Tanner Lectures wrote the next four chapters. Chapter 6 by Richard Seaford questions whether values are determined by energy capture. He delves into the Greek city states (also mentioned and discussed by Morris). Chapter 7 by Jonathan Spence, a China specialist focuses his arguments based on his work on the evolution of Chinese society. Chapter 8 by Christine Korsgaard like Seaford delves into the question of values and their origins. And finally, Chapter 9 by Margaret Atwood asks what will become of civilization “When the lights go out”? Lastly, in Chapter 10, Morris gets the final say by refuting some of the commentator statements and enlarging on some of the ideas presented in his first five chapters.

The book is extremely readable and I almost felt like I was at the lectures because of the commentator chapters. I, like some of the commentators, question some of his statements. It seems to be an impossible task to put all foragers or farmers into one group all having the same values because of their energy consumption/capture. Morris is somewhat cognizant of that as he mentions the

special case of the Pacific Northwest Coast tribes that had a high energy consumption because of the rich productivity of the coastal oceans as compare to the Shoshone of the Utah and Nevada deserts who had a very low energy capture and thus a very different set of values with respect to social, gender, wealth, and political equality.

Also in his predictions as to our future, he seems to believe that based on energy consumption we will continue on as capitalists. Although he does indicate that climate change will have some affect our society as it exists now, he doesn't truly indicate that energy, in the form of fossil fuels, is finite in nature and that we won't be able to continue to increase our consumption (as shown in the above mentioned graph on page 95). Exponential growth whether it is in population or energy consumption is an impossibility. Morris needs to read Naomi Kline's recent book *This Changes Everything*. She indicates that because of climate change, unless we move away from capitalism, we might find ourselves with a world in collapse.

From a technological viewpoint, Morris's book is well organized. The diagrams are clear and integrated into the text, the chapter notes are suitable and the references and index are well done. I would recommend this book to all readers, not just the historians or anthropologists. Morris demonstrates his extensive knowledge of those fields and tries to bring us to a more global understanding of our past and our future as a species. As a biologist, I found his use of evolutionary tenets, both biological and cultural, right down my alley. The book is part of the University Center for Human Values series, Charles R. Beitz, editor.

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**SELECT RECENT and FORTHCOMING
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“Studies of the Susceptibility of *Aedes aegypti* (Diptera: Culicidae) from Timor-Leste to Pyrethroid and Organophosphate Insecticides,” by **Stephen P. Frances, Clinton J. Morton, and William J. Pettit**, *Austral Entomology* (2015), available online at <http://onlinelibrary.wiley.com>.

“A Taxonomic Study of the Phtisicidae (Crustacea: Amphipoda) of New South Wales, Australia,” by **Ichiro Takeuchi** and **James K. Lowry**, *Journal of Natural History* 50:9&10 (2016), pp. 603-648.

“Unpuzzling American Climate: New World Experience and the Foundations of a New Science,” by **Sam White**, *Isis* 106:3 (2015), pp. 544-566.

“Variation in Morphological and Reproductive Characteristics of females in *Anolis nebulosus* (Squamata: Dactyloidae) from Island and Mainland Populations near the Pacific Coast of Mexico,” by **Uriel Hernandez-Salinas** and **Aurelio Ramierz-Bautista**, *Acta Zoologica* 96:4 (2015), pp. 428-435.

“Variations in Leaf Carbon Isotope Composition Along an Arid and Semi-Arid Grassland Transect in Northern China,” by **Chao Wang**, **Dongwei Liu**, **Wentao Luo**, **Yunting Fang**, **Xiaobo Wang**, **Xiaotao Lu**, **Yong Jiang**, **Xingguo Han**, and **Edith Bai**, *Journal of Plant Ecology* (2016), available online at <http://jpe.oxfordjournals.org>.

BOOK REVIEWS



Bridie Andrews, *The Making of Modern Chinese Medicine, 1850-1960*, Contemporary Chinese Studies Series, Vancouver, B.C.: UBC Press, 2014, and Honolulu: University of Hawai‘i Press, 2015, Pp. xvi + 294. Figures. B&W Photos. Notes. Bibliography. Index. ISBN 978-0-8248-4105-9 and 9780824841058.

Bridie Andrews’ long-awaited first book provides a clear and accessible account of the modern transformations of Chinese medicine throughout the late imperial and early Republican periods. Her central contention is that Chinese and Western medicine have historically been “hopelessly entangled,” and that the two forms of medical practice are therefore not as mutually exclusive as they often appear to be (pg. 5). Instead, Chinese medicine required a confrontation with the West in order to achieve its present form; consequently, the traditional Chinese medicine that is practiced today is “neither traditional nor even purely Chinese” (pg. 11). This argument, and the copious examples Andrews provides to support it, serve as a refreshing reminder that the assumed distinction between Chinese (traditional) medicine and Western (modern) medicine is not epistemologically authentic, but rather culturally and

historically constructed.

Andrews begins by examining the plurality of Chinese healing practices that Western missionaries encountered upon arriving to China in the nineteenth century. The “cacophony” of therapeutic methods available to Chinese consumers, Andrews argues, belies the notion of an “idealized pure type” of Chinese medicine (pp. 48-50). Just as Chinese medicine was not fully standardized, Western medicine also proved incredibly malleable and adaptable to local cultural conditions. Medical missionaries, although often derisive of Chinese medical theories, were forced to accommodate themselves to local practices in order to appeal to Chinese sensibilities. By appropriating indigenous pharmaceuticals and mediating the clinical encounter so as to accord with local expectations, missionaries actively changed the terms and practices of Western medicine. The reality of missionary medicine thus diverged significantly from the ideal of a universal biomedical practice.

Chinese intellectuals were not immediately persuaded by the superiority of Western medicine simply through the encounter with the missionary presence, however. A central theme of the book, and one that Andrews takes up at length in chapter four, is the idea that Western medicine was not privileged in China for its therapeutic efficacy, but rather for its symbolic power. Biomedicine, as a marker of Western modernity, appealed to Chinese intellectuals as a potential means of regaining political sovereignty from the imperialist powers, which resided on their soil. When Chinese intellectuals began studying abroad in Japan, therefore, they were impressed at how Meiji-era reforms had utilized scientific medicine as a means of bolstering the prestige and power of the state. Many of these intellectuals, such as Yu Yan (also known as Yu Yunxiu), who would go on to become a member of the Nationalist Health Commission, later returned to China to advocate for the abolition of Chinese medicine and the wholesale adoption of Western medicine. Although his proposal met with strong resistance and was ultimately abandoned, it clearly signaled that “traditional” medicine was increasingly being seen as incompatible with national modernity.

As Andrews explains in chapter five, the state-led decision to pursue biomedicine grew out of a deeper concern with Social Darwinism and the fear of national, racial, and cultural extinction. Chinese intellectuals and modernizing bureaucrats recognized that the adoption of Western medical institutions, joined with state-led initiatives to transform public health, would both lend credibility to the Chinese government and contribute to the rejuvenation of individual Chinese bodies. This justification informed the (failed) initiative to ban Chinese medical practice in 1929, as well as the more successful adoption of public health institutions, such as the Chinese Quarantine Service in 1930. By linking the health of individuals to the health of the nation, modernizing elites deployed Western medicine as a tool of state power.

One of Andrews’ most important contributions is presented in the last full chapter, where she explicitly shows how the form of “traditional” Chinese medicine

that is practiced today was, in fact, consciously recreated in the image of Western modernity. Her discussion of acupuncture is particularly salient. Despite the fact that acupuncture is often interpreted as a quintessential element of Chinese medicine, the practice did not become mainstream or respectable until the early twentieth century. Under the leadership of a physician named Cheng Dan'an, acupuncture was reimagined in the 1930s so as to accord with the principles of Western physiology. Cheng mapped acupoints onto the anatomical body, re-conceptualized the meridians as encompassing the nerves and lymph nodes, and excised "superstitious" ideas from acupuncture practice, such as the notion that treatments should be timed to accord with astrological phenomena. Cheng's methods were made available for public consumption through the publication of his 1931 textbook, *Chinese Acupuncture and Moxibustion Therapeutics*, which featured photographs of the nude body with acupoints drawn onto them. In contrast to earlier forms of acupuncture, whose secrets were transmitted through closed medical lineages and whose efficacy depended entirely on the skill of the individual practitioner, scientized acupuncture was purposely meant to be public, accessible, and reproducible.

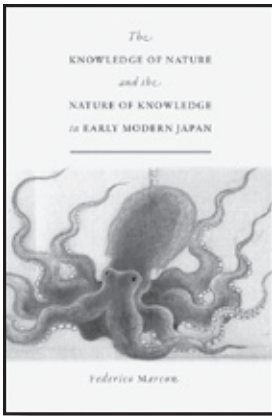
There is much that is commendable in this book. Andrews' invocation of science studies theorists like Bruno Latour represents an important effort to complicate the naturalness of categories like "traditional" and "modern," "Western" and "Chinese." By including a substantial analysis of Japan's role in the transmission of Western medicine to China, moreover, Andrews is able to add nuance to the neat dichotomy between China and the West while also underscoring how "modern" medicine has been implemented differently in different geographical regions. Finally, her main argument – that Chinese and Western medicine are both cultural constructions that have only been fully realized through a confrontation with the other – is a critical point that bears repeating, not just to scholars of medical history, but to anyone with interests in the history of imperialism and colonialism writ large.

Some of Andrews' other points, however, are somewhat less impactful. One of her ancillary arguments, that "medicine became symbolic of a shared striving towards the ideals of modernity" (pg. 11), is a point that historians have been making since at least the 1960s; and the notion that modern medicine brought together "the health of the individual, the health of the nation, and the struggle for existence" (pg. 95) is a concept that has been explored in depth by a number of previous monographs, most notably Ruth Rogaski's *Hygienic Modernity*. The lack of archival research also somewhat limits the type of contributions Andrews is able to make. Nevertheless, the author herself recognizes these limitations. As she admits in her introduction, *The Making of Modern Chinese Medicine* represents an attempt to chart the "broad contours of change" in early twentieth-century Chinese medical history, and as such, "provide[s] a context for other, more archive-driven studies" in the future (pg. 7).

The Making of Chinese Medicine is certain to become standard reading for anyone with interests in Chinese medicine and Chinese medical history. With

its clear prose, colorful examples, and careful attention to historical background, this book is suitable for a wide range of audiences, and can just as easily serve as a classroom text as a reference for seasoned scholars.

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Federico Marcon, *The Knowledge of Nature and the Nature of Knowledge in Early Modern Japan*, Chicago: University of Chicago Press, 2015). Pp. xi + 415. Notes. Index. Illustrations. Glossary. US\$45.00 and ISBN- 13: 978-0-226-25190-5 (cloth); ISBN- 13: 978-0-226-25206-3 (e-book).

The history of Japanese medicine is both long and complex, and studies in Western languages have emphasized the ways in which Japanese medical practitioners diagnosed and treated the various ailments and conditions that the Japanese people had to endure during their pre-modern era. Modern scholars have been aware of the Chinese foundations for Japanese medical knowledge, but they have also noted how the Japanese did not slavishly mimic what they learned from Chinese medical tomes, finding ways to innovate instead, especially with the introduction of Western medical knowledge by the Portuguese in the sixteenth century (and its reintroduction by the Dutch in the eighteenth). The Japanese people of the Edo period (1603–1868), while recognizing the therapeutic benefits of Western medicine, never abandoned the herbal remedies that they had learned from the Chinese. Chinese herbal medicine was closely interconnected with both Confucianism and the careful cataloguing of plants, or *honzōgaku*, and this is the subject of Marcon’s monograph, the first study of its kind in the English language.

Marcon argues that *honzōgaku* or “nature studies” (28) began with the introduction of the Chinese text, *Bencao gangmu* (“Systematic Materia Medica,” ca. 1596), into Japan during the first half of the seventeenth century. Buddhist monks, perhaps the only group within the society of the time who could read highly specialized Chinese, studied this work carefully, noting how only some of the various plants and animals described within it were found within Japan, and so the need for a parallel work that focused on the flora and fauna of Japan emerged soon after the appearance of the *Bencao gangmu*. Marcon observes how, as the Chinese work

circulated among Buddhist monks in Japan, a new class of intellectuals called *jusha* (Confucian scholars) began to develop (10), and the majority of these intellectuals were former monks who had left their monasteries with the hope of becoming teachers and tutors to the powerful samurai who had helped re-establish shogunal rule in 1603, especially the Tokugawa.

That movement eventually culminated in the publication of Kaibara Ekiken's (1630–1714) *Yamato honzō* (The flora and fauna of Japan) in 1709. Ekiken rejected the Chinese methodology of matching plants and animals to their proper names, as mentioned in the Chinese classics, opting for one based on his own fieldwork collecting specimens and speaking with locals (97-98). Marcon argues how Ekiken's work marked the beginning of the emergence of *honzōgaku* as an intellectual endeavor all of its own, freed of any exclusive ties to Confucianism (9), ushering in an era characterized by a "popular craze for natural history" (164). By the nineteenth century, scholars of *honzōgaku* commonly employed empirical methods in their work, and following the famines of the 1830s, began to think of the natural world in "instrumentalist" ways so as "to better exploit the natural environment for human needs" (223).

Marcon especially credits the work of Satō Nobuhiro (1769–1850) for this new approach to *honzōgaku*, noting how this development "facilitated the conversion of late Tokugawa scholars into modern scientists in the early decades of the Meiji period" (265). Thus, the story of the adoption of Western science by the Japanese was not simply one of abandoning a native paradigm in favor of a better foreign one; *honzōgaku* fostered the development of modern scientific sensibilities among the Japanese independently of, but also in tandem with, Western science during the Edo period. By the end of the Edo period, *honzōgaku* had truly become a field of "natural history," and its affinity with its Western counterpart was formally recognized during the early Meiji period, when *honzōgaku* was terminologically supplanted by *hakubutsugaku*, the name that natural history in Japan bears to this day (303).

Monographs in English that address Japanese historical phenomena for the first (or nearly the first) time are always useful if for no other reason than that. Although Marcon was not trying to be comprehensive in his treatment of the subject, his analysis is rather sustained if not a bit overly long, and he manages to make connections between *honzōgaku* and art (via the visual representations of plants and animals, [228, 239]), scholarly networks/associations (178), and political economy (265), in addition to the more commonsensical links to medicine and Confucianism. Such a varied and eclectic approach can be either an intellectual strength or a conceptual weakness. It is a strength because virtually no one else has tried to study a subject in such a way before, and it redefines in some ways what interdisciplinary study can mean; the history of medicine and/or science in Japan is, therefore, somehow more than just that. It is also a weakness, it seems to me, because the reader's "conceptual gear-shifting" can be jarring, and one can lose sight of

what the main focus of the monograph actually is. It is also very difficult to master, especially in an academic monograph, such varied and unrelated disciplines and subjects. For example, Marcon begins his book with a discussion of how *honzōgaku* fits into Confucian learning. His take on Confucianism is not especially enlightening, as he covers ground in ways that come off as rather conventional, and nothing new is added to our understanding of either *honzōgaku* or Confucianism.

Furthermore, Marcon refers to all forms of Japanese Confucianism during the Edo period as “Neo-Confucianism,” a problematic categorization that scholars such as Benjamin Elman and others have been arguing now for decades. For this reason, he is unable to understand or fully appreciate what the “philological exactness” of Neo-Confucianism really was (71). For Confucians of Song Learning (what is also commonly translated as Neo-Confucianism), philology was a secondary pursuit (what they called *xiaoxue*, or “little learning”), taking a backseat to the study of moral teachings (what they called *daxue*, or “great[er] learning”). Philology was useful to the extent that it helped scholars come to grips with the moral teachings of the classics, but it was never an intellectual end in and of itself. Thus, Confucians who were critical of the Song scholars, whom historians have called Ancient Learning scholars, attacked them using more careful philological techniques in order to argue that the interpretations of the Song scholars had actually distorted the truths of the Confucian classics. For this reason, Marcon is unable to recognize the significance of these divergent views of philology on the development of *honzōgaku* (105).

Similarly, Marcon’s discussion of intellectual and scholarly networks is also rather superficial and even misleading. He mentions both the public sphere (181), a term famously associated with the work of Jürgen Habermas, and also terms associated with Pierre Bourdieu, such as “cultural production” (52) and “cultural capital” (186), and he refers to *honzōgaku* scholars as comprising a “field” (73). Combining the ideas of Habermas and Bourdieu in his discussion of scholarly networks, while not inconceivable, does require at least some methodological explanation (if not justification), since Bourdieu conceived of the field of cultural production as characterized by competition and conflict, while Habermas’s public sphere allegedly neutralized such antagonisms, as the foundational precondition for the emergence of transparent communication. In the absence of any such explanation, the reader is left confused and the ideas of two luminary intellectuals of the last forty or so years are distorted and ultimately deprived of their conceptual power.

One of the important themes of this book is how the Japanese of the Edo period made strides in the development of their nature studies that paralleled their early modern counterparts in Europe (x, 265). It is refreshing to see comparative analysis used in this way so as to avoid exceptionalist characterizations of the Japanese. Unfortunately, Marcon has to highlight these developments by undertaking a conceptual flattening of Chinese history, as *bencao* (*honzō[gaku]*) “under the Qing did not change much from the times of the Ming” (154). Thus, while the Edo

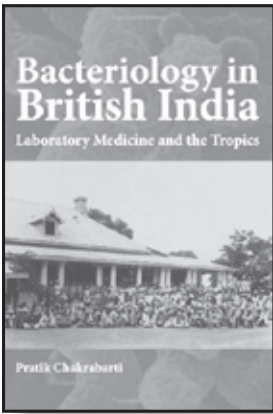
Japanese were like the Europeans, intellectually speaking, they were quite unlike their contemporary counterparts in China, such that the stagnation of the Chinese functions as the outlier by comparison with the Japanese and the Europeans. The Chinese, in other words, were implicitly exceptional with regard to nature studies, but not in a good way. Such a conceptualization of the Chinese needs more than a one-sentence dismissal if we are to believe it. In a book focused on the Japanese, one wonders why an author would even need to resort to such a rhetorical move.

Aside from these larger issues, this book also has its share of rather mundane mistakes and errors. There are several mistranslations, such as *genki* (“restoring the *ki*,” it should be “original qi;” 108), *Sonsai okina zuihitsu* (“Essays of Old Kenkado;” it should be “Essays of Old Sonsai;” 185), *Kenkado zasshi* (“Scattered Notes;” it should be “Kenkado’s Scattered Notes;” 186), the *Koihō* (“Ancient School;” it should be “Ancient Medical Methods;” 197), et al. In addition, the author combines Western and Japanese dating conventions when translating dates within source excerpts. For example, “the 11th day of the 9th month of 1719” (141), should be “the 11th day of the 9th month of Kyōhō 4 [1719].” The author does this throughout the text, but seems to have realized the mistaken convention by the end of the book, when he refers to February 26, 1826 as “the ninth day of the first month of the ninth year of the Bunsei era” (287).

The Knowledge of Nature and the Nature of Knowledge in Early Modern Japan is an ambitious, perhaps even bold, book, and it makes for a mostly interesting read. Some readers will find its scope fresh and even thrilling, while others might see it as cumbersome and distracting. It succeeds in informing us of the developments regarding the “knowledge of nature” during Edo Japan, but is perhaps less successful in relating its insights into the “nature of knowledge.”

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Pratik Chakrabarti, *Bacteriology in British India: Laboratory Medicine and the Tropics*, Rochester, NY: University of Rochester Press, 2012, Rochester Series in Medical History, Pp. x + 304. B&W Photos. Charts. Notes. Bibliography. Index. Cloth US\$ ISBN 978-1-58046-408-6 and 9-781580-46086.

The book provides a thick description of the contexts and imperatives of the ‘change of guard in colonial medicine’ with the advent of bacteriology and bacteriological research in the then unfolding scenario of disease and death in South Asia. In particular, it

explores the revolutionary potential, unique characteristics, and elite and novel status of bacteriology in the colonial South Asian context. Bacteriology was not the evolution of just another medical specialism. Its incubation and evolution in India was intimately connected with debates on tropical geography, climate, race, discourse on cruelty against animals and conservation, development of vaccines, policies and practice of vaccination, along with a host of other public health issues pertaining to colonial India. While clarifying his departure points, the author provides incisive comments and insights, pithily hinting at the missing strands and conceptual weaknesses of received renderings on social and cultural history of medicine in colonial India. By problematizing the ramifications of historiographical inadequacies in documenting and delineating the history of western medicine in colonial India only through the prism of ‘tropical medicine’, he makes a case for the probe and study of bacteriology in the wider setting of colonial tropics.

Starting with the Imperial Bacteriological Laboratory at Poona in 1890, India was witness to the creation and incubation of an array of bacteriological missions and institutions¹ and its populace was subjected to sustained intensive vaccination campaigns against plague, cholera and rabies creating anxieties of native resistance. Historians have narrativized the history of resistance to western medical intervention as spectacle. In this respect, Chakrabarti attempts to understand the

¹ With the breakthroughs by Louis Pasteur and Robert Koch bacteriology acquired the status of a universal panacea against diseases and death in colonial India. The Government of India established several bacteriological laboratories beginning with the Imperial Bacteriological Laboratory at Poona (1890), the Bacteriological Laboratory at Agra (1892), the Plague Research Laboratory in Bombay (1896), the Pasteur Institutes of India at Kasauli (1900), Coonoor (1907), Rangoon (1916), Shillong (1917), Calcutta (1924), and the Central Research Institute (CRI) at Kasauli in 1905. The same year, a Bacteriological department was formed to staff the newly established laboratories consisting of a special cadre of Indian Medical Service (IMS) officers. The GOI also set up the Indian Research Fund Association (IRFA) for sponsoring and coordinating medical research in the country in 1911.

process of accommodation and adoption of vaccination by Indians. The educated Indian elite and English medical men who were ardent adherents and advocates of this novel science hoped that the combination of germ theory and Pasteurian vaccines would definitely rupture and smash the compact of climate and disease, and target and annihilate the causative germs. Possibilities appeared that with vaccines, diseases could now be decisively separated from the vagaries of tropical climate (p. 10). Despite the preponderance of bacteriological institutions and their activities, the author laments the lack of conceptual framework to understand the interconnected contexts that shaped bacteriology, and how the transformation from clinical to laboratory medicine in tropical colonies occurred. Chakrabarti's agenda is to explain and further elaborate 'how bacteriology created its own social, cultural, and ideological spaces in the tropics' (p. 3). It is well documented that the Pasteur institutes in India vaccinated patients coming from various parts of the subcontinent. For instance, the Pasteur Institute at Kasauli was visited by the 'pasteurian population' from northern India, Kashmir, Rajputana, central India, Burma and Tibet. This brought new dimensions to tropical vaccine research and mundane and innocuous issues like clothing, social habits, cultural beliefs, and indigenous treatments became part of serious discussion within these laboratories (p. 5).

Cautioning against the overuse of the term 'tropical medicine' and its limitation to comprehensively represent the larger medical scenario of western medicine in colonial India, the author underlines an anachronistic but curious fact that a full institution dedicated to the scientific specialism called tropical medicine came into being only much later in the 1920s. The bacteriological laboratories towards which our attention is solicited preceded the establishment of the Calcutta School of Tropical Medicine.

As these institutions of bacteriology have received scant attention in the already rendered medical history of colonial India, an unfounded assumption has crystallized that they contributed almost nothing to medical research and their impact on colonial medical or sanitary policies was negligible. In this sense, among the main aims of the book is to redress and remedy this lack of institutional focus in the 'historiography of epidemics, public health and vaccination in colonial India' (p. 5). That these laboratories were important sites of extensive bacteriological experiments and vaccine production then, and, in postcolonial India, have remained the main producers of bacterial and viral vaccines and sera not only for India but other countries in Asia and Africa as well, provide reasons enough for historians to bring them within the ambit of research and documentation. One of the causes of non-engagement and negligence is the deeply entrenched dichotomous presumption that laboratory medicine is not a suitable site yielding to the nuances of social history, and such possibilities can only be realized when medicine steps out from the confines of the laboratory into the field. As the author argues, '[R]ather than studying the dissemination of laboratory ideas into public health and household, [the] book

analyzes how the colonial laboratories embodied a political and moral regime' (p. 15).

By exploring new categories of institutional and private papers as sources, Chakrabarti clarifies that the research conceived, conducted and carried out in laboratories in the late nineteenth and early twentieth century did not actually fall in conventional areas of tropical medicine. Further, the impact of the establishment of laboratories and nurturing of new research traditions on the Indian medical realm cannot be captured without a convincing and comprehensive story of bacteriology, as, in more than one way, 'the very nature and method of bacteriological research' (p. 2) was shaped in and by the tropics. From the 'Introduction' itself he initiates a lengthy examination of the idea of tropics and tropical medicine focusing on climate and geography. The continuities of these ideas on climate also impacted on the notion of germs, and subsequently, on the evolution of bacteriology and parasitology in the colony. In the understanding of tropical diseases, germs and geography were strange bedfellows. Chakrabarti exhorts to shift the trajectory of historical probing as, in his understanding, 'there is a need for fresh conceptual tools to understand how ideas of the tropics figured in the history of germs and parasites' (p. 9). For him this inversion of the lens becomes the decisive point of departure in the analysis and understanding of the bacteriological journey, when from the last decade of the nineteenth century, a new generation of medical men both from the IMS and otherwise, acted as initiators, incubators and catalysts for the 'new science of bacteriology' in colonial India. This new science they acquired and assimilated, and in which they had trained themselves in German and French institutes, was to be tried and tested in the true pestilential land of cholera, plague and rabies, and that was the classic site, India.

The story then is about the emergence, legitimacy and later entrenchment of a new tradition of laboratory medicine in India, which promised the hope of snapping the unholy knot of tropical diseases from its climatic contexts, to allow for sustained European habitations. It is about the hope and optimism that this new arena of science created for taming and eradicating all tropical diseases, through the identification and extermination of their causative pathogens, and the realization of their vaccines in near future. The book by situating the textured history of bacteriology in the context of life and disease in the colonial tropics breaks new ground by abandoning the limits set by laboratory versus field dichotomy. Going beyond the standardized center-periphery argument, the book is not just about the nature, method and traditions of bacteriological research in the tropics but also about the 'confluence of and encounter between bacteriology and the colonial world' (p. 2). It locates the 'scientific, cultural and social contours of bacteriological research' (p. 2) undertaken in colonial India by emphasizing their ramifications both within and beyond the discipline.

The binary of the secluded hills versus populous plains of colonial India has been examined from the vantage point of debates that ensued on the geographical location of bacteriological labs. But, why the enclavist and safe retreat to the hills?

Contrary to British policy, the French initiative and experience, in order to proclaim the universality of Pasteur's methods, experimented and incubated their labs in the tropical climate of their various colonies. Despite the presence of a similar strong lobby among British bacteriologists in India the policy that ultimately won was a retreat to the hills. The plausible reason Chakrabarti's narrative throws up is that the salubrity and seclusion of the hills permitted them to do what they could not do in England, and that was to escape from the ethical opposition of both Indians and British antivivisectionists (p.86). The author also describes why and how in the high noon of nationalism i.e. in and after the 1930s, a nationalist critique was mounted in order to decentralize and bring these labs closer to the afflicted population. 'This book understands the colonial laboratory as an institution whose isolation was never complete, but whose elitism was always evident' (p. 22).

The book has six coherent autonomous though interconnected chapters exploring aspects of the growth and development of bacteriological laboratory research in colonial India. The establishment of Pasteur laboratories was not merely a foreign imposition or implant on colonial society. As the author explains, from the very beginning they were 'part of public movement' and despite their secluded existence on the hills, transformed the practices of colonial medicine by acting as a new moral force and as symbols of scientific modernity in colonial India. The 'research traditions studied closely in this book – pertain to the development of antirabic, anticholeric, and *antivenene* vaccines; plague research in Bombay; the epidemiological mapping of twentieth century cholera; animal experimentations in Indian Pasteur institutes – show that research within the laboratories was always linked to the complex social, political, and economic realities of the colony' (pp. 15-16).

Chapter three of the book titled 'Imperial Laboratories and Animal Experiments' analyzes and documents the British doublespeak and appropriation of agency from native Indians to pose as guardians of ethical conduct towards animals. At the secluded hilltop labs 'massive animal resources' could be utilized unhindered, remaining beyond the pale and gaze of antivivisectionists. This helped in the 'portrayal of bacteriology in late nineteenth century India as a positive and benign science' (p. 86), secured and immune as it was not only from the critical gaze of the antivivisectionists but also from alternative moral critiques (pp. 86-87). The doublespeak and duality of Anglo-Indian attitudes towards Indian wildlife is further reinforced by the author through instances and examples in chapter four titled "'A Land Full of Wild Animals: Snakes, Venoms and Imperial Antidotes.'" This chapter traces 'the trajectories of snake bite and venom research in India from the eighteenth to the twentieth century, which unfolds in a complex progression of colonial science that includes aspects of orientalism, imperialism, tropical wilderness, laboratory medicine, and cultural nationalism,' (p. 13). The evolution and existence of colonial bacteriology was the bearer of the nuanced features of colonial science. In the anxiety-ridden tropics, the continuities of climatic determinism and other racial ideas

of disease causation had a resilience of their own and were always in negotiation with the new science of bacteriology. This prolonged and intense negotiation while imparting a unique character to bacteriology in colonial India, at times, limited its scope and in other instances paved the way for a new line of enquiry and ultimately a new research tradition.

A key chapter of the book 'Pasteurian Paradigm and Vaccine Research in India' is rabies specific, and through an in-depth analysis of David Semple's antirabic vaccine research program, it demonstrates the 'debates around dead and live vaccines' bringing within its ambit issues of dose, potency, safety and side effects in the context of the high incidence of virulence of rabies in India. The chapter shows how rival research traditions emerged and how they impacted on the policies of the Government of India. How were Semple's argument and method of vaccine manufacture different from the proposition and prescription of John Cunningham? The last chapter 'Pathogens and Places: Cholera Research in the Tropics' demonstrates that 'the search for a broad-based causality of cholera by British scientists in the post-Haffkine era led to the epidemiological studies that in fact limited the possibilities of cholera research in India' (p. 21). After Haffkine, when the Assistant Director of CRI, Major Edward David Wilson Grieg demonstrated that the 'human factor' was more important than ecological factors in the Indian context, he was transferred and his researches came to a sudden halt. The Government of India clearly privileged epidemiological research and the 'analysis and control of the microbe' (p. 21) took a back seat.

The author has laboriously brought out a host of medical men and the connectedness of their ideas, activities, and bearings on policy matters, but how they veered towards this new arena of concern called bacteriology needs to be probed further and deeper. Can one explore the ideological moorings, motivations and contexts that pushed them to pursue various new concerns of bacteriology not only as individuals but also as an emerging community of scientists aligned and committed to a new science? I am convinced that Chakrabarti can indulge in it, both from a biographical and prosopographical point of view.

Incidentally the author opens his book with a depiction of the medical and social world of Haffkine at a Calcutta camp where he was passionately pursuing his profession and vocation of vaccination. The ideological motivations that compelled Haffkine and others like him to tread a new path need to be explored further. In Haffkine's case, of course, we know of his Narodnik past and his motivations to 'go to the people' with his vaccines. As a follower of Pasteur and as an accomplished medical man he was re-living and realizing his past ideals through his cholera and plague vaccines by reaching out to people. Is it possible to also identify such moorings and motivations in other colonial medical men who contributed to the growth of bacteriology? This is not simply to tease and challenge Chakrabarti's rendering of the story of bacteriology and bacteriologists in colonial India, but an

invitation and exhortation to revisit and deepen the story he has so painstakingly pieced together.

Through documentation one could grasp the nuances of the evolution of bacteriology and its impact on public health and clinical medicine in India, yet the fact that a community of Indian bacteriologists could not emerge till the 1930s haunts the Indian reader. Who were the Indian contributors to bacteriology? A few names like R.N. Chopra, S.S. Sokhi, and A.C. Ukil do figure in the narrative but rather than satisfy they further whet the appetite of readers. It is true unless one accounts for the dynamism of bacteriological laboratories and the Pasteur institutes of colonial India along with the French and German medical connections, the story of the complexity of the medical encounter cannot be captured in its myriad shades. To this extent, the author needs to be lauded for his massive, rigorous and analytical documentation of an unexplored realm. The book through multiple examples has underlined how colonialism, emerging national aspirations and internationalism impinged on the evolution of bacteriology in India.

I am sure while delving through the dense description some abrupt typos and many magic numbers in parentheses may offer welcome amusement to readers. The usefulness of the book definitely warrants a cheaper paperback edition from the publisher. The author may support this appeal as I hope plebian readers like me are on his mind.

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SUBSCRIPTION and STAFF INFORMATION

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