

Jannetta, Ann. 2007. *The Vaccinators: Smallpox, Medical Knowledge, and the 'Opening' of Japan*. Stanford, California: Stanford University Press. 245 pages, ISBN-10: 0 8047 5489 6

Against all odds: vanquishing smallpox in far-flung Japan

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In Japan, one barely needs to scratch the surface of its history and literature to find the scourge of smallpox. For instance, the Great Buddha at Tōdaiji temple in Nara was erected to propitiate the gods after a 737 smallpox epidemic had killed four grandsons of Fujiwara no Kamatari. Biographies about one of Japan's greatest writers of the Edo period, Ueda Akinari, inevitably refer to his childhood case of smallpox, which left him partially paralysed in his hands, eventually blind, and with a major chip on his shoulder accounting for the misanthropic nature of his writing. One of the favourite *bunraku* plays, *Tsubosaka Kannon Reigenki*, features the protagonist Sawaichi, blinded by smallpox and disfigured by its scars. Vaccinations against smallpox were still mandatory in 1979 for visitors to Japan.

Thus it is not surprising to find considerable scholarship on this topic. Ann Jannetta, Professor of History Emerita at the University of Pittsburgh and author of *Epidemics and Mortality in Early Modern Japan* (Princeton University Press, 1987), has made a major contribution with *The Vaccinators: Smallpox, Medical Knowledge, and the 'Opening' of Japan*. It is also an inspiring celebration of 'human ingenuity and international cooperation' (page xvi), and not without contemporary relevance in this post-9/11 era when bio-terrorism threats (including the re-introduction of smallpox) abound, and we are constantly reminded of the imminence of pandemics such as avian flu or influenza.

The Vaccinators provides a meticulously documented and compelling account of the invention and spread of smallpox vaccination and the vicissitudes of its introduction into Japan in the early 19th century. The work's main theme is the crucial role played by human networks. Other strands of inquiry include the extent to which Japan had in effect already 'opened', at least in the area of medicine, well before 1868, and the reasons why so many of the new Meiji bureaucracy were recruited from the *ranpō* (Dutch medicine) community. Though *ranpō* practitioners had been persecuted and purged some decades earlier by the xenophobic *bakufu* (Japan's military government), the role special expertise (in this case proficiency in Dutch and other Western languages) played in social and political advancement soon became significant.

The book's first chapters contextualise Jannetta's study. She sketches the history of smallpox in the world and in Japan (where it had become endemic and a killer of children from at least the 12th century), and then describes, in fascinating detail (though perhaps not recommended for the squeamish), early attempts to combat smallpox by fine-tuning the technique of 'variolation' (creating immunity by deliberately infecting a patient with a mild case of smallpox). Variolation was the main defence against smallpox before the invention of vaccination and was practised with considerable success in China, Turkey and Britain but never really caught on in Japan. This anomaly allows Jannetta to engage in one of her major arguments: the extent to which the propagation and life-saving effects of new therapies are dependent on the infrastructure of a medical establishment that publishes journals and creates associations that spur their discussion and dissemination. Although such networks existed in Western Europe and America, they did not exist in Japan when variolation techniques were first introduced, and thwarted their adoption. The same situation applied when the first news of the vaccination technique reached Japan, but this was no longer the case when at last the vaccine safely arrived approximately 50 years later.

From cows to humans to Japan: a *cause célèbre*

Jannetta proceeds to document the process by which Edward Jenner invented his method of vaccination against smallpox through inoculation with cowpox virus in Britain in 1798. She provides a minute but absorbing account of how vaccination techniques and the highly fragile, heat- and humidity-susceptible cowpox vaccine reached far-flung corners of the globe, including the Philippines, Macao and Canton. The pre-requisite for such transmission was the existence of human networks, be they political, religious, commercial or personal; indeed, human contact was crucial to the vaccination process, as 'arm-to-arm' inoculation (the transference of cowpox lymph directly from a pock on the arm of the donor to a scratch on the recipient's arm) was the only reliable method of transmission. Jannetta reaches the inevitable conclusion that 'Places and people that were disconnected...were unable to claim the benefits of this diffusion of knowledge about Jenner's cowpox vaccine. The Japanese Islands were just such a place' (page 52).



The Great Buddha at Tōdaiji temple in Nara was erected to propitiate the gods after a smallpox epidemic in 737.



Hand of Sarah Nelmes (1798) by William Skelton (1763-1848). This coloured plate appears in the first edition of Edward Jenner's *An Inquiry into the Causes and Effects of Variolae Vaccinae* and depicts the cowpox pustules on the hand of dairy-maid Sarah Nelmes. Cowpox matter from these pustules was used to vaccinate the boy James Phipps in 1796.

And so the focus moves to Japan and its tenuous points of contact with the rest of the world. The pivotal setting is the Dutch Factory in Nagasaki, where strictly controlled official foreign trade was permitted with the Dutch. It was here that news of the Jennerian vaccination technique first entered Japan, conveyed by a warehouse master at the Dutch Factory to a young Japanese interpreter, Baba Sajurō, in 1803. However, written details of this technique didn't begin to circulate for almost 20 years, even though Baba had heard about vaccination techniques three separate times (and even after having refused a gift of cowpox scabs from a British commercial ship captain in 1818; accepting gifts from foreigners violated Japanese law). He finally completed his translation of a Russian vaccination tract in 1820.

By 1817, a solid state vaccination programme existed in the Dutch East Indies. Initiated by the Dutch, numerous attempts to transport viable cowpox virus from Batavia (today's Jakarta) to Japan failed, despite assistance by Japanese physicians well-acquainted through various circulating translated texts with cowpox inoculation. From 1823, Dutch Factory physician Philipp von Siebold (German court physician to William I of Holland, the 'Merchant King', who was intent on improving trade with Japan) established networks among his former students who made 'Jennerian vaccination their *cause célèbre* [sic]' (page 101). In 1849 viable cowpox virus was at last successfully imported to Nagasaki and three Japanese children were vaccinated. The narrative becomes a real nail-biter here, as only one vaccination 'took', leaving 'the entire supply of cowpox vaccine in Japan...contained in the pocks on the arm of Narabayashi Kensaburō' (page 133).

The roles of *ranpō*, the *daimyo*, the *bakufu* and the 'founding fathers'

Miraculously, vaccination spread rapidly and widely. The author focuses on the vital role played by the local *daimyo*, who led by example, allowing their own children to be vaccinated, and by *ranpō* physicians who had laid the groundwork by educating the *daimyo* about the benefits of vaccination and creating networks throughout Japan across social and domain

divides along which inoculation could rapidly spread. Consciousness of the need to convince more physicians and the general public was also clearly a major contributor to the successful dispersal of smallpox vaccination: within months of the first successful vaccination at Nagasaki, numerous publications about it were available to the medical profession, while fliers and woodblock prints convinced the general public of the procedure's merits.

Until this point, the propagation of vaccination had been a largely private endeavour, endorsed actively by domain lords but not the *bakufu*. Jannetta suggests possible reasons behind this detachment, and proposes her own convincing theory that the *bakufu* position was in fact not opposition but 'tacit approval' (page 158): a shrewd 'turn a blind eye' but also 'wait and see' strategy. Once it became clear that the risks were low, the *bakufu* was willing to engage in vaccination. By 1858, the *bakufu* had been persuaded to build a vaccination clinic in Kanda, Edo. A direct descendant of this clinic, the Otamagaiké Vaccination Clinic, was the Tokyo Imperial University Medical School. The Clinic's sponsors, including four of von Siebold's students and many younger generation physicians, are regarded as the 'founding fathers of modern medicine in Japan' (page 164).

In 1858 the *bakufu* opened the Western-style Nagasaki Medical School, followed three years later by a Western-style teaching hospital. In these institutions Japanese physicians could train and work openly with Dutch physicians for the first time. Several were descendants of the early vaccinators in Japan and became major figures in the new Meiji bureaucracy. Their policies ensured that from 1872 all infants were required by law to be vaccinated and that vaccinations were free, an unbelievably progressive public policy just four years after the fall of feudalism.

This thread provides one of the work's intriguing fairytale-like narratives: how the marginalised and at times persecuted *ranpō* doctors ended up in key positions at the very centre of the new Meiji government, formulating its public health and medical education policy. Expressed a different way, Jannetta shows how expertise in medicine, especially *ranpō*, attracted social opportunity and power, thus many of these individuals came from peasant or low-ranking samurai backgrounds.

Details, details... but in a good way

An impressive and formidable piece of scholarship, one of the book's great strengths is its extensive use of primary and contemporary sources written in several languages: Japanese, French, Dutch, German and Russian. It is meticulously footnoted and documented; Chinese characters in appendices are provided for all Japanese personal names and glossary terms (but not, inexplicably, for *tenntō*, "smallpox"). These details ensure that *The Vaccinators* will become a vital reference for researchers.

It is by no means an easy read: although exceedingly well written, the enormous amount of detail and proliferation of names at times is overwhelming. However, Jannetta has spun an intricate web of detail from an exceptionally strong structure, progressing ineluctably from periphery to centre, deftly steering and propelling the reader. Her details are rarely gratuitous: for example, the biographies of seven *ranpō* physicians who played a key role in introducing vaccination serve as cogent case studies of the expanding *ranpō* network in the early 19th century, so crucial to the vaccination's eventual success. And some of the detail is riveting: the *bakufu* purges of von Siebold's students in 1829, resulting in several executions, and again ten years later, ending in deaths or suicides, demonstrate that involvement in *ranpō* implied extreme risk. Jannetta's details support her central theme of the crucial role that institutions, networks and authority play in effective public health operations. And yet her central plot is utterly simple: the discovery of vaccination and its introduction to Japan.

This is a work of immense value to scholars and students of late Edo and early Meiji history, society and culture, the history of *rangaku* (Dutch studies) and *ranpō* (Dutch medicine) in Japan, the history of science and medicine, public health and epidemiology. Jannetta is to be congratulated on her prodigious achievement.

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1 King, Michael. 2003. *The Penguin History of New Zealand*. Auckland: Penguin Books, 275.