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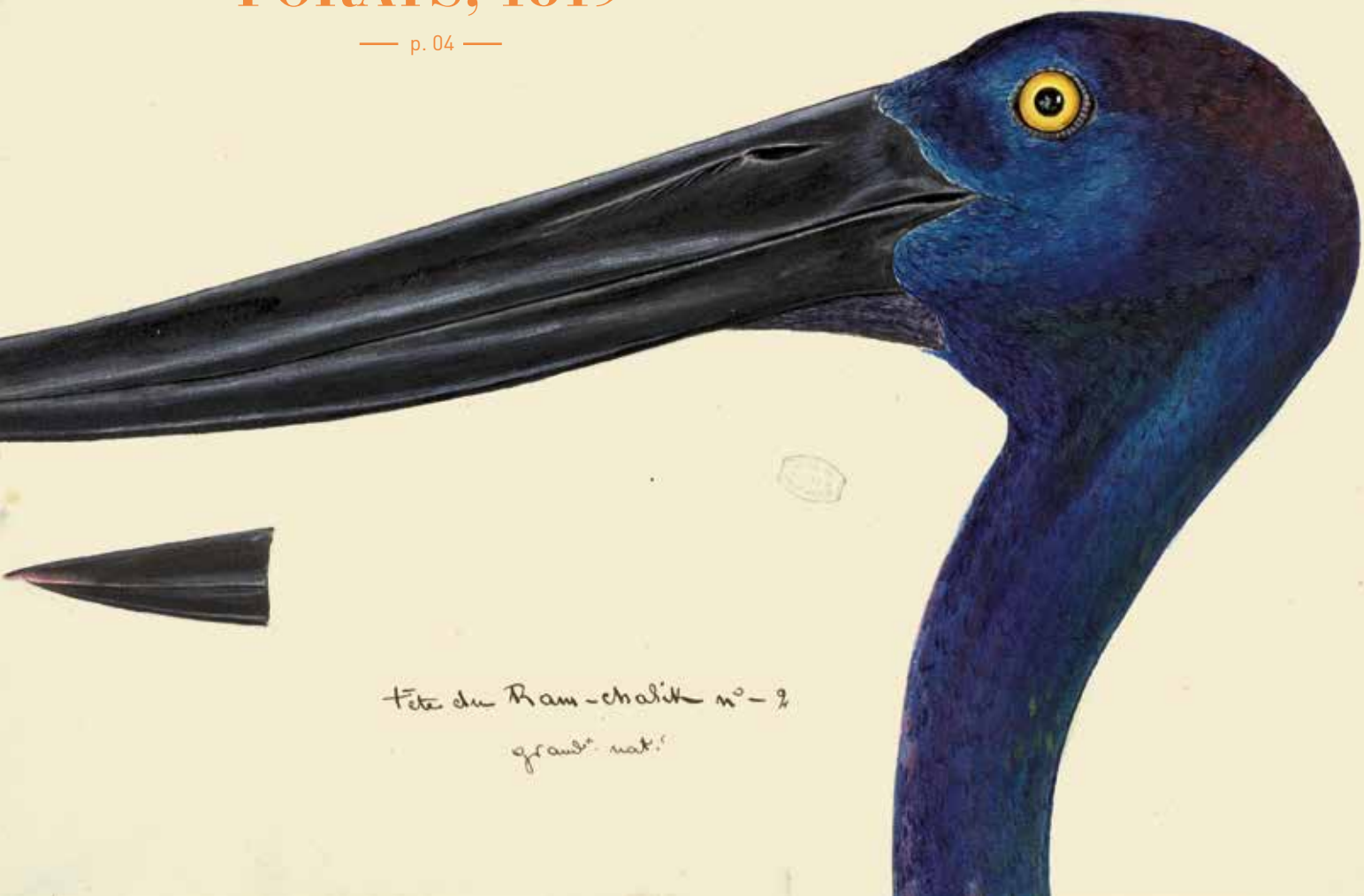
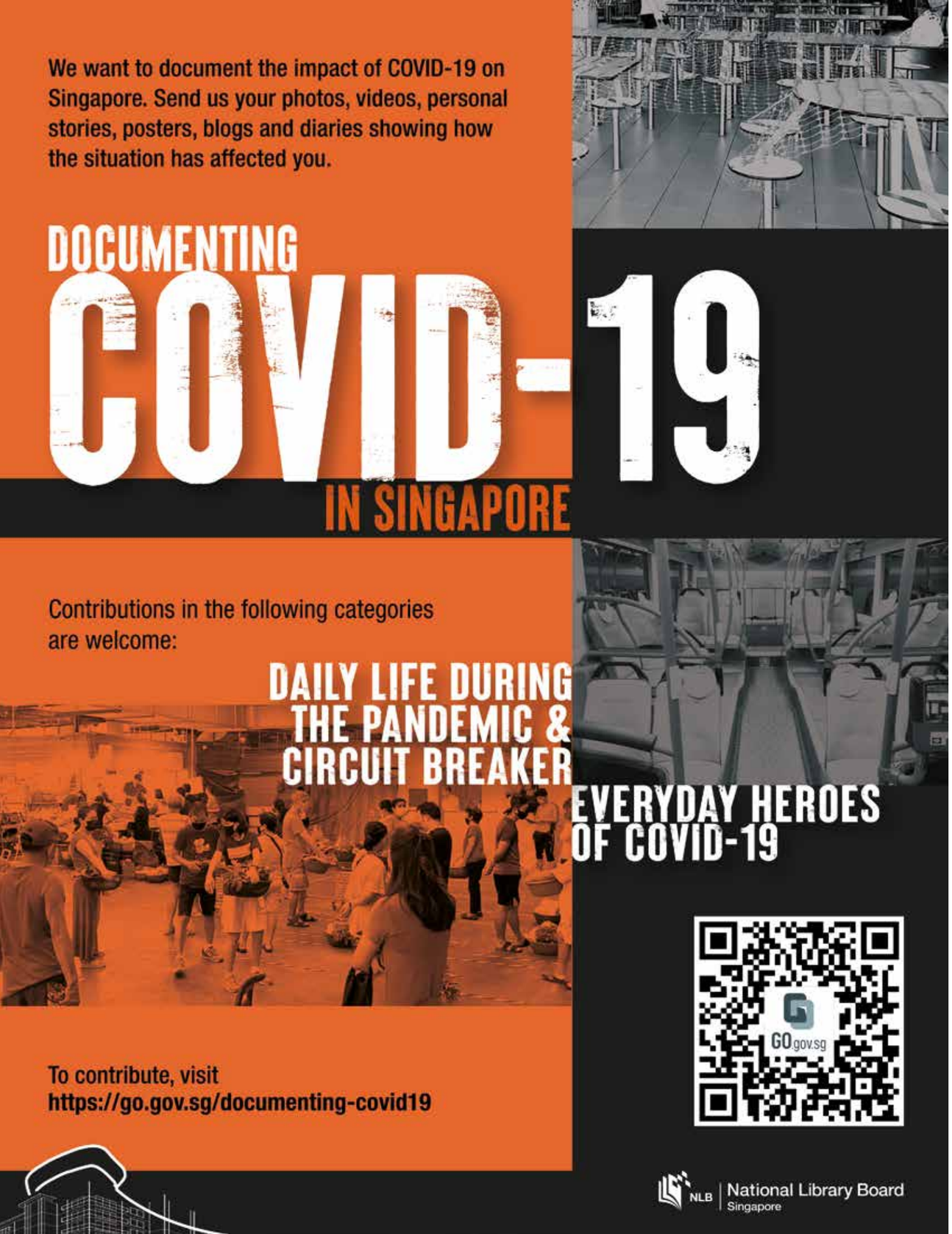
Vol. 16 Issue 02 JUL–SEP 2020

THE FRENCH NATURALISTS AND THEIR WILDLIFE FORAYS, 1819

— p. 04 —





Director's Note

During the "circuit breaker" period, a widely circulated video showed a family of otters scurrying around the suddenly quiet streets of urban Singapore. Elsewhere around the world, skies, seas and rivers cleared up because of widespread lockdowns. Some conservation groups have cautioned against thinking that the COVID-19 pandemic has given nature a break, pointing to mounting pressures to exploit nature further because of economic disruptions caused by the virus. Humans and nature – a very complex relationship.

In our first article, Danièle Weiler recounts the story of two French naturalists who were hired by Stamford Raffles to collect wildlife specimens in the region. These two young men accompanied Raffles when he arrived in Singapore in 1819. A year later, the first systematic recording of Singapore's rainfall and temperature was started by William Farquhar, as Lim Tin Seng notes. These stories remind us how scientific endeavours of the past were often associated with colonial, economic and military interests.

Appropriately for the times, we have two stories that deal with pandemics. Bonny Tan looks at how 19th-century Singapore responded to a series of cholera outbreaks, while Kevin Y.L. Tan tells us how the Penang-born doctor Wu Lien-Teh – despite being marginalised by colonial authorities at home – played an instrumental role during the Manchurian plague.

This issue is not only about disease and death. If you enjoy meeting up with friends over coffee, Vandana Aggarwal takes us back in time with her essay on G.H. Cafe. And while we wait for the reopening of cross-border travel between Singapore and Malaysia, you can read about the history of the Causeway. Also, don't miss Margaret Chan's deep dive into the world of the Chinese *tangki*. Her essay helped to put in context some of my childhood memories of seeing such rituals.

In part two of Gracie Lee's essay on the history of early printing in mainland Southeast Asia, she examines how modern printing technology came to Myanmar and Thailand. We then move from the printed word to the medium of photography with Janice Loo's tour of the National Library's PictureSG Collection.

We round up this issue with Derek Heng's essay on a character of great importance to the story of Singapura – Sang Nila Utama – through the lens of different versions of the royal Malay text *Sulalat al-Salatin* (better known as the *Sejarah Melayu*).

Finally, I would like to announce that we've migrated the online version of *BiblioAsia* to a new platform. Do check out our new look and please let us know what you think by taking part in the survey. Go to biblioasia.nlb.gov.sg or use the QR code below.

Happy reading and take care.

Tan Huism
Director
National Library

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On the cover

Close-up of the black-necked stork, or *Ephippiorhynchus asiaticus* (Latham, 1790) – a resident species of Southeast Asia and the Indian Subcontinent. Shown here is the adult female with its yellow iris (the adult male has a brown iris). Image reproduced from *Figures peintes d'oiseaux [et de reptiles], envoyées de l'Inde par Duvaucel et Diard (Painted depictions of birds [and reptiles], sent from India by Duvaucel and Diard). Courtesy of the Muséum National d'Histoire Naturelle in Paris.* Digitised and available on National Library's BookSG portal from August 2020.

BiblioAsia is a free quarterly publication produced by the National Library Board. It features articles on the history, culture and heritage of Singapore within the larger Asian context, and has a strong focus on the collections and services of the National Library. *BiblioAsia* is distributed to local and international libraries, academic institutions, government ministries and agencies, as well as members of the public. The online edition can be accessed with the QR code on the right.

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ISSN 0219-8126 (print)
ISSN 1793-9968 (online)

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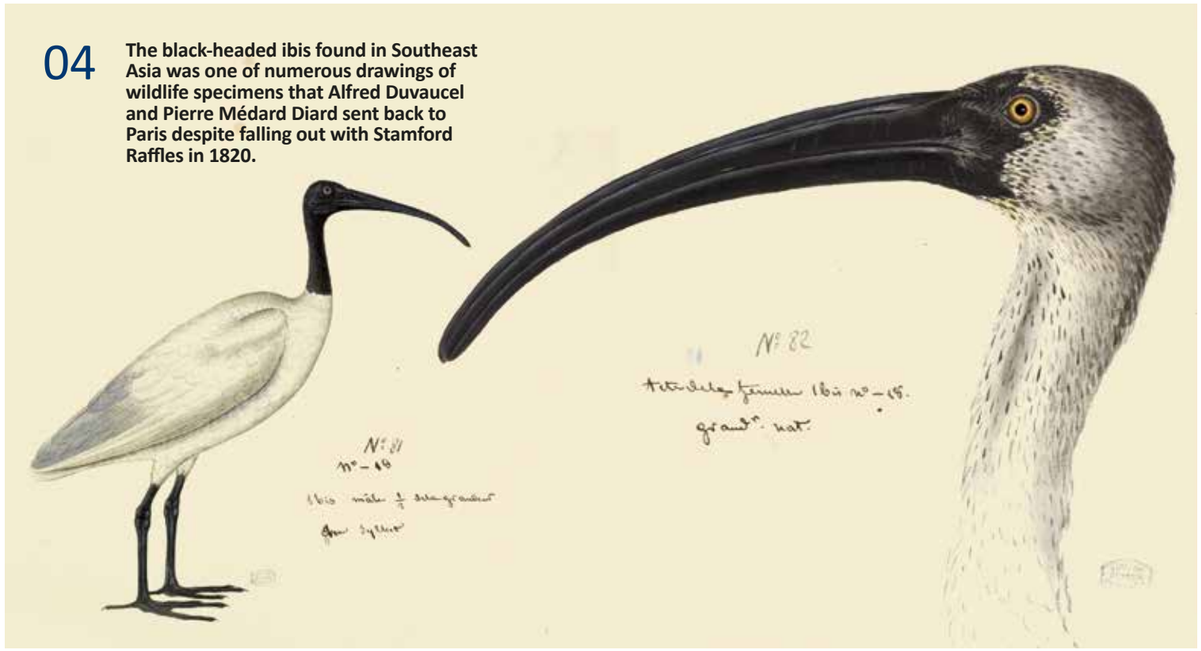
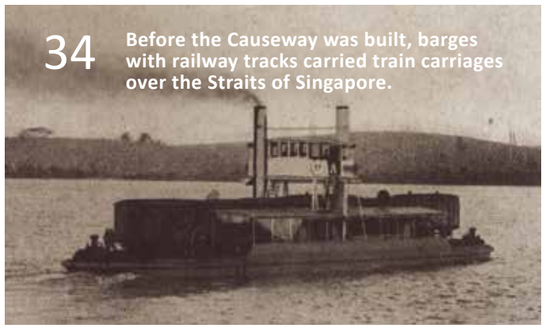
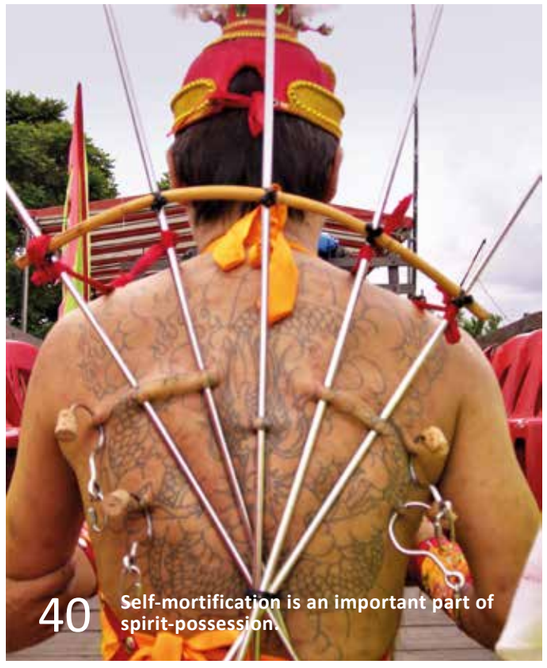






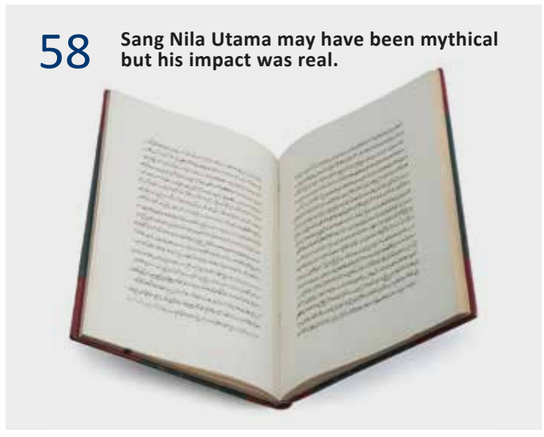
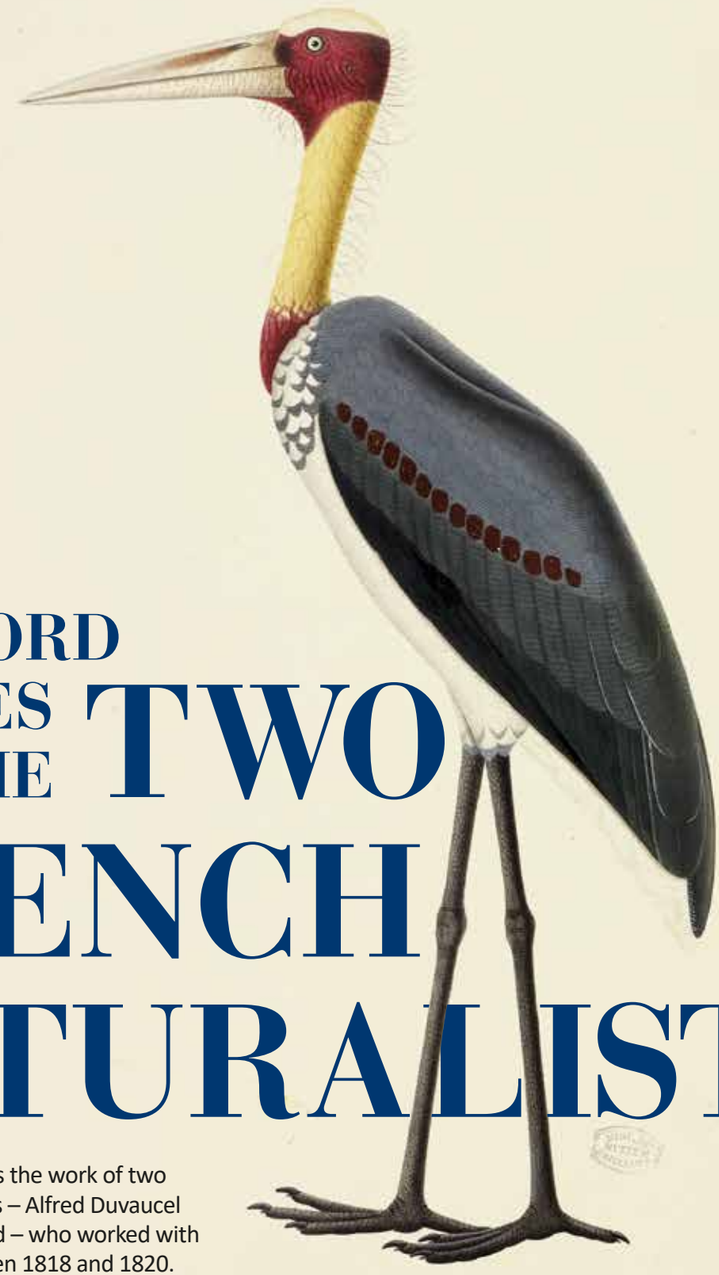


Image credits, clockwise from top left: Muséum National d'Histoire Naturelle, Paris; PictureSG, National Library, Singapore; Royal Asiatic Society of Great Britain and Ireland, United Kingdom; Victor Yue; National Archives of Malaysia; PictureSG, National Library, Singapore.



STAMFORD RAFFLES AND THE TWO FRENCH NATURALISTS

Danièle Weiler uncovers the work of two young French naturalists – Alfred Duvaucel and Pierre Médard Diard – who worked with Stamford Raffles between 1818 and 1820.

Danièle Weiler contributed a chapter to the book, *Voyageurs, Explorateurs Et Scientifiques: The French and Natural History in Singapore* (2019). She is also the co-author of *The French in Singapore: An Illustrated History, 1819–Today* (2011). A retired teacher and librarian now back in France, she lived in Singapore for 15 years where she worked at the Lycee Francais de Singapour.

Stamford Raffles is probably best known as the East India Company (EIC) official who set up a trading post in Singapore that became part of the British Empire. However, a lesser-known fact about Raffles is that he was fascinated by the natural world. As a colonial administrator in Southeast Asia, he hired zoologists, botanists and naturalists to collect specimens and conduct research on his behalf.

Among the people Raffles hired were two young French naturalists – Alfred Duvaucel and Pierre Médard Diard. Interestingly, they were also on board the *Indiana* in January 1819 when Raffles and William Farquhar made landfall in Singapore and met Temenggung Abdul Rahman. Raffles went on to sign an interim agreement with the Temenggung before inking a treaty with Sultan Husain Shah and the Temenggung on 6 February, allowing the EIC to set up a trading post on the island.

As the two men were with Raffles at the time, they offer a unique account of the meeting between Raffles and the Malay court officials in Singapore:

> "On reaching the harbour, the governor received the visit of three of the king's aides-de-camp. These officers were not like our young men – tight-lipped, musk-scented and richly dressed – their black heads were shaven and covered with a dark-coloured turban; a large waistcoat hid their oiled, burnt, peeling and stooped backs. On their left side they carried a large *kris* or dagger and were bare-legged. These three Malays seemed delighted to see us, as if we had come for their benefit. The English were trying to find out what advantage might be gained by taking possession of their island; we, who were less concerned about this, questioned them about the animals that lived there. Who do you think these poor people listened to most willingly? They respond eagerly to the demands of their allies, and shrugged their shoulders listening to ours."[1]

Diard and Duvaucel would have better luck later on, amassing a large collection of specimens, both while travelling with Raffles, as well as around Bencoolen (now Bengkulu) where Raffles was the Lieutenant-Governor at the time.

Unfortunately for the duo, their association with Raffles only lasted until March 1820 when their services were terminated. To make things worse, there was a dispute over how the collection would be divided and the two Frenchmen ended up losing a significant part of it. Undaunted, and perhaps not entirely legally, they managed to retrieve more specimens than they were entitled to before parting company with Raffles.

Diard and Duvaucel

Born in Paris in 1793, Alfred Duvaucel was the stepson of Georges Cuvier,[2] a naturalist and zoologist sometimes known as the founding father of palaeontology. After a brief stint in the army, Duvaucel decided to become a naturalist and in December 1817, he sailed to India, bearing the title of Naturalist to King Louis XVIII of France. He arrived in Calcutta (now Kolkata) at the end of May 1818.

In Calcutta, Duvaucel met up with his friend Diard, who had arrived in the city a few months before. Diard, a year younger than Duvaucel, was interested in science and had studied medicine. In France, Diard had became acquainted with both Cuvier and his stepson Duvaucel. Diard had always been fascinated by the Far East and in 1817, he seized the opportunity to travel to India to settle inheritance matters on behalf of a family. He left Bordeaux on 20 August and arrived in Calcutta on 5 January 1818.

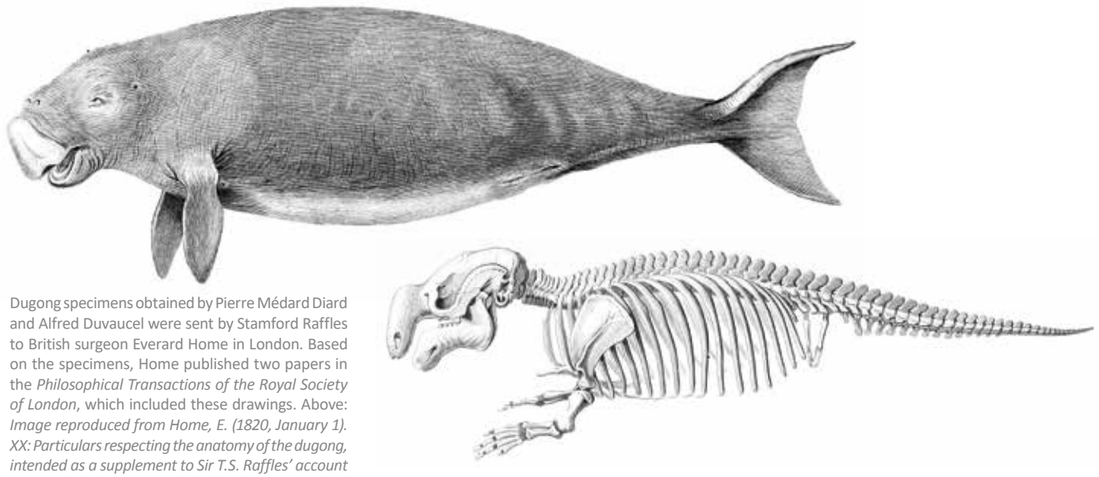
Both men got along well. In a letter to his mother, Duvaucel wrote: "(O)f all the pleasures I have experienced here, the most pleasant is to have met poor old Diard, whom I have embraced as a brother, and who is as constantly by my side as my own shadow, and with whom I am determined to live and work for two or three years."[3]

The pair, who were in their mid-20s, soon left Calcutta for the French trading post of Chandernagor (now Chandannagar), about 50 km north. There, they began collecting animals to be stuffed or drawn. They frequently sent animal skeletons, drawings and mineralogical specimens back to the Muséum National d'Histoire Naturelle (National Musuem of Natural History) in Paris where Cuvier, Duvaucel's stepfather, was assistant professor to the Chair of Animal Anatomy.

(Facing page) The lesser adjutant stork, or *Leptoptilos javanicus* (Horsfield, 1821), is a large wading bird found in wetland habitats in India and Southeast Asia. *Image reproduced from Figures peintes d'oiseaux [et de reptiles], envoyées de l'Inde par Duvaucel et Diard (Painted depictions of birds [and reptiles], sent from India by Duvaucel and Diard). Courtesy of the Muséum National d'Histoire Naturelle in Paris. Digitised and available on National Library's BookSG portal from August 2020.*

(Right) Pierre MédardDiard in the uniform of the Garde d'Honneur, which would date this portrait to between 1813 and 1814. He was around 19 years old at the time. Note: no image of Alfred Duvaucel appears to exist. *Image reproduced from Peysonnaux, J.H. (1935). Vie voyages et travaux de Pierre Médard Diard. Naturaliste Français aux Indes Orientales (1794–1863). Voyage dans l'Indochine (1821–1824) (plate 2). Bulletin des amis du vieux Hué.*

(Far right) The great French anatomist and zoologist George Cuvier, also known as Jean Léopold Nicolas Frédéric, Baron Cuvier (1769–1832). Line engraving by A.J. Chollet after Lizinka de Mirbel and Giraud. Cuvier was also the stepfather of Alfred Duvaucel. *Image from Wellcome Collection. Attribution 4.0 International (CC BY 4.0).*



Dugong specimens obtained by Pierre Médard Diard and Alfred Duvaucel were sent by Stamford Raffles to British surgeon Everard Home in London. Based on the specimens, Home published two papers in the *Philosophical Transactions of the Royal Society of London*, which included these drawings. Above: *Image reproduced from Home, E. (1820, January 1). XX: Particulars respecting the anatomy of the dugong, intended as a supplement to Sir T.S. Raffles' account of that animal. Philosophical Transactions of the Royal Society of London, vol. 110, pp. 315–323.* Right: *Image reproduced from Home, E. (1821, January 1). XVII: An account of the skeletons of the dugong, two-horned rhinoceros, and tapir of Sumatra, sent to England by Sir Thomas Stamford Raffles, Governor of Bencoolen. Philosophical Transactions of the Royal Society of London, vol. 111, pp. 268–275. Retrieved from The Royal Society Publishing website.*

Diard and Duvaucel came to Raffles' notice when he visited Calcutta – the EIC's Asian headquarters – in late 1818. Raffles persuaded the two Frenchmen to collect specimens for him at his base in Bencoolen.[4] In turn, the EIC would pay them an allowance to help defray expenses. Raffles also agreed that the collections and findings of the research would be shared equally among the three of them.[5]

Although there was no written agreement, Diard and Duvaucel accepted Raffles' offer. They were short of funds and realised that they would not be able to continue working on their own for much longer. They trusted Raffles, who appeared to benefit from unlimited funds from the EIC. The only condition stipulated by the two Frenchmen, which Raffles agreed to, was that they could freely dispose of duplicate specimens and publish their observations in Calcutta, France or England as they chose.

To Penang, Singapore and Melaka

Accompanied by Diard and Duvaucel, Raffles and his entourage left Calcutta for Penang on 7 December 1818. The journey began well and even before reaching Penang, Diard and Duvaucel managed to capture a dugong, which they sketched, dissected and described. (Their notes and drawings were later published in 1824.[6])

The group eventually arrived in Penang on 29 December 1818,[7] and Diard and Duvaucel spent a few days on the island where they collected, among other animals, two species of fish and some rare birds.

On 19 January 1819, Raffles sailed from Penang on the *Indiana*, accompanied by the schooner *Enterprise*. After failing to land in Carimon (the Karimun Islands), they headed for Singapore and anchored off St John's Island in the morning of 28 January 1819. That afternoon, Raffles and his entourage landed at the mouth of the Singapore River where Raffles met Temenggung Abdul Rahman. And that is how the two French naturalists ended up witnessing the fateful meeting that would lead to a major shift in Singapore's history.

After the treaty was signed on 6 February 1819, Raffles left Singapore with the two naturalists and some of his men leaving William Farquhar behind to manage the new settlement as its Resident. For the next five months, Raffles turned his attention to other matters in the region before returning to Bencoolen. One of the tasks he had been assigned by the EIC in Calcutta was to resolve a dynastic dispute in Aceh.

Diard and Duvaucel accompanied Raffles to the northern tip of Sumatra where the naturalists attempted to collect specimens from the area. This, however, did not go so well as Duvaucel's letter to the French Academy of Sciences, which Cuvier was a member of, reveals:

> "We stayed more than a month in this frightful country, without being able to penetrate the interior, nor procure most of the objects we had expected to collect there. The bad reputation of these people is justified every day by their conduct towards the Europeans, and Mr. Diard, convinced that the savages are only bad when they are mistreated, almost fell victim to this sense of false security which I have been fighting against for a long time: surrounded by two hundred Malays, with three of our servants he was able, it is true, to escape without injury, but he lost the fruit of his hunt, his weapons, and our luggage... Our stay at Achem, Padie, Tulosimawe has not greatly enriched our collections; a few plants, a few insects, a few birds, two or three snakes, four or five fish, and two deer are the only results of this arduous journey."[8]

Diard and Duvaucel did manage to visit Melaka, then under the Dutch, where they had better luck than they did in Aceh. In his correspondence with the French Academy of Sciences, again Duvaucel wrote:

> "No sooner had we arrived in Melaka than the whole city was at our door: all we have ever traded in here is opium and pepper and they could not guess what we wanted to do with the monkeys and birds we buy; in two hours we were able to acquire a bear, an Argus Pheasant and some other birds. The Dutch Governor has a young Orang-utang, and I shall leave you now to pay him a not disinterested visit."[9]

While Diard and Duvaucel were arguably the first European naturalists to visit Singapore, the island does not appear to figure highly as a location for collecting specimens. Singapore, however, is mentioned as a place where they captured and named the common treeshrew. In a paper published in 1822, they described the squirrel-like mammal as follows:

> "During our stay in Pulo Penang and Singapore, on several occasions we killed a small quadruped in the woods which we took at first for a Squirrel but our examination of it soon led us to recognise that it belonged to the Insectivora family... it perfectly resembled a species of small squirrel that we meet at every step of the way in the woods of Singapore... we gave it the name Sorex Glis, which gives at one and the same time an idea of its outer appearance and true nature."[10]

Eventually, Raffles completed the work he needed to do and on 28 June 1819, Diard and Duvaucel sailed with Raffles from Singapore for west Sumatra, arriving in Bencoolen about a month later. During the six months that they were with Raffles, their difficulties in Aceh notwithstanding, they had managed to amass a large collection of animals that filled half the ship.

The Fallout with Raffles

In Bencoolen, Diard and Duvaucel settled in Raffles' country house and began their work hunting and collecting animals to study. However, this happy state was not to last as Raffles informed them that the EIC was going to stop paying them.

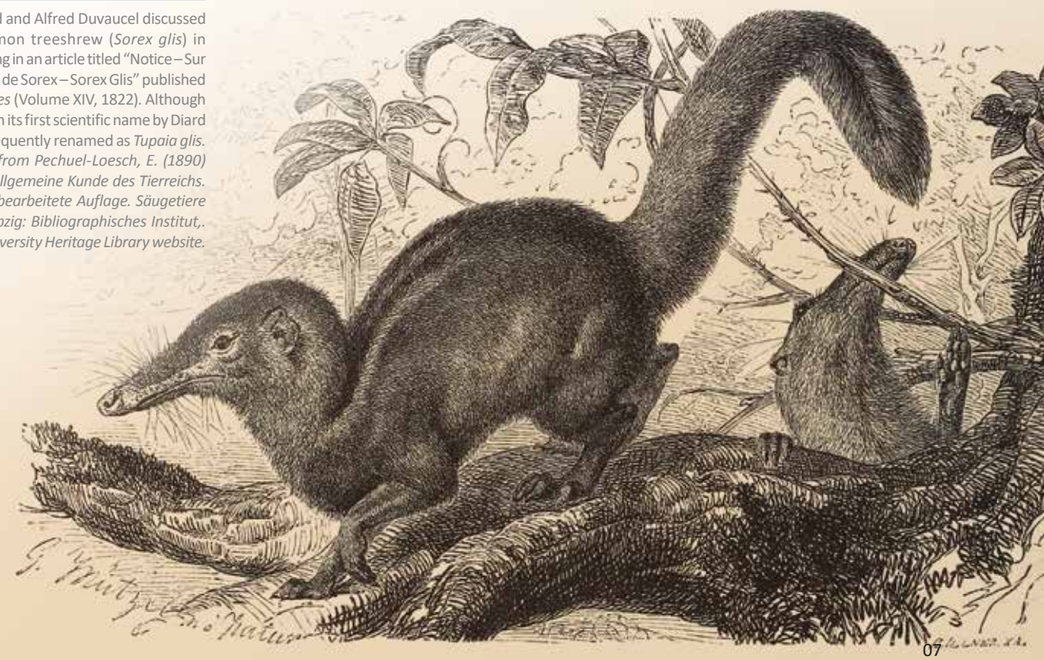
This was actually the second major blow that Raffles delivered to the two naturalists. The first was when Raffles reneged on his verbal agreement made in December 1818 that the collection and the research findings would be equally shared among the three of them. On 7 March 1819, Raffles wrote to the Frenchmen, informing them that they would not actually own anything they had collected. His letter read:

> "Your researches to be confined to Sumatra and the smaller Islands in its immediate vicinity. The draftsmen, &c. engaged by you to be entertained at the charge of Government, who will also defray all incidental and necessary expenses to which you may be subjected in the prosecution of your researches, on condition that such researches are made for and on account of the Honourable The East India Company, and that your collections &c. are considered as their property. An estimate to be framed of your monthly expenses for such establishment, &c. in which a fixed sum will be paid to you to cover all charges of every description... With reference to your present establishment, and the expenses you must necessarily be subjected to, a fixed monthly allowance of five hundred ducats is considered adequate to cover all your disbursements..."[11]

Losing the financial support of the EIC would be disastrous for them. In an effort to salvage the situation, Diard and Duvaucel exchanged a number of letters with Raffles in March 1820 attempting to present alternative proposals, but it was in vain. In a letter dated 15 March 1820, Raffles announced that he would terminate their services. That same day, he appointed a committee to seize the entire collection of objects, along with the descriptions, observations and drawings, from the two naturalists.

Raffles ordered that one of each item was to be sent to him, with the duplicate placed on the *Mary* to be shipped back to Europe and any surplus stored at Government House in Bencoolen. The committee was also instructed to compile a catalogue of all items. At the same time, Raffles informed Diard and Duvaucel of the new arrangement and requested that they provide assistance to the committee.[12]

In a subsequent about-turn, Raffles agreed that Diard and Duvaucel could keep some specimens provided there were



Pierre Médard Diard and Alfred Duvaucel discussed catching the common treeshrew (*Sorex glis*) in Singapore and Penang in an article titled "Notice – Sur une nouvelle espèce de Sorex – Sorex Glis" published in *Asiatick Researches* (Volume XIV, 1822). Although the species was given its first scientific name by Diard in 1820, it was subsequently renamed as *Tupaia glis*. *Image reproduced from Pechuel-Loesch, E. (1890) Brehms Tierleben. Allgemeine Kunde des Tierreichs. Dritte, gänzlich neubearbeitete Auflage. Säugetiere – Zweiter Band. Leipzig: Bibliographisches Institut,. Retrieved from Biodiversity Heritage Library website.*

spares available. This was on condition that the specimens taken did not arrive in France before those sent to England were received and noticed.[13]

Diard and Duvaucel felt that this was still not good enough. On account of their good relations with the English in Bencoolen, the two naturalists managed to secretly obtain additional specimens which they hid in their luggage, replacing the contents of some crates with rags.[14] The specimens arrived safely in France and were received by the Muséum National d'Histoire Naturelle, some of which are on display at the institution today.

Around the same time that Raffles sent the collection to England on board the *Mary*, he also compiled a *Descriptive Catalogue*, which was published in volume XIII of *The Transactions of the Linnean Society of London* (1821–23).[15] This established Raffles' reputation as a zoologist when in fact the *Descriptive Catalogue* was mainly the work of his secretary, William Jack.[16]

Interestingly, in the introduction to this catalogue, Raffles briefly explains the situation that arose between him and Diard and Duvaucel. He wrote:

> "They advanced pretensions diametrically opposed to the spirit and letter of their engagement and altogether inconsistent with what I had a right to expect from them, or they from me. Thus situated, I had no alternative but to undertake an immediate description of the collection myself, or to allow the result of all my endeavours and exertions to be carried to a foreign country."[17]

That said, Raffles did have kind words for the pair: "They are young men not deficient in zeal, and though misled for the moment by private and national views, will, I doubt not, profit by the means I have afforded them, and eventually contribute to our further knowledge of the zoology of these islands."[18]

An Amicable Parting

Once the collections had been sent to England and France, Diard and Duvaucel asked Raffles if they could sail to Batavia (now Jakarta) on the *Indiana*. Raffles agreed on condition that they provide the aforementioned committee with all the remaining specimens, drawings and descriptions still in their possession.[19]

Before Diard and Duvaucel left Bencoolen, Raffles penned a final letter to the naturalists on 22 March 1820. He wrote:

> "No man can appreciate more highly than myself the zeal and personal exertion which you have displayed in making these collections and researches, I am sincerely desirous of securing to you the full measure of credit due to them, and I think you must be satisfied that it is always been my wish to contribute to the extension of science… I conclude with expressing my regret at the necessary close of our public relation, but at the same time my satisfaction at its being about to terminate in an amicable adjustment."[20]

Diard and Duvaucel were equally effusive in their reply. They wrote in French:

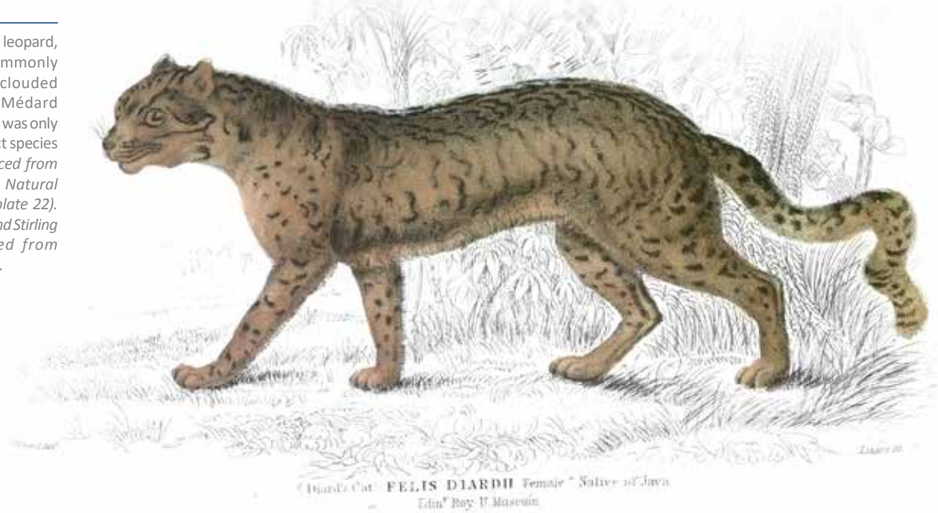
> "Although it has been painful for us to engage with you in a public dispute, we have been pleased to receive the recompense of receiving your assurance that this opposition on our part has not affected the esteem in which we hold you. We are eager therefore to express how grateful we are at this fresh proof of your benevolence.
>
> "We are more than pleased, Sir, to see that you have been able to appreciate the motives for our conduct, so that henceforth we may have no other desire than to conform to the views you have expressed. We beg you therefore, to be persuaded that we gladly agree to your proposals and that nothing could be more satisfactory to us before we leave Bencoolen than to prove to you our perfect confidence in your amicable intentions."[21]

After bidding Raffles farewell, the two naturalists wanted to make good their losses and immediately set to work again. The pair agreed to go their separate ways this time but to meet up at some point in future. Unfortunately, they never met again.

Duvaucel left on 1 April 1820 for Padang where he amassed 14 cases of stuffed animals and skeletons, including the skeleton and skin of a Sumatran tapir, the skeletons and skins of four rhinoceroses of two recognisably distinct species, a large number of monkeys (some still alive), reptiles and two kinds of deer.

In 1821, Duvaucel decided to turn his attention to collecting animals in South Asia. While in India, he became severely injured after being attacked by a rhinoceros while on a hunt. Although Duvaucel survived the initial attack, he died about a year later in 1824. Accounts at the time pointed to either fever or dysentery as the cause of his death.

Georges Cuvier named a leopard, the *Neofelis diardi*, commonly known as the Sunda clouded leopard, after Pierre Médard Diard in 1823. The animal was only confirmed to be a distinct species in 2007. *Image reproduced from Jardine, W. (1834). The Natural History of the Felinae (plate 22). Edinburgh: W.H. Lizars, and Stirling and Kenney. Retrieved from Internet Archive website.*

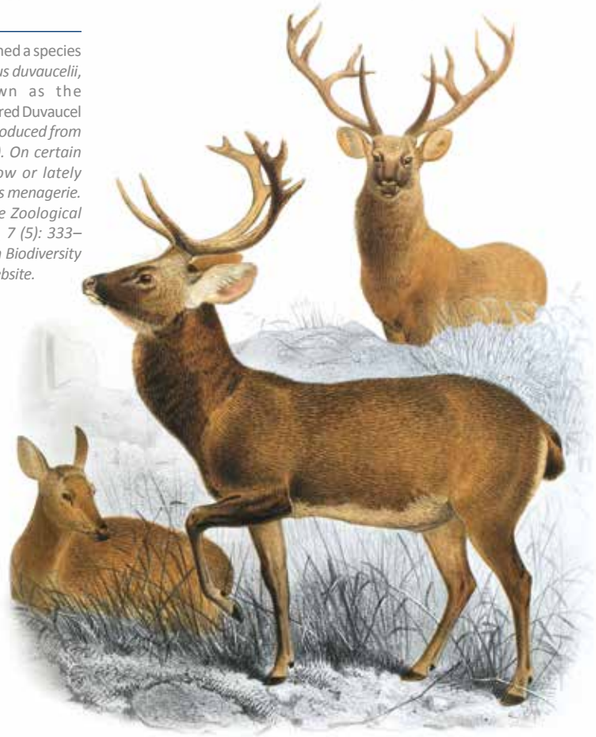


Diard, on the other hand, stayed on in the Dutch East Indies (modern-day Indonesia) and lived in the region until his death in 1863. In addition to collecting animals, Diard also worked for the Dutch colonial government. He died from arsenic poisoning caused by the chemical used in the preservation of animal skins when he was assembling a new collection for a museum in Leiden in the Netherlands.

Raffles' view that the two men would "eventually contribute to our further knowledge of the zoology of these islands" turned out to be prescient. Diard and Duvaucel managed to send some 2,000 items, comprising stuffed animals, skins and skeletons from the region back to the Muséum National d'Histoire Naturelle in Paris. They also sent back numerous drawings of animals and plants that they had commissioned.

Their memory also lives on in a number of animals named after them. These include a species of deer, *Cervus duvaucelii* (first described by Georges Cuvier); a bird, the scarlet-rumped trogon *Harpactes duvaucelii*; a bat, *Pachysoma duvaucelii*; the Indian squid, *Loligo duvaucelii*; the Sunda clouded leopard, *Neofelis diardi* (also first described by Cuvier); a snake, *Typhlops diardii*; and *Rattus diardii*, a kind of rat. ♦

Georges Cuvier named a species of deer, the *Rucervus duvaucelii*, commonly known as the barasingha, after Alfred Duvaucel in 1823. *Image reproduced from Sclater, P. L. (1871). On certain species of deer now or lately living in the society's menagerie. Transactions of the Zoological Society of London, 7 (5): 333–352. Retrieved from Biodiversity Heritage Library website.*



This essay is adapted from Danièle Weiler's chapter on Diard and Duvaucel in *Voyageurs, Explorateurs Et Scientifiques: The French and Natural History in Singapore* (2019) published by the Lee Kong Chian Natural History Museum.

The book can be reserved for on-site reference at the Lee Kong Chian Reference Library, National Library Building, on the PublicationSG portal.

Close to 120 drawings of animals and plants commissioned by the two French naturalists have been compiled in *Figures peintes d'oiseaux [et de reptiles], envoyées de l'Inde par Duvaucel et Diard (Painted depictions of birds [and reptiles], sent from India by Duvaucel and Diard)*. The digitised drawings were provided by the Muséum National d'Histoire Naturelle in Paris and will be available on the National Library's BookSG portal in August 2020.

NOTES

1 Notice sur les voyages de MM. Diard et Duvaucel, naturalistes français, dans les Indes orientales et dans les iles de la Sonde, extraite de leur correspondance et lue à l'Académie des sciences le 14 mai 1821 par M. le baron George Cuvier, membre de l'institut. *Revue Encyclopédique, ou analyse raisonnée des productions les plus remarquables dans la littérature, les sciences et les arts, par une réunion de Membres de l'Institut et d'autres hommes de lettres*. Tome X. Paris, Avril 1821 (p .478); Société Asiatique. (1824, Mars–Avril). Notice sur le voyage de M. Duvaucel. *Journal Asiatique*, IV, pp. 137–145. (Not available in NLB holdings)

2 Jean Léopold Nicolas Frédéric, Buron Cuvier (1769–1832) was a major figure in natural sciences research in the early 19th century. He established the sciences of palaeontology and comparative anatomy. See Encyclopaedia Britannica. (2020, May 9). *Georges Cuvier.* Retrieved from Britannica website.

3 Coulmann, J.-J. (1973) *Réminiscences* (Tome 1, p. 146). Genève Slatkine Reprints. (Not available in NLB holdings)

4 Bastin, J.S. (2014). *Raffles and Hastings: Private exchanges behind the founding of Singapore* (p. 195). Singapore: National Library Board and Marshall Cavendish Editions. (Call no.: RSING 959.5703 BAS-[HIS])

5 Cuvier, 14 May 1821, p. 478.

6 Geoffroy Saint-Hilaire, E., & Cuvier, F. (1824). *Histoire naturelle des mammifères: Avec des figures originales, coloriees, dessinees d'apres des animaux vivans*. A Paris: Chez A. Belin. Retrieved from Biodiversity Heritage Library website.

7 Bastin, 2014, p. 29.

8 Cuvier, 14 May 1821, p. 478.

9 Cuvier, 14 May 1821, p. 479.

10 Diard, P.M., & Duvaucel, A. (1822). On the Sorex Glis. *Asiatick Researches or Transactions of the Society, Instituted in Bengal for Inquiring into the History and Antiquities, the Arts, Sciences and Literature of Asia*, vol. XIV, pp. 471–475. Retrieved from Biodiversity Heritage Library website.

11 Raffles, S. (1830). *Memoir of the life and public services of Sir Stamford Raffles: Particularly in the government of Java 1811–1816, and of Bencoolen and its dependencies, 1817–1824: With details of the commerce and resource of the eastern archipelago, and selections from his correspondence* (p. 703). London: J. Murray. Retrieved from BookSG.

12 Raffles, 1830, pp. 711–716.

13 Raffles, 1830, pp. 718–719.

14 Peysonnaux, J.H. (1935). Vie voyages et travaux de Pierre Médard Diard. Naturaliste Français aux Indes Orientales (1794–1863). Voyage dans l'Indochine (1821–1824) (p. 21). *Bulletin des amis du vieux Hué*. (Not available in NLB holdings)

15 Raffles, T.S. (1821–1823). Descriptive catalogue of a zoological collection, made on account of the honorable East India Company, in the island of Sumatra and its vicinity, under the direction of Sir Thomas Stamford Raffles, Lieutenant-Governor of Fort Marlborough, with additional notices illustrative of the natural history of those countries. *The Transactions of the Linnean Society of London*, volume XIII, pp. 239–74, 277–340. Retrieved from Biodiversity Heritage Library website.

16 Bastin, 2014, p. 194.

17 Raffles, 1821–1823, p. 240.

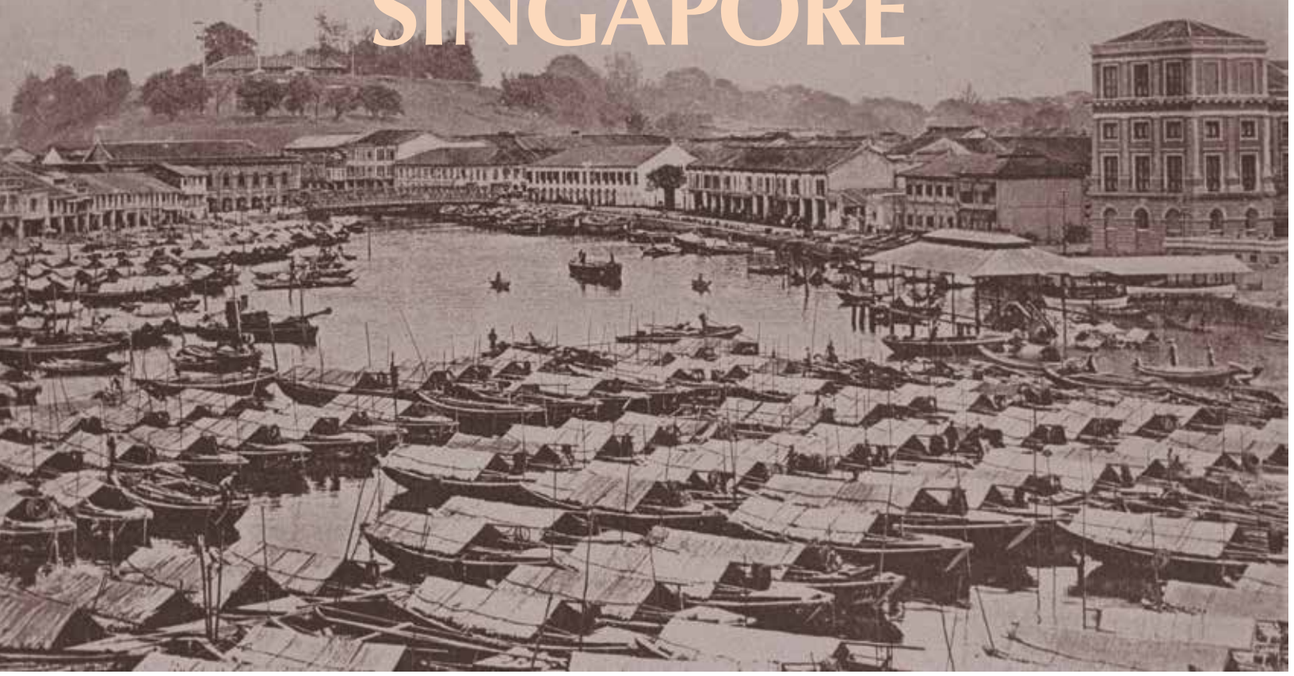
18 Raffles, 1821–1823, p. 240.

19 Raffles, 1830, pp. 720–721.

20 Raffles, 1830, pp. 721–722.

21 Raffles, 1830, pp. 722–723.

CHOLERA IN 19TH-CENTURY SINGAPORE



The colony experienced its first cholera outbreak in 1841, and several epidemics in the decades thereafter. **Bonny Tan** examines how the battle against this deadly illness was won.

At the beginning of the 19th century, a mysterious disease circled the globe, eventually killing millions in its wake. Although the cause was unknown, its outcome was severe; within hours of vomiting and diarrhoea, a healthy person would be sickened, along with those who had been in close contact with the infected.

Endemic to India's Ganges Basin, the first recorded pandemic of this ailment called cholera began in 1817. Before long, it spread like wildfire throughout Asia, giving it the nickname – the Asiatic Cholera. Riding on the backs of colonialism and the increased trade ties that spanned the oceans, the pestilence travelled beyond Asia to Europe and the Americas. To date, the world has experienced at least seven known cholera pandemics.

Singapore, with its strategic location along major trade routes, was not spared. When the scourge afflicted the island in the 1840s, the British colonial authorities responded by improving the settlement's healthcare, waterworks and sanitation. Although occurring more than a century ago – the unending waves of cholera, the subsequent cures and medicines, and the unfolding of scientific understanding and control of the disease, has resonance with the Covid-19 pandemic that Singapore is experiencing today.

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The First Outbreaks in Singapore

The disease first reached the Malay Peninsula with "explosive suddenness" in Penang in October 1819, just nine months after the founding of Singapore. Anticipating its spread southwards, cholera medication was quickly dispatched to the colony and the new settlement was spared.

The next two decades were uneventful until Singapore's first cholera outbreak in April 1841, affecting especially the "Native and Portuguese" people living in Telok Ayer.[1] The disease was probably introduced to the island through the Anglo-Indian trade routes as well as British troops travelling en route to China to fight in the First Opium War (1839–42). Thereafter, cholera took firm root in Singapore, rearing its ugly head periodically.

At the time, Singapore was ill-equipped to handle the cholera outbreak because of a lack of proper medical care and insufficient hospital beds. As a result, in May 1841, the cholera-stricken seamen on the battleship *H.M.S. Pelorus* were not allowed to disembark on the island. Responding to the situation, the colonial government set up the European Seamen's Hospital in November 1842,[2] a predecessor of the Singapore General Hospital.

In 1851, Singapore faced its second cholera outbreak. This time around, the impact on the community was so severe that it quickly escalated into an epidemic. Lasting between January and May 1851, the epidemic gravely affected the population in Kampong Glam. By 25 April, an estimated 220 people had died, of whom 107 were Malays and 95 Chinese, although some reports suggest that the death toll reached as high as 400 at one point.[3] The severity of this epidemic led to calls for proper waterworks and drainage to clear sewage among the coolie community quarters where the largest number of deaths occurred.

Although there were no other major outbreaks in Singapore in the 1860s, an epidemic that took place in Mecca in 1865 was traced to the colony. That episode killed 15,000 out of the approximately 90,000 pilgrims in Mecca and was linked to British ships originating from Singapore with Javanese pilgrims on their way to the *haj*.[4]

Singapore's next cholera epidemic occurred in 1873, this time crossing over from Bangkok via the *S.S. Chow Phya* on 2 July. In just three months, 448 of the 857 known cases died, chalking up an alarming mortality rate of over 50 percent.[5] This led to stricter quarantine laws and sanitary measures, which helped to stem the spread of the disease.

Despite these actions, cholera returned to Singapore with a vengeance two decades later, beginning with a sudden surge of deaths among Chinese coolies in April 1895 compared to the same period the prior year. This was the first indication that something sinister was afoot, but before any action could be taken by the authorities, there was a sudden spike in cholera cases between June and August that year. Subsequently, calls were made for a more systematic count of deaths and their causes so that future outbreaks could be nipped in the bud.[6]

Understanding Cholera

Cholera is caused by the bacterium *Vibrio cholerae*, which was identified by German scientist Robert Koch in 1883. The bacterium enters the body when contaminated food or water is ingested. In the small intestine, the bacterium reproduces in the mucous lining of the bowels. While most victims are asymptomatic or display limited symptoms, at least 20 percent are severely affected.

As the immune system of the infected person attempts to fight the bacteria, a poison released by the bacteria causes the intestinal walls to work in reverse: instead of food nutrients moving into the bloodstream, plasma from the blood drains into the intestines, causing the distinctive "rice water stools" associated with this illness.[7] Copious amounts of this liquid are then expelled by the sick person resulting in dehydration. If untreated, it can lead to shock and eventually death.

In the 19th century, the scientific study of germs was still in its infancy. The prevailing belief was that the malady was spread through effusions of bad air released by rotting material. Based on this miasmic theory of the disease, people in the Western world were encouraged to keep away from foul air during cholera outbreaks. Posters like the "Cholera Prevention Man", distributed throughout Europe and America, depict a man

(Facing page) View of Boat Quay looking towards Fort Canning Hill, 1890s. As the centre for trade and commercial activity in Singapore in the 19th century, the Singapore River became highly congested and polluted, resulting in poor drainage and unsanitary living conditions along the river banks. The river water was blamed for causing various diarrhoea-inducing diseases, including cholera. *Andrew Tan Collection, courtesy of National Archives of Singapore.*

(Right) An ink and watercolour etching of the "Cholera Prevention Man" by Wundet. The translation of the inscription reads: "The well-equipped home medicine cabinet for one who loves his health. Cholera Prevention Man". *Division of Medicine and Science, National Museum of American History, Smithsonian Institution.*

A cartoon showing a woman dropping her teacup in horror upon discovering the monstrous contents of a magnified drop of water from the River Thames, revealing the impurity of drinking water in London. Coloured etching by William Heath, 1828. *Wellcome Collection. Attrbution Non-commercial (CC BY-NC 4.0).*

surrounded by a cabinet of potions and covered in layers of clothing to protect himself from the "bad air", and inhaling as an antidote the clean air of vinegared vapours released from a bottle.

Certainly, there was no shortage of "bad air" in the slums of 19th-century Singapore as new migrants arrived by the shipload, with many squeezed into congested and unhygienic quarters along the stretch of the Singapore and Kallang rivers. There, poor drainage and improper disposal of sewage, along with the foul detritus of activities like pig-breeding resulted in "the first-class stenches that Singapore slums so successfully distil".[8] The Singapore River at low tide was compared to the River Thames in London, revealing the filth that caused the foul air seen as the root of various diseases, including cholera.

Contaminated water was later proven to be a conduit for the disease, especially given the poor hygiene practices in the consumption of food and drink among local residents. Raw fruit and vegetables were one source of infection, as were the shellfish plucked from the murky Singapore River. Popular among the Chinese community, the shellfish was described as "dainties which thrive on sewage and afford a breeding ground for microbes". The situation was further aggravated by the consumption of contaminated well water as well as water bottled from the polluted Kallang River.[9]

Following the tragic outcomes of the 1851 epidemic, a decision was made to set up proper waterworks in Singapore. In 1852, the Government Surveyor John Turnbull Thomson drew up plans for supplying water to the town, although it was only in 1867 that the Impounding Reservoir (later renamed MacRitchie Reservoir) was approved for construction off Thomson Road. The reservoir finally began operations in 1877.[10]

Local Cures and Customs

Globally, there was no agreed method for treating cholera in the 19th century. In the early days of the epidemics, residents in Singapore turned to remedies that had been adopted in countries where pandemics had previously swept through.

One recipe recommended by a Major Wallace of the Madras Presidency in British India involved imbibing brandy infused with cloves, cinnamon and peppers, and topped with laudanum, an opiate. The cure was first published in *The Asiatic Journal and Monthly Register for British and Foreign India, China and Australasia* in July 1838, and reprinted in *The Singapore Free Press* on 1 April 1841. The remedy was touted as a success in India and Germany.

Unfortunately, the same outcomes were not realised in Singapore when the Straits Settlements Medical Officer Thomas Oxley administered this potion to five patients here. In a critical letter to *The Singapore Free Press* on 15 April 1841, he recommended the use of "hot salt water emetics and enemata, aided by dry heat to the surface of the body" instead as a cure.[11]

Other treatments put forward at the time included a concoction by Queen Victoria's physician James Clerk "which proved very effectual in England in 1849", mixing equal parts of camphor, laudanum, turpentine and peppermint. Another prescription attributed to a Lord Ponsonby comprised dissolving "one part camphor in six parts of spirits of wine".[12]

People in Singapore had their own home remedies. In 1849, one Charles Perreau found his cure in a traditional Malay approach consisting of bruised ginger boiled in a pint of water for 10 minutes, with two tablespoons of salt added. This was consumed while the body was briskly rubbed.

In a letter to *The Singapore Free Press* in October 1849, Perreau wrote: "After having tried every European remedy I received no benefit, and were it not for a simple Malay Drug I would not have recovered from my severe attack nor would I, Mr Editor, now have been able to address you upon the subject."[13] It may have been a "simple Malay Drug" but this remedy is not dissimilar to the World Health Organization's modern-day recommendation to drink clean water mixed with sodium and glucose to replace the loss of salts and liquids, and prevent dehydration.

Singapore's Asian residents were often reluctant to seek treatment in government hospitals out of fear and superstition, preferring native remedies instead. For this reason, police stations and *kongsi* (clan) houses were stocked with a local concoction for treating cholera well into the early 20th century. This pungent mix of calumba, cardamon, ammonia, camphor and capsicum, steeped in peppermint water, was first offered during the 1851 outbreak in Singapore and was considered a trustworthy curative.[14]

In the late 19th century, the Chinese also turned to their own dispensaries along Philip Street, imbibing "Chinese red pills" and a trusty homemade remedy of old ginger infused in hot water. On their preference for Asiatic medicines, one Peranakan gentleman wrote: "Cholera is an Asiatic disease, it is within the province of the Asiatic people and their physicians to know something about the disease..."[15]

Native cures went beyond mere medication. During outbreaks, loud communal processions to exorcise the "Hantu Cholera",[16] or cholera demon, took place nightly. The Chinese would parade around town "escorting fierce gladiators carried on platforms with drawn swords and flags with which they cut the air in all directions while the demon was roused up with the din of gongs and cymbals. As these processions pass, their countrymen rush out and let off crackers to their own intense gratification and the great annoyance of hack and private carriage drivers".[17]

There were also Indian processions, which were described as a "little less dangerous, accompanied as they are by the ringing of bells, blowing of horns, and clamorous beating of tom toms". The Malays added to the general din by "bawling out in the streets at a late hour of the night, rendering sleep next to impossible to the great bulk of the town residents".[18]

In 1873, the Colonial Secretary James Birch participated in a Tamil procession and was garlanded in appreciation for his support. This created some controversy at the Legislative Council when Dr Robert Little, a medical practitioner who also served as a council member, argued that such processions where "persons went about with knives and swords, crying out, and howling and screaming... fighting with fancied deities and spirits" not only caused unrest and obstructions, but also amplified fear among local residents and "were the cause of spreading cholera instead of preventing it".[19]

Nevertheless, some local approaches to the disease had their advantages. For example, during the 1851 cholera epidemic, medical authorities used native drums to inform the locals whenever hospital palanquins made their rounds so that the sick could be quickly conveyed to hospital.[20]

Quarantine Quarrels

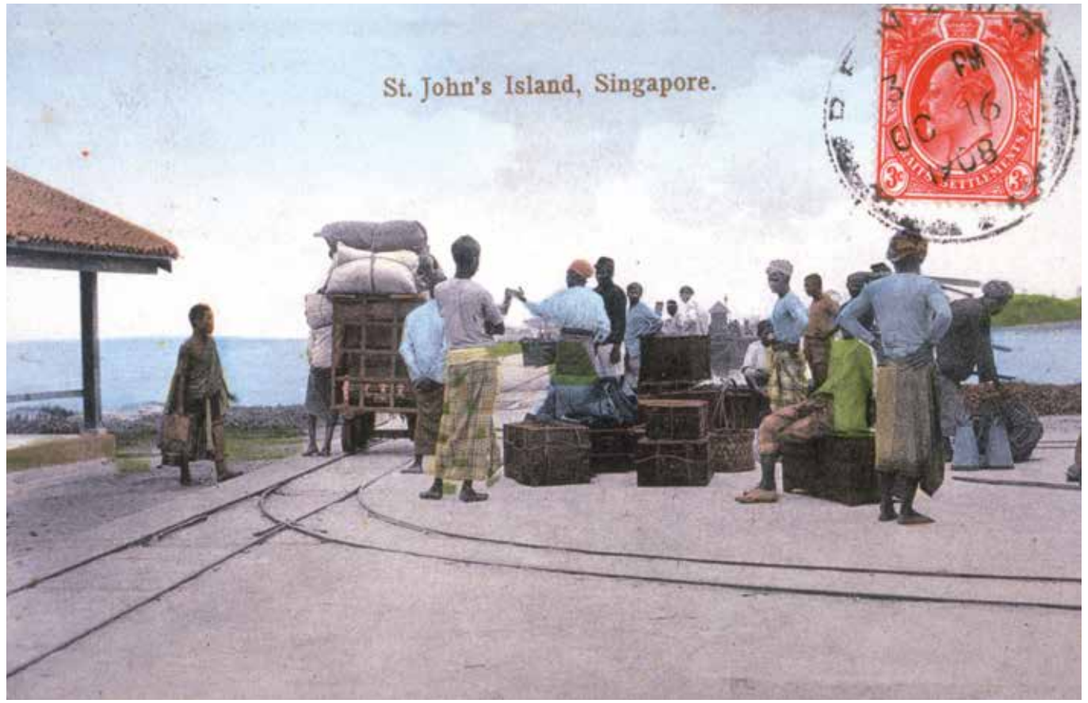
The first recorded instance of forced quarantine in Singapore took place in June 1821 when the cholera-stricken Austrian ship, the *Caroline Augustus*, arrived from Batavia (now Jakarta) with afflicted sailors. Mindful of the safety of residents in Singapore who were "relatively untouched by cholera", the colonial authorities did not permit the ship to land except to have their convalescents disembark at Sandy Point[21] (on the tip of Tanjong Rhu today) where medical assistance was rendered.

However, strict quarantine measures were not consistently applied to the growing number of ships arriving in Singapore until the severity of the 1851 cholera epidemic, followed by a smallpox outbreak in 1857, called for a re-evaluation. One of the recommendations made to Governor of the Straits Settlements Edmund A. Blundell was that every vessel be checked for illness and that an infected ship be quarantined, with no one permitted to leave until every person on board was given a clean bill of health. Only those bringing medical or food supplies to the ship would be allowed to board.[22]

Governor Blundell, however, noted that no vessels could be completely free of contagious diseases and that such actions would interfere with the "free immigration" and "agricultural interests" that the Straits Settlements offered.[23] Quarantine was also seen as an annoyance by the mercantile community as it hindered the free flow of trade. To complicate matters, not everyone in the medical field was convinced that quarantine was an effective means of keeping diseases out of Singapore.

In 1866, the British Cholera Commission, having had the experience of battling severe cholera outbreaks in England, advised the British Governor-General of India that cholera was a communicable disease and reccommended that infected persons be quarantined to

Newly arrived migrants at the quarantine centre on St John's Island, waiting for the ferry to take them to mainland Singapore, c. 1908. *Courtesy of National Archives of Singapore.*



stem the contagion. In the Straits Settlements, new ordinances for quarantine were soon introduced.

However, Dr Little, who had by then served 28 years in Singapore, strongly opposed the quarantine bill in 1868. He noted that residents in Singapore had acquired immunity as cholera had been endemic here for more than 20 years, adding that quarantine would affect the entrepot trade that Singapore had become so reliant on. The setting up of a lazaretto (a facility to isolate and treat people with contagious diseases) would also incur too high a cost. Nevertheless, in November 1868, Governor Harry St George Ord issued the order for the quarantine bill.[24]

The bill would lead to the proposal to set up a lazaretto on St John's Island. Following the cholera epidemic that was introduced to Singapore by a ship from Bangkok in 1873, Acting Master Attendant Henry Ellis proposed a scheme which "included a steam cutter, a floating police station, a hospital on St John's, and a quarantine burial-ground on Peak [Kusu] Island".[25] The lazaretto was seen as an ideal solution as infected patients could be sent to St John's Island to recover while the ships they disembarked from could continue on their journey unhindered.

In November 1874, the *S.S. Milton* arrived from Swatow (now Shantou), China, with around 1,200 to 1,300 Chinese coolies on board. It was suggested that at least two of them had died of cholera upon arrival, although contaminated water purchased in Singapore could also have been a source of infection.[26]

As the lazaretto on St John's Island had not been completed yet, huts had to be quickly constructed at personal cost to the ship's agents to accommodate the sick. The lazaretto was eventually completed in 1875.[27] St John's would be used as a quarantine centre for the next hundred years until its facilities were officially closed in January 1976.[28]

MOULE'S ECO-TOILET

The world's "first practical earth-closet", a composting toilet for homes without access to piped water has an indirect connection to Singapore. It was invented in England by Reverend Henry Moule, the brother of Reverend Horatio Moule, Resident Chaplain at Singapore's St Andrew's Chapel between 1845 and 1851.

Seeing how cholera outbreaks in England in the mid-19th century were caused by poor sanitation, Henry Moule designed a dry-earth toilet as a hygenic means of disposing human waste. He patented his earth-closet in 1860 and is acknowleged today as its inventor.

The earth-closet resembled a modern-day toilet, with a hole cut into a chair, a bucket below it and a hopper filled with earth attached to the back of the seat. When a handle was pulled, a quantity of earth would be released over the human excreta to mask unwelcome odours and help the contents to decompose. When the bucket was full, the resulting compost could be used to enrich and fertilise soil. Moule was certainly ahead of his time when he came up with this contraption.

Reverend Henry Moule – the brother of Reverend Horatio Moule, Resident Chaplain at the St Andrew's Chapel in Singapore – invented the "first practical earth-closet". Henry Moule patented his design in 1860. Seen here is the improved version of Moule's environment-friendly toilet, c. 1875. *Retrieved from Wikimedia Commons (CC BY-SA 3.0).*

REFERENCES

BBC. (2014). *Moule's mechanical dry earth closet*. Retrieved from BBC website.

Earth closets. (n.d.). Retrieved from Old & Interesting website.

Russell, M. (2014, February). *Life of Reverend Henry Moule M.A. (1801–1880)*. Retrieved from RootsWeb website.

Sipe, B.M. (1988). Earth closets and the dry earth system of sanitation in Victorian America. *Material Culture, 20* (2/3), 27–37. Retrieved from JSTOR via NLB's eResources website.

Putrid Pitholes

As late as 1889, Singapore had yet to have a proper sewage system in place, aggravating the situation whenever cholera outbreaks took place.[29] According to the Acting Health Officer Dr Gilmore Ellis, four-fifths of toilets here had "no catchment apparatus whatever other than the bare earth (with or without a hole dug in it) or a large cesspool built of brick… [which] retain larger accumulations of excrement… that not unfrequently is one mass of writhing maggots to be removed…"[30]

The bucket system in use at the time involved the manual removal of faeces, or night soil, carried to places outside of town and disposed of by coolies. While it was an improvement over foul-smelling cesspits located near residences, the bucket system had its own share of problems. The system relied on lowly paid and poorly motivated night-soil workers to clear the buckets regularly. In addition, the subsequent disposal of the waste and the washing of the night-soil buckets had to be done in such a way that groundwater and rivers did not become contaminated.

The 1895 cholera epidemic renewed discussions over how the disposal of night soil could be improved. There was a call for the authorities to organise a proper network of night-soil carriers to do the job, while the Health Officer pushed for the reconstruction of unsanitary toilets and ordered public latrines to be cleaned regularly with Jeyes Fluid, a disinfectant still used today.[31]

Finally, a Vaccine

Singapore would experience its most severe cholera outbreak in 1902 when 759 out of the reported 842 cases died, a hitherto unprecedented mortality rate of 90 percent.[32] This, however, was the last time that cholera would exact such a heavy toll here as modern developments in sanitation and waterworks helped control the spread of the disease.

Advancements in medical science in subsequent years also brought a greater understanding of the disease, identifying its cause and controlling it through the development of a vaccine. Following Koch's identification of *Vibrio cholorae* in 1883, Spanish doctor Jaime Ferran, who trained under the famed microbiologust and chemist Louis Pasteur, successfully immunised humans against cholera in 1885.[33] By the 1920s, Singapore was receiving a supply of vaccines from the

(Above left) A child being vaccinated against cholera at one of several inoculation centres in Singapore, 1963. *Ministry of Information and the Arts Collection, courtesy of National Archives of Singapore.*

(Above) A night-soil carrier, c. 1940. Workers were paid to manually remove human waste. The workers would arrive at households with empty buckets to exchange for filled ones. As the collection was usually carried out at night and the filled buckets covered with soil to lessen the stench, it soon acquired the name "night soil". *Courtesy of National Archives of Singapore.*

Pasteur Institute in Bandung, Java.[34] In the 1930s, the Institute of Medical Research in Kuala Lumpur began producing supplies of the cholera vaccine not only for Malaya but for the region too.[35]

In 1964, the seventh cholera pandemic from nearby Java spread to Singapore. Even though Singapore had been considered vulnerable due to its high volume of traffic as a trading port, the island was able to protect itself from the spread of cholera. By then, its "standards of urban sanitation [were] high, piped water supplies… second to none in Asia, [and] medical control at ports and airports… first class".[36] Several inoculation centres were also set up to offer free vaccines to the population.

Although there are still sporadic instances of cholera infections in sanitised Singapore, with four reported cases as recently as 2009, the virulence of cholera, thankfully, is a thing of the past.[37] ♦

NOTES

1 The Free Press. (1841, April 1). *The Singapore Free Press and Mercantile Advertiser*, p. 3. Retrieved from NewspaperSG.

2 Lee, Y.K. (1978). *The medical history of early Singapore* (pp. 31, 26). Tokyo: Southeast Asian Medical Information Center. (Call no.: RSING 610.95957 LEE)

3 Untitled. (1851, May 2). *The Singapore Free Press and Mercantile Advertiser*, p. 5; Untitled. (1851, April 29). *The Straits Times*, p. 4. Retrieved from NewspaperSG.

4 Hays, J.N. (2005). *Epidemics and pandemics: Their impacts on human history* (p. 267). California: ABC-CLIO. (eBook)

5 Legislative Council. (1873, October 4). *Straits Times Overland Journal*, p. 7. Retrieved from NewspaperSG.

6 The year 1895. (1896, January 7). *The Singapore Free Press and Mercantile Advertiser*, p. 1. Retrieved from NewspaperSG.

7 Snowden, F.M. (2019). *Epidemics and society: From the black death to the present* (p. 236). New Haven: Yale University Press. (Available for digital loan on nlb.overdrive.com)

8 The Singapore Free Press. (1895, June 27). *The Singapore Free Press and Mercantile Advertiser*, p. 2. Retrieved from NewspaperSG.

9 A Chinese view – The cholera outbreak. (1895, June 25). *The Singapore Free Press and Mercantile Advertiser*, p. 3. Retrieved from NewspaperSG.

10 Hallifax, F.J. (1991). Municipal Government. In W. Makepeace, G.E. Brooke & R.St.J. Braddell. (Eds.). *One hundred years of Singapore* (Vol. I, p. 327). Singapore: Oxford University Press. (Call no.: RSING 959.57 ONE); National Library Board. (2009). *MacRitchie Reservoir* written by Zaubidah Mohamed. Retrieved from Singapore Infopedia website; Lim T.S. (2018, Apr–Jun). The four taps: The story of Singapore water. *BiblioAsia*, *14* (1), 50–57. Retrieved from BiblioAsia website.

11 Correspondence. (1841, April 15). *The Singapore Free Press and Mercantile Advertiser*, p. 2. Retrieved from NewspaperSG.

12 Cholera. (1873, July 13). *The Straits Times Overland Journal*, p. 12. Retrieved from NewspaperSG.

13 Correspondence. (1849, October 12). *The Singapore Free Press and Mercantile Advertiser*, p. 2. Retrieved from NewspaperSG.

14 Local. (1851, January 24). *The Singapore Free Press and Mercantile Advertiser*, p. 3; The Free Press. (1851, April 25). *The Singapore Free Press and Mercantile Advertiser*, p. 2. Retrieved from NewspaperSG; Brooke, 1991, p. 505.

15 More about the cholera. (1895, August 12). *The Straits Times*, p. 3. Retrieved from NewspaperSG.

16 Correspondence. (1873, August 9). *Straits Times Overland Journal*, p. 11. Retrieved from NewspaperSG.

17 Untitled. (1873, August 9). *Straits Times Overland Journal*, p. 13. Retrieved from NewspaperSG.

18 Untitled. (1873, August 23). *Straits Times Overland Journal*, p. 16. Retrieved from NewspaperSG.

19 Legislative Council. (1873, September 20). *Straits Times Overland Journal*, p. 6. Retrieved from NewspaperSG.

20 Local. (1851, January 31). *The Singapore Free Press and Mercantile Advertiser*, p. 3. Retrieved from NewspaperSG.

21 Lee, Y. K. (1973, March). Cholera in early Singapore (Part I) (1819–1849). *Singapore Medical Journal*, *14* (1), 42–48, pp. 44–45. Retrieved from Singapore Medical Journal website.

22 SSR, Z, 33 (65A) 1857, May 1 from Lee, Y.K. (1978). *Quarantine in early Singapore (1819–1874) (Part II)* (p. 289). Singapore: Stamford College Press (Pte) Ltd. (Call no.: RCLOS 614.46095957 LEE)

23 Lee, 1978, p. 289.

24 Lee, 1978, p. 295.

25 Brooke, 1991, p. 505.

26 The "Milton". (1874, November 19). *Straits Times Overland Journal*, p. 2. Retrieved from NewspaperSG.

27 Quarantine. (1875, March 6). *The Straits Times*, p. 1. Retrieved from NewspaperSG.

28 Ng, M. (2018, Apr–Jun). St John's Island: From gateway to getaway. *BiblioAsia*, *14* (1), pp. 30–35. Retrieved from BiblioAsia website.

29 Insanitary Singapore. (1889, December 17). *Straits Times Weekly Issue*, p. 12. Retrieved from NewspaperSG.

30 Pollution of the Singapore River. (1896, April 28). *The Mid-day Herald*, p. 2. Retrieved from NewspaperSG.

31 Removal of night soil. (1895, July 15). *The Mid-day Herald*, p. 2; Municipal Commission. (1895, August 2). *The Straits Times*, p. 3; Sanitary regulations. (1895, June 24). *The Mid-day Herald*, p. 2. Retrieved from NewspaperSG.

32 Brooke, 1991, p. 504.

33 The College of Physicians of Philadelphia. (2020). *All timelines overview*. Retrieved from The History of Vaccines website.

34 Health in the East. (1928, January 11). *The Straits Times*, p. 9. Retrieved from NewspaperSG.

35 New move to prevent cholera spread. (1937, August 21). *The Singapore Free Press and Mercantile Advertiser*, p. 1. Retrieved from NewspaperSG.

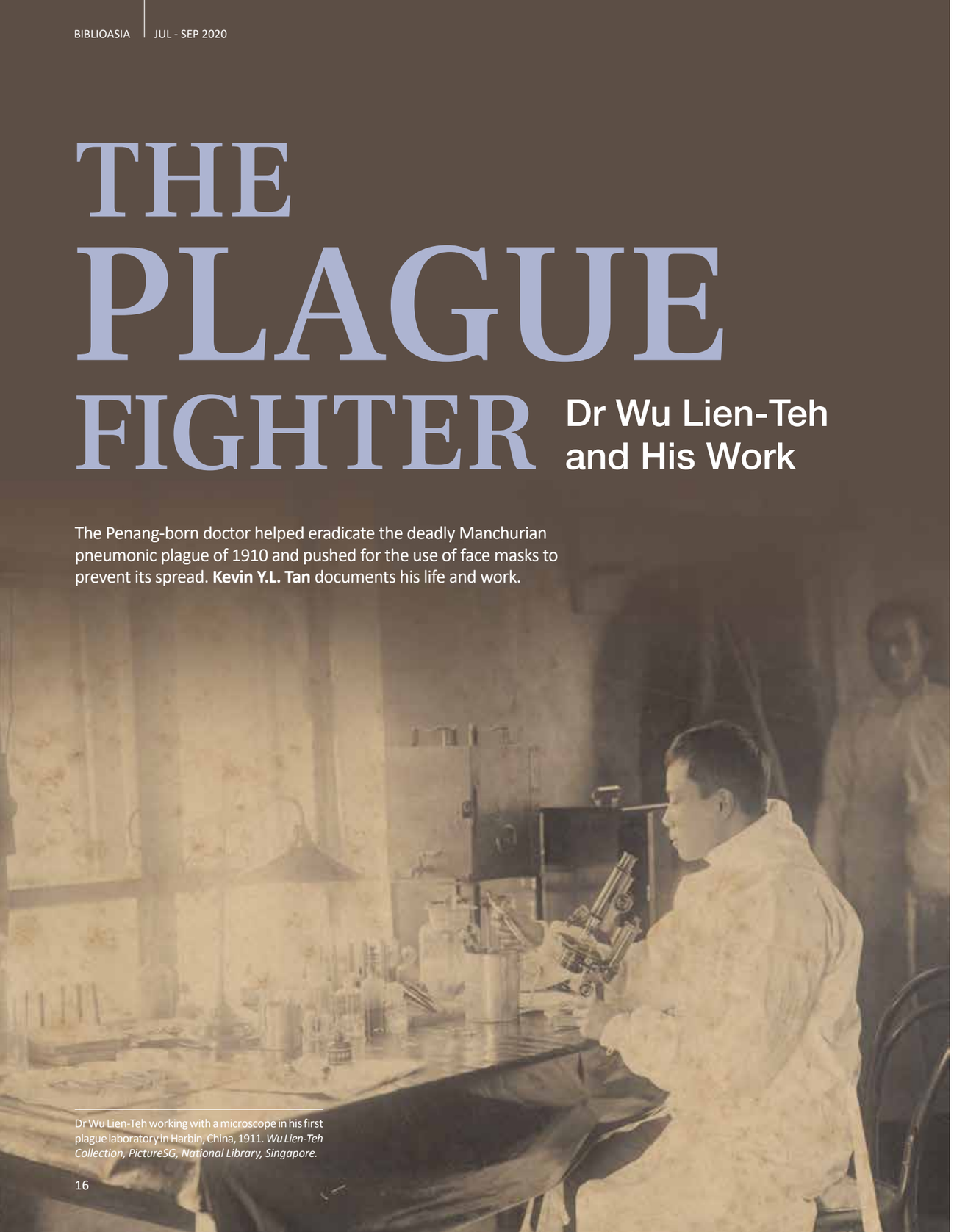
36 Cholera menace. (1961, September 7). *The Straits Times*, p. 8. Retrieved from NewspaperSG.

37 National Centre for Infectious Diseases. (2020). *Cholera*. Retrieved from National Centre for Infectious Diseases website.

THE PLAGUE FIGHTER

Dr Wu Lien-Teh and His Work

The Penang-born doctor helped eradicate the deadly Manchurian pneumonic plague of 1910 and pushed for the use of face masks to prevent its spread. **Kevin Y.L. Tan** documents his life and work.



Dr Wu Lien-Teh working with a microscope in his first plague laboratory in Harbin, China, 1911. *Wu Lien-Teh Collection, PictureSG, National Library, Singapore.*

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The year 2020 will be remembered as the time when the Covid-19 pandemic struck. As the virus spread through towns and cities, people were made to isolate themselves, to work from home and to don face masks when they went out.

Although few realise it, much of this is a replay of some of the protocols that were pioneered 110 years ago by a brilliant but now-forgotten Penang-born bacteriologist Wu Lien-Teh (伍連德) when he was tasked to deal with the Manchurian pneumonic plague of 1910–11. Wu's efforts gained him the reputation and sobriquet "The Plague Fighter".[1]

The Making of a Modern Chinese Doctor

Born in Penang on 10 March 1879, Wu was the fourth son of Ng Khee-Hock (1832–1916) and Lam Choy-Fan (1844–1908). Ng was an immigrant from Taishan in Guangdong province, China, while Lam was a Penang-born Hakka. Although Wu's Cantonese birth name was Ng Leen Tuck, he was officially registered as "Gnoh Lean Tuck" by a school clerk who transliterated his name into Hokkien.[2] Wu was known by this name until 1908 when, upon arrving in Tianjin, China, he had it transliterated into Mandarin as Wu Lien-Teh. (When Wu was studying in Cambridge though, he was known as G.L. Tuck as the English mistook his personal name for his surname).[3]

In 1886, at the age of seven, Wu enrolled at the Penang Free School. Seven years later, he sat for the first of his four attempts at the Queen's Scholarship examination. In 1896, the 17-year-old was finally awarded the scholarship and became only the third student from the Penang Free School to bag this prestigious honour.[4]

Scholarship in hand, Wu entered Emmanuel College in Cambridge where he continued to excel. In 1898, he was awarded the "Exhibition" (scholarship) in Natural Science at the college, which earned him a stipend of £40.[5] Reporting this news, *The Singapore Free Press and Mercantile Advertiser* speculated that Wu was the first Straits student at either Oxford or Cambridge to attain the status of "Exhibitioner".[6]

In his third year, Wu obtained a First Class in his Bachelor of Arts final examination (which he had to take before studying for his medical degree in Cambridge) and was made a Foundation Scholar with a stipend of £60. Thereafter, he won one of two university scholarships offered by St Mary's Hospital in Paddington, which came with a £150-scholarship prize that was enough to cover his hospital training fees for three years. Wu was the first Chinese student to be accepted by St Mary's where he won a series of prizes: the Special Prize in Clinical Surgery (1901), the Kerslake Scholarship in Pathology (1901) and the Cheadle Gold Medal for Clinical Medicine (1902).[7]

Upon completing his three-year clinical training in 1902, Wu obtained a House Physicianship at the Brompton Hospital for Consumption and Diseases of the Chest.[8] At Brompton, he received news from Emmanuel College that he had been awarded a Research Studentship, valued at £150 a year, to undertake postgraduate work at a research institute in either England or continental Europe.

Wu spent the last four months of 1902 at the Tropical Diseases Institute in Liverpool. At the end of his stint, Wu completed his final examination for his Bachelor of Medicine and Bachelor of Surgery degrees. At his oral examination, Clifford Allbutt, Regius Professor of Medicine at Cambridge University,

THE WU LIEN-TEH COLLECTION

The Wu Lien-Teh Collection in the National Library has over 840 photographs that mainly document Wu's work and achievements in Manchuria and China, including his efforts to contain the pneumonic plague of 1910–11 and 1920–21. In addition, there are photographs of his family and friends.

The photographs of Manchuria and China capture grim scenes such as unburied bodies left out in the open, mass cremation of corpses, and the isolation and protective measures adopted to curb the spread of the plague. These were likely to have been taken and captioned by Wu himself. It is not known who took the photographs of Wu with his family, friends and colleagues.

These photographs came from two separate donations. In 2010, Wu's eldest daughter, Dr Betty Wu Yu-lin, gave three photo albums to the National Library as well as individual photographs. The three albums are titled *Plague and Medical Scenes: Manchuria and China, 1911, 1921 up to 1936; Chronological Record of Anti-plague Work in Manchuria and China, 1910–1937*; and *Ruth's Complete Collection, 1910 to 1935*. In 2018, the National Library received another 35 photographs from Dr Wu's grandson, Daven Wu. The photographs have been digitised and can be accessed on the National Library's PictureSG portal.

Dr Wu Lien-Teh, at age 41, taking charge of anti-plague work during the second pneumonic plague epidemic in Manchuria, c. 1920. *Wu Lien-Teh Collection, PictureSG, National Library, Singapore.*

The Wu Lien-Teh Collection also includes publications by Dr Wu, such as *League of Nations Health Organisation: A Treatise on Pneumonic Plague*; *History of Chinese Medicine*; *The Queen's Scholarships of Malaya, 1885–1948*; and *Plague Fighter: The Autobiography of a Modern Chinese Physician*; two typescript manuscripts; and a set of compiled genealogy of the Wu surname, which traces it back to Lingnan in China (岭南伍氏阖族总谱).

advised Wu to make good use of his forthcoming research stint in Europe and to submit it for the degree of Doctor of Medicine (MD).[9]

In 1903, Wu spent eight months in Germany's University of Halle (today's Martin Luther University of Halle-Wittenberg), under the supervision of the famous German bacteriologist Professor Karl Fraenkel, and then at the Institut Pasteur in Paris under Professor Ellie Metchikoff. Wu then returned to Cambridge University and worked on his doctoral thesis which he submitted to Professor Allbutt in August that year.

Wu successfully defended his thesis and, at age 24, had done everything necessary to fulfill the requirements for his MD degree. However, as university regulations stipulated that there should be a minimum of three years between the initial medical degrees and the MD degree, Wu was only conferred the latter two years later *in absentia* in 1905.

Meanwhile, Wu expressed interest in working for the Colonial Medical Service but was informed by the Colonial Office that he would only be accepted as an "Assistant Medical Officer" and not as a "Medical Officer", as the latter post was reserved for "Britishers of pure European parentage, whatever the qualification".[10] Incensed, Wu decided to accept another Research Studentship from Emmanuel College to pursue a further year of research into tropical diseases at the newly established Institute for Medical Research in Kuala Lumpur.

In 1903, Wu returned to Malaya, stopping by Singapore for a week before travelling to Penang to visit his parents whom he had not seen in almost seven years. He then headed to Kuala Lumpur where he undertook research into beri-beri as the institute's first research student.[11] On completing his fellowship at the end of 1904, Wu returned to Penang and established a private medical practice on Chulia Street that became very popular.[12]

Social Causes and the Anti-Opium Movement

Although Wu only spent a week in Singapore en route to Penang in October 1903, it was a period that would have a big impact on his life. He stayed with Lim Boon Keng[13] – also a medical doctor and Singapore's first Queen's Scholar – who initiated Wu "into the need for devoting some time to social service among the people".[14] At Lim's home, Wu met the "most charming and beautiful" Ruth Huang – the younger sister of Lim's wife Margaret. She reciprocated his affections and the couple married in July 1905.

Apart from his flourishing medical practice in Penang, Wu also played a "prominent part in the social service work, and tried hard to introduce reforms among the people, such as girls' education, removal of the queue [pigtails for men], campaign against gambling and opium smoking, formation of literary clubs and promotion of healthy physical exercises among boys and girls".[15]

In 1906, Wu plunged himself "heart and soul into the anti-opium campaign" after reading that the British parliament had denounced the opium trade and requested the British government "to take such steps as may be necessary for bringing it to a speedy close".[16] In March that year, Wu organised the first-ever Anti-Opium Conference for the Straits Settlements and Federated Malay States, which was held in Ipoh.[17]

Unfortunately, the official rhetoric on stopping the opium trade had not yet percolated to the colonies. Officials in Malaya still supported the trade in opium and continued issuing licences for its sale. In retaliation, the Penang authorities decided to teach Wu a lesson by prosecuting him for unlicensed opium possession. In 1906, a staged "raid" was organised by no less than the Senior Medical Officer of Penang, Dr Sidney Lucy. Wu had purchased a single ounce of opium from the previous owner of the dispensary, but had never sold nor dispensed it. He was charged with possessing opium without a requisite licence and was fined $100 by the District Court. His conviction was subsequently upheld by the Supreme Court.

The First Plague Epidemic, 1910

At the time of Wu's troubles with the Penang authorities, he received two invitations: the first from London to attend an anti-opium meeting at the Queen's Hall and the second from General Yuan Shih-Kai, Grand Councillor (and later President) of the Chinese government in Peking (Beijing), who offered him the post of Vice-Director of the Imperial Medical College in Tianjin.[18] Although Wu was only 29 years old at the time, he felt that he was at a major crossroads in his life:

> "Should I remain on the inhospitable shores of my birthplace where neither government nor friends seemed to need me, or should I accept the invitation, so opportunely offered, to render useful service to China where, at least, I would not be misrepresented and where I might find a fertile soil for promoting the scientific and health work which I had taken such pains to acquire before and since graduation."[19]

Dr Wu Lien-Teh (standing, extreme right) in a family portrait with his parents, four brothers and three nephews, 1903. He had just returned from England. *Wu Lien-Teh Collection, PictureSG, National Library, Singapore.*

Wu decided to accept both invitations. He set off for London and then went on a three-month tour of Europe. Upon his return to Penang, Wu resumed his practice but by May 1908, he and his family had set sail for China. Wu could hardly speak any Mandarin then as his education had wholly been in English, but he was a fast learner and very quickly picked up a working knowledge of the language, just as he had picked up French and German in the eight short months he worked in Europe.

By Wu's own admission, the first few years of his stay in Tianjin "was not all too invigorating",[20] but this was to change in December 1910 when he received an unexpected telegram summoning him to the Foreign Ministry. Wu learned that there had been a deadly epidemic in Harbin and they needed an expert on bacteriology to "proceed to that region to investigate the cause and to suppress it, if possible".[21]

A few months before, reports had reached Peking of a mysterious illness afflicting the people of Fuchiatien, the Chinese sector of the half-Russian town of Harbin in Northern Manchuria. Those who contracted the disease developed high fever, a cough with blood-streaked sputum and purplish discolouration of the skin. Almost all who were afflicted died within a few days. The Foreign Ministry feared that if the Qing court failed to stop the spread of the disease, the Russians and Japanese would take matters into their own hands and send in their own medical personnel to deal with the contagion.[22]

Wu and his assistant arrived in Harbin on Christmas Eve, 1910. The situation was grim: temperatures were minus 30 degrees, the city had just two doctors and five dressers for a population of 24,000, and dead bodies littered the streets, making the primitive unsanitary conditions of the town even worse. Russian doctors suspected bubonic plague (which is spread by infected flea bites) and examined patients without a mask. They soon contracted the disease as well.

The families of victims were unwilling to provide bodies of their loved ones for a post-mortem because of the Confucian tradition of mourning and burying the dead. The opportunity arose on his third day in Harbin when the Japanese wife of a Chinese innkeeper died and Wu was able to perform a preliminary post-mortem. He found the presence of the plague bacterium *Yersinia pestis* and evidence that it was a pneumonic plague (spread through the air by human hosts). Knowing that the disease was highly contagious and could spread from person to person through the inhalation of the bacterium, Wu formulated a strategy to control its spread. He had to do this quickly because many people were preparing to return from the city to their villages for the upcoming Lunar New Year, which would cause a further spread of the disease.

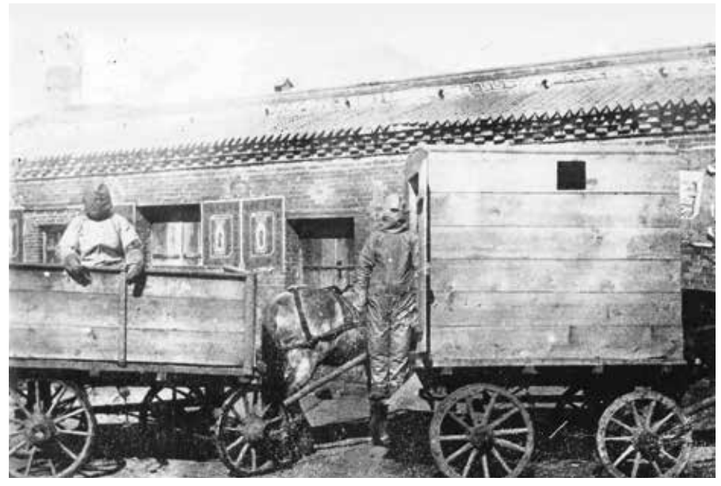
To keep the infected away from others, disused schools, warehouses and other facilities like train cars were turned into isolation facilities. In addition, a new plague hospital was built while the old one was burnt down. Wu also recommended the use of face masks so that people could protect themselves and others from the infection.

Initially, Wu's plan met with opposition. Dr Gerald Mesny, a French professor at the Peiyang Medical College in Tianjin – who had experience dealing with the bubonic plague – insisted on being put in charge of operations. Mesny cast aside Wu's plan with typical colonial arrogance. When Wu paid him a courtesy call and sat quietly, "trying to smile away their differences", the Frenchman yelled threateningly, "You, you Chinaman, how dare you laugh at me and contradict your superior."

Wu reported the encounter and tendered his resignation, but the authorities asked him to stay while they suspended Mesny's services. Unfortunately for Mesny, his failure to

(Below) Horse carts transporting corpses to the cremation ground in Fuchiatien, Harbin, 1911. China's first outbreak of the deadly pneumonic plague occured in this remote northern Manchurian region. *Wu Lien-Teh Collection, PictureSG, National Library, Singapore.*

(Bottom) Two horse-drawn wagons used as ambulances during the pneumonic plague epidemic that started in Harbin, China, in 1911. The covered one on the right is for the sick, while the unsheltered one is for those who had come into contact with the sick. *Wu Lien-Teh Collection, PictureSG, National Library, Singapore.*



correctly diagnose the disease cost him his life. Thinking that it was another type of bubonic plague, Mesny went about examining patients without a mask. As a result, he caught the pneumonic plague and died six days later.[23] Suddenly, everyone wanted the simple cotton and gauze mask that Wu had used and recommended. Volunteers were soon producing them by the thousands.

Despite all the isolation and movement controls enforced by military troops, the infection and mortality rates continued to rise throughout January 1911. In addition, there was another problem in Harbin: dead bodies were piling up because the ground had frozen solid to a depth of two metres, making burial impossible.

In late January, when Wu visited the burial ground, he found rows of corpses and coffins a mile long, all unburied. This presented him with a most difficult and delicate situation. If the corpses were left unburied, they would pose a huge health risk in the coming spring when rats would gnaw at the infected decomposing bodies and spread the infection further. The only way to quickly dispose of the corpses was to organise a mass cremation, but that would go against the tenets of Confucianism in a country where ancestor worship and visiting ancestral tombs had been viewed as an act of filial piety for centuries.

However, Wu managed to convince the local officials and a memorandum was sent to the Chinese emperor to approve their proposed action. Three days later, an imperial edict was handed down and on 31 January 1911 (the second day of the Lunar New Year), what is believed to be the first mass cremation in Chinese history was carried out in Harbin.

Eventually, the containment measures began to have an impact and mortality rates started falling almost immediately. By 1 March 1911, the last case of the plague in Harbin was registered. In other cities, the outbreak lasted another month before it was finally contained. In all, the epidemic affected an area that stretched almost 2,800 km from Manchuria to Peking, and reaching Zhili and Shandong provinces. It lasted seven months and claimed some 60,000 lives.

The Second Plague Epidemic, 1920

In 1912, Wu was made director of the newly set up North Manchurian Plague Prevention Service and he established a network of plague hospitals and labora-

During the second pneumonic plague epidemic in Manchuria in 1921, Dr Wu Lien-Teh (left) and another doctor conducted experiments on animals like marmots to find out how the disease spread. In 1910, when the pneumonic plague outbreak first began, the initial victims of the disease were marmot trappers and fur traders in Manchouli (Manzhouli), along the Siberian border. *Wu Lien-Teh Collection, PictureSG, National Library, Singapore.*

tories throughout the region. As a result, he was prepared when a second major outbreak occurred in 1920.

The second plague began in October in the Hailar district of Manchuria and quickly spread through cities and towns in China's north-east. Efforts by the Plague Prevention Service and local authorities eventually stopped the epidemic in October 1921, but not before 9,300 people had died.

During this outbreak, Wu himself went to affected areas to assess the situation and to make recommendations. In a paper published in *The Journal of Hygiene* in 1923, Wu wrote that when the outbreak first broke out in Hailar, he and his team had gone there in November 1920 where they noticed "the gradual evolution of the plague from the bubonic through the septicaemic into the pneumonic form, due principally to promiscuous spitting and huddling together of coolies day and night in unventilated inns".[24]

Wu also wrote about the non-medical difficulties that doctors faced. In the city of Harbin, rumours circulated that the plague hospital's staff poisoned wells, flour and food in order to kill patients and earn the $3 they were paid for each dead body. In addition, he noted that the hospital "took in patients but did not let them out, and that something uncanny therefore happened within the hospital compound".[25] This suspicion made the lives of the doctors much harder. Wu wrote:

> "For instance, the Chief Medical Officer was accused of shooting the sick in the plague compound and was threatened with a similar fate should an opportunity offer itself, our house-to-house inspection doctors were on several occasions faced with revolvers and knives in the course of their duty, while the disinfection assistants were almost obliged to swallow some of the disinfectants used in the disinfected houses."[26]

Wu also met with resistance to mask-wearing among some medical personnel. When he visited the affected Manchouli (Manzhouli) region, he found a small Russian medical team there (half the region's population was Russian). They were "most untrained, very careless about wearing masks in the presence of the sick and the dead" and even "smoked cigarettes while handling the dead". Three nurses and 15 attendants from this team subsequently died from the plague. The Plague Prevention Service, on the other hand, suffered no fatalities.[27]

Wu himself was proud of the cotton and gauze masks he had popularised, and he noted that the service's laboratory in Harbin also produced 60,000 face masks, in addition to their routine work.[28]

(Below) Corpse collectors using long prongs to collect dead bodies during the second pneumonic plague epidemic in Manchuria, 1921. *Wu Lien-Teh Collection, PictureSG, National Library, Singapore.*

(Bottom) Demonstrating the correct way to wear cotton and gauze masks during the second pneumonic plague in Manchuria (1920–21). *Wu Lien-Teh Collection, PictureSG, National Library, Singapore.*

Father of Modern Chinese Medical Services

By now, Wu had become an important figure in the world of Chinese medical services.[29] Following the first plague of 1910–11, he submitted a long memorandum on "Medical Education in China", suggesting radical improvements to modernise the training of medical students. At Wu's instigation, the government established the National Medical Association in 1915 to promote Western medicine in China. Wu was elected as its inaugural secretary and later served two terms as president from 1916 to 1920.

In 1930, the Chinese government created the National Quarantine Service and appointed Wu as its first director. Headquartered in Shanghai, this agency enabled the government to regain control of quarantine centres in China's major ports that were previously under the supervision of foreign powers.

Wu was also responsible for initiating the building of modern Western-style medical facilities in China. The centrepiece of his efforts was the Peking Central Hospital to which he devoted his best efforts "unceasingly for four years, because it was intended as a model *civil* hospital".[30] Between 1912 and 1935, Wu was responsible for building 14 hospitals in various parts of the country.[31]

Wu's Final Decades

In 1937, while Wu was in Java attending a medical conference, he received news that his Shanghai home had been destroyed by Japanese invaders. He decided not to return to China and resigned from his position as director of the National Quarantine Service. He also suffered a personal tragedy when his wife Ruth died in November that year. By January 1938, he was back in Malaya where he resumed private medical practice at the Boon Pharmacy in Ipoh – the town of his first anti-opium conference.[32]

Like most other Malayans, Wu suffered during the Japanese Occupation. But he was able to continue practising without too much trouble as he had been previously conferred an honorary doctorate by the University of Tokyo. He was friendly with many of the Japanese commanders who sought his medical services.

In 1943, Wu was kidnapped by guerrillas of the Malayan Communist Party and held for a ransom of $7,000. He was released only after the money was paid up. The Japanese authorities found out about the ransom payment and accused Wu of helping the anti-Japanese resistance movement. Fortunately, his life was spared as he was the attending physician to one of the Japanese officers in Malaya.

Wu finally retired from medical practice in 1957 at the age of 78. In mid-January 1960, he moved back to Penang where he was born but died a week later on 21 January 1960, after suffering a stroke.[33] He was survived by his second wife, Marie, two sons and three daughters.

Wu gained great fame as a pioneering plague fighter and became the first Malayan nominated for the Nobel Prize in Medicine in 1935. It is ironic that his success was the indirect result of the systemic racism that he experienced. As a colonial subject, he was raised and nurtured to be among the best of the King's Chinese (as the Peranakan, or Straits-born Chinese, were known) and, indeed, he had proven himself the equal of any doctor in the British Empire. Yet, colonial racism ensured that he would not receive his due. When he tried to spread the values he had acquired in England in Malaya, the authorities decided to teach him a lesson and marginalise him.

Malaya's loss was, however, China's gain. Wu left for China at a time when it was on the cusp of modernity. This was just after China's defeat in the Sino-Japanese War of 1895 and the collapse of the modernising Self-Strengthening Movement that had started in 1861.[34] The movement, which sought to modernise through "Western means" but with "Chinese minds", was an effort to import Western technology, methods and institutions without a corresponding adoption of the thinking, morals or norms of the West. It took someone like Wu – an overseas Chinese person with a Western education – to show how it was possible to do this. Western medical methods were applied and institutionalised with a sensitivity to Chinese traditions. Limited as this movement was in the field of medicine, it nevertheless paved the way for the creation of a modern Chinese state. ♦

Dr Wu Lien-Teh in a studio portrait with his second wife Marie (his first wife passed away in 1937) and their children, 1949. *Wu Lien-Teh Collection, PictureSG, National Library, Singapore.*

NOTES

1 Wu, L.-T. (2014). *Plague fighter: The autobiography of a modern Chinese physician*. Penang: Areca Books. (Call no.: RSEA 610.92 WU)
2 Wu, 2014, p. 149.
3 Wu, 2014, p. 168.
4 The first student from the Penang Free School to win the Queen's Scholarship was Ung Bok Hoey, in 1893. He was followed by Koh Leap Teng in 1894. See Tan, C.L. (2016). *Live free: In the spirit of serving* (p. 166). Singapore: The Old Frees' Association. (Call no.: RSING 371.0095951 TAN)
5 Wu, 2014, p. 182.
6 Penang School. (1898, July 11). *The Singapore Free Press and Mercantile Advertiser*, p. 11. Retrieved from NewspaperSG.
7 Wu, 2014, p. 193.
8 Wu, 2014, p. 195.
9 Wu, 2014, p. 197.
10 Wu, 2014, p. 214.
11 Wu, 2014, pp. 224–225.
12 Wu, 2014, p. 232.
13 See National Library Board. (2015, December 31). *Lim Boon Keng* written by Ang Seow Leng. Retrieved from Singapore Infopedia website.
14 Wu, 2014, p. 221.
15 Wu, 2014, p. 232.
16 Wu, 2014, p. 236.
17 Wu, 2014, pp. 236–237.
18 Wu, 2014, p. 244.
19 Wu, 2014, pp. 244–245.
20 Wu, 2014, p. 279.
21 Wu, 2014, pp. 279–280.
22 Wu, 2014, pp. 3–4.
23 Wu, 2014, pp. 19–21.
24 Wu, L.T. (1923, May). The second pneumonic plague epidemic in Manchuria, 1920–21. *The Journal of Hygiene*, *21* (3), 262–288, p. 264. Retrieved from JSTOR via NLB's eResources website.
25 Wu, 1923, p. 275.
26 Wu, 1923, p. 275.
27 Wu, 1923, p. 271.
28 Wu, 1923, p. 277.
29 See Goh, L.G., Ho, T.M., & Phua, K.H. (1987). Wisdom and Western science: The work of Dr Wu Lien-Teh. *Asia Pacific Journal of Public Health, 1* (1), 99–109. Retrieved from JSTOR via NLB's eResources website; Lee, K.H., Wong, T.K., & Ng, K.H. (2014, January). Dr Wu Lien-teh: Modernising post-1911 China's public health service. *Singapore Medical Journal, 55* (2), 99–102. Retrieved from Singapore Medical Journal website.
30 Wu, 2014, p. 460.
31 Wu, 2014, p. 469.
32 Dr Wu Lien Teh retires. (1938, January 22). *The Malaya Tribune*, p. 12. Retrieved from NewspaperSG.
33 Dr Wu – plague fighter – dies, aged 81. (1960, January 22). *The Straits Times*, p. 7. Retrieved from NewspaperSG.
34 See Qu, J. (2016, August). Self-strengthening movement of late Qing China: An Intermediate reform doomed to failure. *Asian Culture and History, 8* (2), 148–154. Retrieved from ResearchGate website.

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G.H. CAFE

A DINING LANDMARK ON BATTERY ROAD

G.H. Cafe was a fashionable eatery in the business district that was popular among Singapore's well-heeled. **Vandana Aggarwal** relives the history of this landmark institution.

G.H. Cafe on Battery Road, 1962. In its heyday, this was where the affluent dined. Photo by Wong Ken Foo (K.F. Wong). *Courtesy of National Archives of Singapore.*

Hock Lai took him to the G.H. Cafe at nearby Battery Road. There were no hints anywhere what G.H. abbreviated stood for... The restaurant was air-conditioned, had plush upholstered chairs, white tablecloths, occasionally stained, and a fat Indian woman at the piano, singing old Broadway hits. Cole Porter, Oscar Hammerstein and Richard Rogers ghosted the large, comfortably darkened dining room, while young business executives and lawyers and doctors ate from plates with knife and fork and spoon. Silver cutlery a little worn from use. Cutlery, however, embossed with the letterings "G.H.". Kwang Meng understood from Hock Lai that this same restaurant would be transformed into a bar, with girls and all, in the night. During the day, it only catered to the lunch throng.[1]

In 1972, Singaporean poet and novelist Goh Poh Seng published *If We Dream Too Long*, a book that has been described as the first true local novel. References to a G.H. Cafe on Battery Road appear periodically in the book, illustrating how a character in the story – because he now dines at the cafe – has risen up the social ranks.

A Sweet Treat

G.H. Cafe was not a figment of Goh's imagination. It was a real cafe that was located on Battery Road. In its heyday, this was where the well-heeled had tea, businessmen hobnobbed and lawyers dined.

G.H. Cafe began life as G.H. Sweet Shop, located at 31 Kling Street (present-day Chulia Street), and started advertising its delectable offerings in *The Straits Times* in October 1920.[2] There has been much speculation about what the initials "G" and "H" stood for. While some believe they were short for "Grand Hotel", others have attributed it to businessman G.H. Kiat.[3] However, in all likelihood, they were the initials of the eatery's European founder, Mrs Gertrude Howe.[4]

According to a Straits Times report on 13 October 1920, the sweets on display at G.H. Sweet Shop were "sold under the chop 'G.H.' which conceals the identity of a lady who evidently has nothing to learn in the art of sweet making".[5] Advertisements promoted the shop's "new delicious sweets made fresh daily in Singapore". These could be purchased from various outlets around town, including hotels, or directly from the shop itself. G.H. Sweet Shop soon became the go-to place for wedding and Christmas cakes, ice lollies and sweets.[6] Such was its reputation that someone even bought a G.H. Sweet Shop cake for the Sultan of Johor's birthday in September 1922.[7]

By then, the shop had moved to larger premises at 6 Battery Road, and later to 7 Battery Road next door. The ground floor comprised a cake and tiffin room while the second floor had tea rooms and another tiffin room.[8] Part of the shop space was rented out for exhibitions of art works. In 1924, G.H. Sweet Shop opened the Tea Kiosk overlooking the lake at the Botanic Gardens.[9]

G.H. Sweet Shop also supplied confectionery to places such as Hong Kong and Rangoon (present-day Yangon) "carefully packed in tins". In Singapore, the G.H. brand gained patronage of the well-heeled of society. The establishment catered food for events at the Yacht Club and guests at horse races, and also ice-cream for balls held at Government House (today's Istana).[10]

Changes Afoot

Around 1926, G.H. Sweet Shop was put up for sale for unknown reasons. It was eventually purchased for $12,000 by Armenian businessmen John Eleazar Johannes and his brother Basil Eleazar Johannes, in partnership with fellow Armenian Arathoon Martin Sarkies, a cousin of the Sarkies brothers of Raffles Hotel fame. The men took out a loan from Chettiar moneylenders[11] for the acquisition.[12]

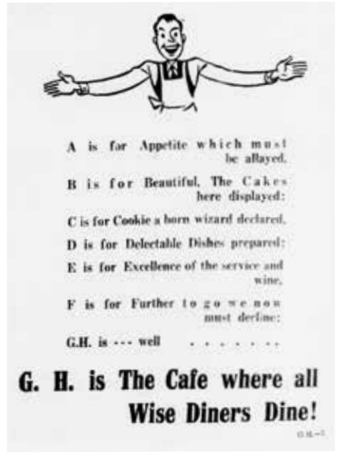
Money was pumped in to redecorate and furnish the shop, enhance the kitchen and augment the food menu. The restaurant, which reopened around early 1927, operated till 10 pm nightly, serving a la carte meals.[13] Its cakes remained the most sought-after item on the menu and patrons were advised to order Christmas cakes "in advance so as to avoid disappointment as was the case last year".[14]

Within two years, however, poor management by the Johannes brothers resulted in their bankruptcy.[15] In August 1931, *The Singapore Free Press* reported that G.H. Sweet Shop would be liquidated. Fortunately, prominent Parsi merchant Navroji R. Mistri[16] stepped in to save the business and became its new proprietor that same month. Determined to give it a new lease of life, Mistri renamed the shop "G.H. Cafe" and sought to "improve the amenities and the scope of business".[17]

Under Mistri, G.H. Cafe continued churning out cakes and confectionery while continuing its restaurant and catering business. In 1932, Raffles Institution held its annual dinner there and the following year, the cafe catered for almost a thousand guests at Mrs Ong

(Below) Navroji R. Mistri (1885–1953) was a businessman and philanthropist who acquired G.H. Cafe in August 1931. The Mistri Wing of the Singapore General Hospital and Mistri Road are named after him. *Courtesy of Mr and Mrs Noshir Mistri.*

(Below right) An advertisement of The Tea Kiosk, operated by G.H. Sweet Shop, at the Botanic Gardens. *Malayan Saturday Post, 19 April 1924, p. 4. Retrieved from NewspaperSG.*



(Far left) Hot cross buns were sold at G.H. Cafe. The advertisement took pains to mention that the buns were "baked to a golden brown and hot from the oven" and also reasonably priced. *The Malaya Tribune, 9 April 1936, p. 2. Retrieved from NewspaperSG.*

(Left) On top of its delicious food and excellent service, G.H. Cafe publicised itself as the place where "all wise diners dine". *The Malaya Tribune, 1 September 1933, p. 6. Retrieved from NewspaperSG.*

Sam Leong's[18] 71st birthday celebration held at New World Cabaret.[19]

A Popular Hangout

With business doing well, Mistri decided that the restaurant needed a face lift. When G.H. Cafe reopened in 1935 after an extensive refurbishment, it featured a lounge with terrazzo flooring and comfortable low chairs upholstered in green. The main hall, tastefully painted in shades of grey and green, had 40 tables that could accommodate up to 200 diners and ceiling fans to cool the place. Tea and dinner dances could now be held on the spanking new dance floor, accompanied by music played on an automatic electric gramophone.[20]

G.H. Cafe was a popular venue for hosting visiting dignitaries, wedding receptions and high-profile society events. In 1935, the women-only Lotus Club held a dinner at the cafe in celebration of its jubilee anniversary which saw, for the first time in the club's history, male attendees.[21] Other events held at the cafe included the annual general meetings of the Medical Practitioners of Singapore, the Old Boys of St John's College of Jaffna in Ceylon (now Sri Lanka) and the Christian Brothers Old Boys Association.

G.H. Cafe continued to operate during the Japanese Occupation. Mrs Myna Ruth Segeram, who worked in the Library Section of the Economic Research Department for a Japanese officer, remembers that very often, she and other co-workers "piled into his car and went down to G.H. Cafe in Battery Road and he gave us a treat of ice-cream".[22] Mr Trevelyan Hale, a Eurasian who joined the Customs Department during this period, held his wedding reception at the cafe in 1944.[23]

After the war, G.H. Cafe became synonymous with an upmarket tea house and luncheon venue. Scotsman Hugh William Jamieson, who arrived in Singapore in 1946 and worked in the vicinity of Raffles Place, recalls the cafe as a "superior place" with "white tablecloths and proper cutlery".[24]

Such was the popularity of the cafe that it continued to operate even after an external wall collapsed, taking down part of the first floor. This happened at about 8.30 am on 12 October 1948. Fortunately, there were no customers at the time, and the manager and the chief bartender narrowly escaped with their lives. Later in the day, customers nonchalantly carried on with their meal even as debris was being cleared.[25]

G.H. Cafe was also an ideal venue to impress a girl, according to a poem written by an "A.S. Lee" and published in *The Straits Times* in July 1949. He wrote:

> "A picture in silk and lace by Elsie May,
> If my darling, my winsome Jenny!
>
> "I will bring her then to the G.H. Cafe
> Where we chat and eat cakes and
> sip tea"[26]

A week later, a European resident in Singapore penned a witty poem in response to Lee, admonishing him thus:

> "Dear A.S. Lee, you ought to see,
> You'll ne'er have little Jennys
> If you eat cakes and sip your tea
> At such expensive venues!...
>
> "I don't pretend you should not spend
> Fair sums to please fair Jenny,
> But there are less expensive shops
> Than in the Jalan Batt'ry!"[27]

To expand its customer base, G.H. Cafe began putting up advertisements that emphasised the affordability – yet uncompromising quality – of its meals.[28]

The cafe had a large repertoire of dishes catering to different tastes. In 1935, Indian cuisine was served at a dinner hosted by Mrs J.T.N. Handy[29] in aid of the St Andrew's School building fund,[30] while Rijsttafel tiffin was cooked for the delegates of a Rotary Club conference.[31] G.H. Cafe also regularly catered at weddings. In 1953, the cafe hosted a dinner party on the occasion of the wedding of Devan Nair (who would be appointed President of Singapore in 1981). Guests included future prime minister Lee Kuan Yew and his wife, Kwa Geok Choo.[32]

G.H. Cafe was well patronised at breakfast, lunch and afternoon tea. The day would begin with morning shoppers who dined and relaxed in the cafe before the lunchtime crowd descended. According to prominent Indian businessman Rajabali Jumabhoy, "at 11 o'clock most shipping and insurance people used to go for coffee or a drink at G.H. Cafe and bargains for cargo and insurance... [were] often made there."[33] Tea-drinking crowds thronged the cafe in the late afternoons. However, the cafe was generally closed in the late afternoons unless an event was held there.

A porcelain plate bearing the logo of G.H. Cafe, 1980s. *Courtesy of National Museum of Singapore, National Heritage Board.*

Post-Mistri Era

Following Mistri's death in 1953, G.H. Cafe continued to operate under the same name. Peter Chua Hock Seng, a well-known racehorse owner, became a partner and the managing director of G.H. Cafe until his demise in 1960.[34] The cafe remained a trendy place for hosting visitors, club meetings, office parties and all manner of celebrations. Nicolas Tang, who was then a salaried partner with law firm Allen & Gledhill, recalls that G.H. Cafe was a popular haunt for lawyers in the 1970s:

> "When we went to the High Court on summons in chambers days, we would walk back to Raffles Place, and have coffee at the G.H. Cafe in Battery Road... together with its sinfully delicious kaya cake. If we missed coffee, we could always go there for lunch and sit at a table reserved for lawyers (a sort of 'mess table')."[35]

A farewell tea party hosted by the Indian Chamber of Commerce at G.H. Cafe for founding member Jamnadas Purshotam. *The Singapore Free Press and Mercantile Advertiser, 16 April 1936, p. 2. Retrieved from NewspaperSG.*

A Quick Decline

By the mid-1970s, however, the cafe's accounts were in the red. The management attempted to reinvent the cafe as a nightclub and cocktail lounge in a bid to save the business. In 1973, G.H. Cafe became known as Singapore Kitchen & Cocktail Lounge. The next year saw the space being transformed into a nightclub called Singapore Mini Nite-Club.[36] In 1975, the night club was renamed Golden Lucky Cocktail Lounge and, a few months later, Seven-Up Restaurant and Cocktail Lounge.[37] Despite the series of makeovers and rebranding, the business failed to revive and went into liquidation in 1981.[38] While G.H. Cafe no longer exists today, it remains a fond memory for an older generation of Singaporeans. ♦

NOTES

1 Goh, P.S. (2020). *If we dream too long* (p. 28). Singapore: NUS Press. (Call no.: RSING S823 GOH)
2 Page 3 advertisements column 2. (1920, October 18). *The Straits Times*, p. 3. Retrieved from NewspaperSG.
3 Chew, D. (Interviewer). (1984, November 30). *Oral history interview with Hale, Trevelyan James Ruthven* [Recording no. 000476/27/21]. Retrieved from National Archives of Singapore website.
4 Lee, P. (interviewer). (1997, November 3). *Oral history interview with Jamieson, Hugh William* [Recording no. 001968/2/2]. Retrieved from National Archives of Singapore website.
5 [Untitled]. (1920, October 13). *The Straits Times*, p. 8. Retrieved from NewspaperSG.
6 *The Straits Times*, 18 Oct 1920, p. 3.
7 [Untitled]. (1922, September 16). *The Straits Times*, p. 10. Retrieved from NewspaperSG.
8 Page 7 advertisements column 2. (1922, April 1). *The Straits Times*, p. 7; [Untitled]. (1924, July 1). *The Straits Times*, p. 8. Retrieved from NewspaperSG. [Note: Tiffin is a colonial term for light tea-time meals.]
9 [Untitled]. (1925, March 5). *The Straits Times*, p. 8; Page 4 advertisements column 2. (1924, April 19). *Malayan Saturday Post*, p. 4. Retrieved from NewspaperSG.
10 The "G.H." Shop. (1922, April 11). *The Singapore Free Press and Mercantile Advertiser*, p. 12. Retrieved from NewspaperSG.
11 The Chettiars hailed from Chettinad in India's Tamil Nadu state, a caste of Tamil moneylenders. They acted as full service bankers by providing liquidity in the form of working capital loans, syndicated loans, investment capital and demand drafts. For more information, see Ng, M. (2017, Oct–Dec). Micro India: The Chettiars of Market Street. *BiblioAsia, 13* (3): 10–17. Retrieved from BiblioAsia website.
12 Purchase of G.H. Sweet Shop. (1929, July 10). *The Singapore Free Press and Mercantile Advertiser (Weekly)*, p. 9. Retrieved from NewspaperSG.
13 Bankruptcy court: Former owners of G.H. Sweetshop. (1929, July 13). *The Malaya Tribune*, p. 7; Page 20 advertisements column 1. (1927, November 5). *The Singapore Free Press and Mercantile Advertiser*, p. 20. Retrieved from NewspaperSG.
14 [Untitled]. (1927, November 22). *The Singapore Free Press and Mercantile Advertiser*, p. 9. Retrieved from NewspaperSG.
15 Bankruptcy Court: Johannes' deals in shares. (1929, July 13). *The Singapore Free Press and Mercantile Advertiser*, p. 11. Retrieved from NewspaperSG.
16 Navroji R. Mistri (1885–1953) was a businessman and philanthropist, who donated $950,000 to the General Hospital for a new ward and $50,000 to the University of Malaya. The Mistri Wing of the Singapore General Hospital and Mistri Road are named after him. See National Library Board. (2017). *Navroji R. Mistri* written by Joshua Chia Yeong Jia. Retrieved from Singapore Infopedia website.
17 Page 2 advertisements column 3. (1931, August 17). *The Singapore Free Press and Mercantile Advertiser*, p. 2; Page 16 advertisements column 4. (1931, August 22). *The Malaya Tribune*, p. 16. Retrieved from NewspaperSG.
18 Mrs Ong Sam Leong was the widow of prominent Chinese businessman Ong Sam Leong (1857–1918). The biggest grave in Bukit Brown Cemetery belongs to the couple. Their sons Ong Boon Tat and Ong Peng Hock opened the New World amusement park in 1923. See National Library Board. (2016, July). *Ong Sam Leong* written by Lee Hwee Hoon. Retrieved from Singapore Infopedia website.
19 Birthday party: Mother Of Ong brothers honoured. (1933, December 22). *The Malaya Tribune*, p. 12. Retrieved from NewspaperSG.
20 Around the town. (1935, February 15). *The Singapore Free Press and Mercantile Advertiser*, p. 4. Retrieved from NewspaperSG.
21 Lotus Club jubilee dinner on Saturday. (1935, May 13). *The Straits Times*, p. 12. Retrieved from NewspaperSG.
22 Tan, B. L. (Interviewer). (1985, July 3). *Oral history interview with Segeram, Myna Ruth (Mrs)* [Recording no. 000580/7/2, p. 31]. Retrieved from National Archives of Singapore website.
23 Chew, D. (Interviewer). (1984, November 30). *Oral history interview with Hale, Trevelyan James Ruthven* [Recording no. 000476/27/22]. Retrieved from National Archives of Singapore website.
24 Lee, P. (Interviewer). (1997, November 3). *Oral history interview with Jamieson, Hugh William* [Recording no. 001968/2/2]. Retrieved from National Archives of Singapore website.
25 They were drinking coffee when the wall fell down. (1948, October 13). *Morning Tribune*, p. 1. Retrieved from NewspaperSG.
26 Hand in hand in Singapore. (1949, July 23). *The Straits Times*, p. 9. Retrieved from NewspaperSG.
27 How to get married and live happy ever after. (1949, July 30). *The Straits Times*, p. 9. Retrieved from NewspaperSG.
28 Page 6 advertisements column 2. (1934, July 21). *The Singapore Free Press and Mercantile Advertiser*, p. 6; Page 2 advertisements column 2. (1936, April 9). *The Malaya Tribune*, p. 2; Retrieved from NewspaperSG.
29 Mrs J.T.N. Handy was a founding member of the Indian and Ceylonese Ladies' Club, which was the first club for Indian women in Singapore.
30 Women's interest: Indian dinner. (1935, July 19). *The Singapore Free Press and Mercantile Advertiser*, p. 4. Retrieved from NewspaperSG.
31 The social spotlight: Rijstafel tiffin. (1935, June 16). *The Straits Times*, p. 8. Retrieved from NewspaperSG. [Note: A creation of the Dutch colonists, Rijsttafel is a meal comprising several Indonesian dishes served buffet style, with rice being the centrepiece of the menu.]
32 Lee-Koh, A.M.C. (Interviewer) (1981, August 21) *Oral History Interview with Nair, Chengara Veetil Devan*. [Transcript of recording no. 000049/26/12, p. 113]. Retrieved from National Archives of Singapore website.
33 Lim, H.S. (Interviewer). (1981, July 2). *Oral history interview with Jumabhoy, Rajabali*. [Transcript of recording no. 000074/37/5, p. 37]. Retrieved from National Archives of Singapore website.
34 Partner in cafe, lorry driver die in spate of crashes on roads. (1960, December 26). *The Singapore Free Press*, p. 1. Retrieved from NewspaperSG.
35 Tang, N. (2013, June 28). Singapore legal practice in the 70's [Blogpost]. Retrieved from nicolastang.com website.
36 Page 1 advertisements column 4. (1973, April 25). *New Nation*, p. 1; Page 10 advertisements column 2. (1974, October 17). *New Nation*, p. 10. Retrieved from NewspaperSG.
37 Page 9 advertisements column 1. (1975, March 22). *The Straits Times*, p. 9; Reutens, L L. (1975, April 4). Bak koot teh in cool comfort. *New Nation*, p. 14. Retrieved from NewspaperSG.
38 Page 17 advertisements column 3. (1981, November 19). *New Nation*, p. 17. Retrieved from NewspaperSG.

CLOUDY WITH A SLIGHT CHANCE OF RAIN

SINGAPORE'S METEOROLOGICAL SERVICE

The Met Service was officially set up in 1929, but people have been recording weather data here for the last 200 years. **Lim Tin Seng** has the details.

Low-lying countries like Singapore face an existential threat from climate change. By the year 2100, sea levels are projected to rise by at least one metre, which is a problem given that 30 percent of Singapore lies less than 5 metres above sea level.

But there is no need to wait 80 years to see the impact of climate change on Singapore. Already, the average sea level around Singapore is now 14 cm higher than it was 50 years ago, according to the Meteorological Service Singapore (MSS).[1] In 2019, the MSS reported that four of the island's 10 warmest years on record have been in the last five years.

The temperature records of the MSS date back to 1929 while its rainfall readings began in 1869. But the systematic observation of Singapore's weather stretches back even further. Throughout the 19th century, scientifically inclined individuals, armed with thermometers and rain gauges, have been earnestly documenting Singapore's rainfall and temperature. They were a mixed bag of people that included government officials, a missionary and even a magistrate.

In 1869, the Medical Department of the Straits Settlements began collecting weather data seriously. Its efforts led to the formation of a dedicated government department for recording and analysing weather information in 1929 – the Malayan Meteorological Service, the predecessor of today's MSS.

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The earliest known weather observations in Singapore were carried out by the first Resident, William Farquhar, between 1820 and 1823. This table shows the temperature readings for 1822. The highest temperature recorded that year was 89°F (31.7°C) and the lowest 73°F (22.8°C). *Image reproduced from Farquhar, W. (1827). Thermometrical and Barometrical Tables (p. 585). Transactions of the Royal Asiatic Society of Great Britain and Ireland. London: Parbury, Allen, & Co. Collection of the National Library, Singapore (Accession no.: B29032746K).*

MONTHS.	THERMOMETER.								
	Average of the Month.			Greatest Range.			Least Range.		
	6 A. M.	Noon.	6 P. M.	6 A. M.	Noon.	5 P. M.	6 A. M.	Noon.	6 P. M.
January ..	74·2	81	79·2	76	85	83	72	76	74
February	74·2	82·3	80·1	76	86	84	72	74	75
March ..	73·3	84·6	81·4	78	87	84	74	79	78
April	76·1	84·8	82·3	78	87	85	72	79	78
May	77·3	83·8	82·5	79	87	86	75	81	78
June	77·4	84	83·1	82	87	86	75	78	81
July	76·7	84·8	83·9	81	88	86	74	79	81
August ..	77·7	83·5	82·7	81	87	85	75	78	77
September	77·3	84·9	83·8	81	81	86	75	76	76
October ..	76·5	83·6	82·8	82	86	86	74	78	79
November	75·7	82·3	80·6	78	88	88	74	77	77
December	75·5	83·6	81·3	76	85	76	73	81	78
Total Ann. Average	75·9	83·7	82·1	79	86·9	85·4	73·7	78	77·6

The Beginnings

The earliest known weather observations were conducted by the settlement's first Resident, William Farquhar, who personally recorded the monthly temperature and number of rainy days on Government Hill (present-day Fort Canning) between 1820 and 1823. After Farquhar left Singapore in 1823, this practice continued for another two years before it was stopped.

In the following years, several others attempted their own recordings. From November 1839 to February 1841, American missionary Joseph S. Travelli recorded the island's temperature and rainfall from the mission school run by the American Board of Foreign Missions located on Ryan's Hill (today's Bukit Pasoh). Second-Lieutenant Charles Morgan Elliot of the Madras Engineers did the same between January 1841 and September 1845 from an observatory along the Kallang River. Magistrate of Police Jonas Daniel Vaughan, who had an active interest in science, kept a series of reports that ran from 1862 to 1866. He conducted his observations on River Valley Road using a self-reading thermometer and a rain gauge.[2]

In 1869, the government formally institutionalised the routine observation of Singapore's weather patterns. This was led by the Medical Department of the Straits Settlements, which wanted data to establish a relationship between the weather and epidemics. The department believed that "the health of Singapore is dependent on its rainfall" and linked the outbreak of vector- and water-borne diseases such as cholera to the amount of rainfall the island received.[3]

The department began compiling temperature and rainfall readings taken by observation stations located in hospitals such as the Convict Jail Hospital in Bras Basah, Kandang Kerbau Hospital, and the General Hospital at Sepoy Lines. The department also relied on readings recorded by stations maintained by private individuals, estate owners and other government departments. These stations were located mainly in the southern and central parts of Singapore, such as Mount Pleasant, Perseverance Estate in Geylang, the P&O (Peninsula and Oriental Steam Navigation Company) Depot in New Harbour, the Botanic Gardens, Killiney Estate, St John's Island and the Waterworks Reservoir (today's MacRitchie Reservoir).

By the end of the 1800s, there were 11 observation stations scattered across Singapore and 34 others in Penang and Melaka. Weather observations in these two territories began in 1883.[4]

The Malayan Connection

The Medical Department collated weather data for Singapore, Penang and Melaka – the colonies making up the Straits Settlements – until the end of 1926 when responsibility was transferred to the Survey Department. This was in anticipation of the formation of a dedicated meteorological branch to be overseen by the Survey Department.

In 1929, the Malayan Meteorological Service was formally established and tasked to observe the weather of the Straits Settlements and British Malaya as well as carry out a systematic and scientific study of the climate. The new office would conduct weather forecasts, prepare synoptic charts[5] and organise regular observations of the earth's upper atmosphere.[6]

The idea to set up a meteorological branch was first mooted by William George Maxwell, Chief Secretary of the Federated Malay States, and Herbert Robinsons, Director of the Federated Malay States Museums. The two men wanted to improve the quality of meteorological services so that more complex weather information such as weather forecasts and daily reports could be provided to the aviation sector, which was in its infancy at the time.[7]

Before the meteorological branch could be formed though, new full-scale

(Facing page) A pilot balloon at the Paya Lebar observation station, 1955. The balloon measures wind speed and direction in the upper atmosphere. *Ministry of Information and the Arts Collection, courtesy of National Archives of Singapore.*

(Right) Singapore's weather data compiled by the Medical Department of the Straits Settlements from 1869 to 1926 was based on readings taken by various observation stations across the island. This 1893 survey map shows the location of one of the stations within the compounds of Kandang Kerbau Hospital. *Survey Department, Singapore, courtesy of National Archives of Singapore.*

observation stations had to be set up in Singapore and the Malay Peninsula. These stations were staffed by full-time observers and equipped with self-recording instruments capable of recording hourly readings of elements like temperature, humidity, rainfall, cloud formation, amount of sunshine, wind, barometric pressure, visibility, evaporation and thunderstorms (duration and intensity).[8] The older observation stations were subsequently downgraded to auxiliary stations.

In 1929, the first full-scale observation station in Singapore was established on Mount Faber. Singapore was also made the headquarters of the Malayan Meteorological Service with the office located in Fullerton Building. In 1934, the Mount Faber station as well as the headquarters were moved to Kallang Airport, which the authorities thought was a more suitable location for observing Singapore's weather and for the transmission of weather information to aircraft.[9]

Using weather data gathered by 17 full-scale observation stations and over 30 auxiliary stations in Malaya and Singapore, the meteorological service supplied daily weather reports to local newspapers and carried out weather forecasts for both civil and military aviation. In the mid-1930s, the Malayan Meteorological Service was described as "fast becoming one of the best organised in the East".[10]

In 1938, the Malayan Meteorological Service began measuring wind speed and direction in the upper atmosphere using pilot balloons.[11] It also shared synoptic weather information of Singapore and British Malaya with ships at sea as well as with the meteorological services in the Dutch East Indies (Indonesia), French Indochina (Vietnam, Cambodia and Laos), Siam (Thailand), Hong Kong, the Philippines and India.[12]

During the Japanese Occupation (1942–45), the Malayan Meteorological Service continued with its work. Unfortunately, weather records collected during the Occupation years were destroyed by the Japanese before they surrendered. In addition, almost all the meteorological instruments and equipment were damaged beyond repair. It took about two years after the end of the war before the Met Service was able to resume full operations.[13]

After the war, the Malayan Meteorological Service ceased to be part of the Survey Department and instead functioned as a separate government department that served both Singapore and the Federation of Malaya. In addition to its regular duties, the service also exchanged meteorological information with regional met offices and the World Meteorological Organisation (WMO). The latter was an intergovernmental organisation set up by the United Nations in 1950 to facilitate cooperation and the sharing of weather data among member nations.[14]

The Malayan Meteorological Service also began acquiring new equipment to better capture weather-related data. In 1951, it installed the first weather radar sets in Singapore, Kuala Lumpur and Kota Baru to track the occurence and movement of thunderstorms in the region. The following year, it established an upper air observatory in Paya Lebar. This was significant as the upper air observatory enabled the tracking of temperature and humidity in order to determine the vertical profile of the atmosphere.[15]

From the mid-1950s, the Malayan Meteorological Service began using merchant shipping vessels to gather weather data. These ships were equipped with meteorological instruments so that they could capture weather information along the Straits of Melaka and in the South China Sea. By the end of the decade, the service was managing 10 full-scale meteorological stations in the Federation of Malaya and one in Singapore. This was in addition to a network of 43 auxiliary stations in the Federation and another 24 in Singapore.[16]

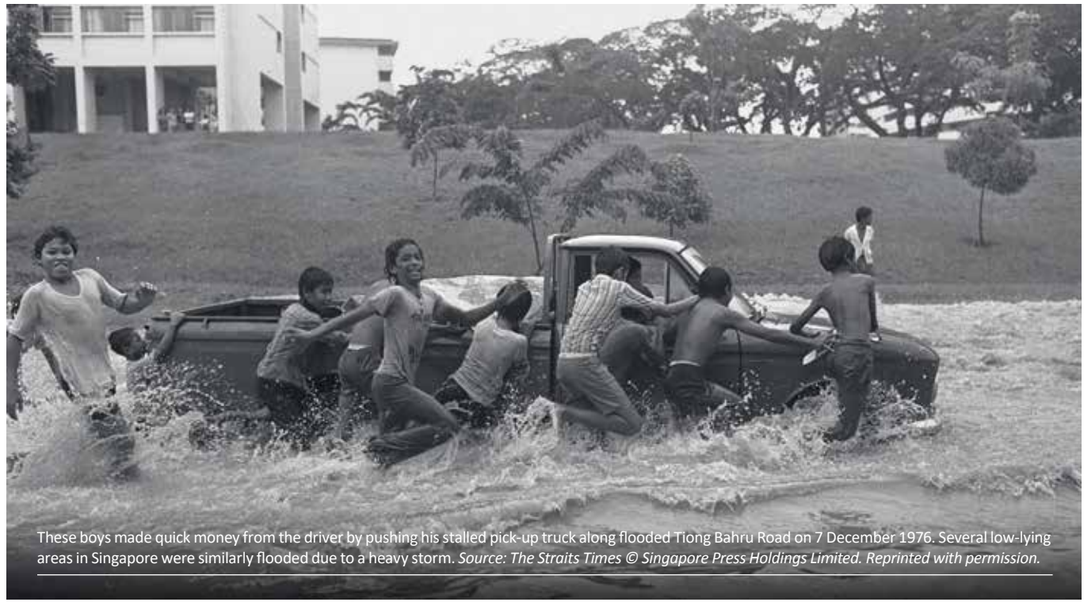
Yang di-Pertuan Negara Yusof Ishak peering into a weather apparatus at Paya Lebar Airport, 1961. *Yusof Ishak Collection, courtesy of National Archives of Singapore.*

Flying Solo

After Singapore gained independence in 1965, the Meteorological Service Singapore (MSS) was formed when the Singapore section of the Malayan Meteorological Service – comprising the main observation station in Paya Lebar and 30 auxiliary stations – was hived off and briefly came under the purview of the Deputy Prime Minister's Office before being transferred to the Ministry of Communications in 1968.[17] During this time, Singapore also officially became a member of the WMO in 1966.[18]

The MSS continued acquiring new equipment to improve its ability to gather data and carry out forecasting. In 1970, the MSS replaced its storm warning radar at Paya Lebar Airport with one that could detect storms up to 400 km away. Its radar waves could penetrate places receiving heavy rainfall, which enabled the service to obtain a more detailed picture of the distribution of rain areas.[19] In 1971, the MSS replaced its upper air-sounding system and opened a new ground station at its headquarters in Paya Lebar Airport to receive up-to-date satellite meteorological imagery of Southeast Asia.

The MSS also began deploying aircraft as mobile weather observations. From 1979, an electronic device known as Aircraft to Satellite Data Relay was installed in Singapore Airlines planes to record temperature, wind and pressure conditions outside the aircraft. The system could also track the aircraft's altitude and



These boys made quick money from the driver by pushing his stalled pick-up truck along flooded Tiong Bahru Road on 7 December 1976. Several low-lying areas in Singapore were similarly flooded due to a heavy storm. *Source: The Straits Times © Singapore Press Holdings Limited. Reprinted with permission.*

location every seven-and-a-half minutes. The information was then automatically transmitted to ground-receiving stations via geostationary satellites so that the MSS could provide better services to the aviation industry, especially for aircraft on long-haul routes.[20]

In 1981, the MSS introduced a new weather radar system to track rain better. Located at Changi Airport, which became the headquarters of the department in 1983,[21] the radar system also provided advance warning of adverse weather conditions. It could even measure the total amount of rainfall in any part of Singapore during a storm.[22]

The MSS also launched a multimillion-dollar computerisation programme to replace time-consuming, labour-intensive work such as the compilation of meteorological data, and the preparation and updating of weather charts. Johnny Tan, a technical officer with the MSS, told *The Straits Times* that the work he used to do was "tedious" and involved "decoding pages of numbers and plotting tiny figures onto weather charts day in and day out…".[23] Because of his work at the MSS, Tan had to start wearing glasses. With the help of computers, however, charts that Tan used to take four or five hours to plot could be done by the computer in just eight minutes.

Throughout the 1990s, the MSS continued to expand its capabilities with new meteorological equipment. In 1996, the MSS established a national seismic system to detect an earthquake within minutes of its occurrence. The system, which is still in use today, can also estimate the location of the earthquake and measure its intensity and magnitude. This information is shared with the Association of Southeast Asian Nations (ASEAN) Earthquake Information Center based in Jakarta.[24]

In 1997, the MSS installed a lightning detection system to track and detect lightning activities between clouds as well as lightning that strikes the ground. (Interestingly, Singapore has one of the highest occurences of lightning activity in the world.) This allows the MSS to generate accurate maps showing lightning activity. Before this, the MSS was only able to estimate the location of lightning strikes.

That same year, the MSS replaced the weather radar installed in 1981 with a Doppler radar. While the older radar could only measure the intensity of precipitation, the new radar was able to measure the velocity of raindrops moving towards or away from the radar, thus allowing it to compute wind speeds during a storm.[25]

Apart from upgrading equipment, the MSS also improved the way it delivered weather information to the public. Soon after Teletext – a television information retrieval service – was launched in 1983, weather information was made available on the platform. The following year, the MSS introduced a 24-hour telephone service whereby people could obtain 12-hour weather forecasts, tide times, and the highest and lowest temperatures expected.[26] A decade later, the MSS launched METFAX so that the public could retrieve graphic weather charts by fax.

In 1995, the MSS launched a website featuring its own weather satellite images as well as those by the US National

THE HIGHS AND LOWS OF SINGAPORE'S WEATHER

- Highest daily maximum temperature: 37°C (Tengah Station, 17 April 1983)
- Lowest daily minimum temperature: 19°C (Paya Lebar Station, 14 February 1989)
- Highest daily total rainfall: 512.4 mm (Paya Lebar Station, 2 December 1978)
- Highest monthly total rainfall: 996.3 mm (Buangkok Station, December 2006)
- Maximum wind gust: 90.7 km/h (Changi Climate Station, 29 November 2010)

REFERENCE

Meteorological Service Singapore. (2020, February 12). *Historical extremes*. Retrieved from Meteorological Service Singapore website.

Oceanographic Atmospheric Administration.[27] That same year, the MSS became the Operational Meteorological Databank for Southeast Asia, a responsibility it continues to assume today. This databank facilitates the exchange of operational meteorological data between countries in the Asia-Pacific and Europe.

The MSS was also appointed to host the ASEAN Specialised Meteorological Centre (ASMC). Set up in 1993, the ASMC – which is still active today – aims to support the development of national meteorological services in ASEAN. After the ASEAN Regional Haze Action Plan was implemented in 1997, the ASMC was designated by the environment ministers of ASEAN member states as the centre responsible for the monitoring of land and forest fires, and the assessment and provision of advisories of transboundary haze in the southern ASEAN region.[28]

A Leading Meteorological Service

The MSS became part of the National Environment Agency (NEA) in 2002, under the auspices of the Ministry of the Environment and Water Resources (MEWR).

In 2010, the Doppler weather radar in use since 1997 was replaced with an even more powerful version that can track the movement and intensity of precipitation within a radius of 480 km. With this, the MSS is able to provide a more accurate estimate of expected rainfall. In turn, this data can be used for better water resource and flood management. The improved data also enables the Met Service to prepare detailed en-route weather forecasts for flights as well as issue advisories and warnings of adverse weather conditions.[29]

To keep pace with the way people consume information today, the MSS launched the Weather@SG mobile website in 2009, followed by the Weather@SG mobile app in 2016 so that the public can obtain information such as island-wide observations of rainfall, temperature, humidity, wind direction and location-specific forecasts on-the-go.[30]

The MSS has also been strengthening its research base by building up local expertise in climate science and expanding its collaboration with regional institutes. In 2011, the Met Service signed a memorandum of understanding with the Meteorological Office of the United Kingdom to develop climate models that could make long-term projections of Singapore's climate for various time scales up to the year 2100.

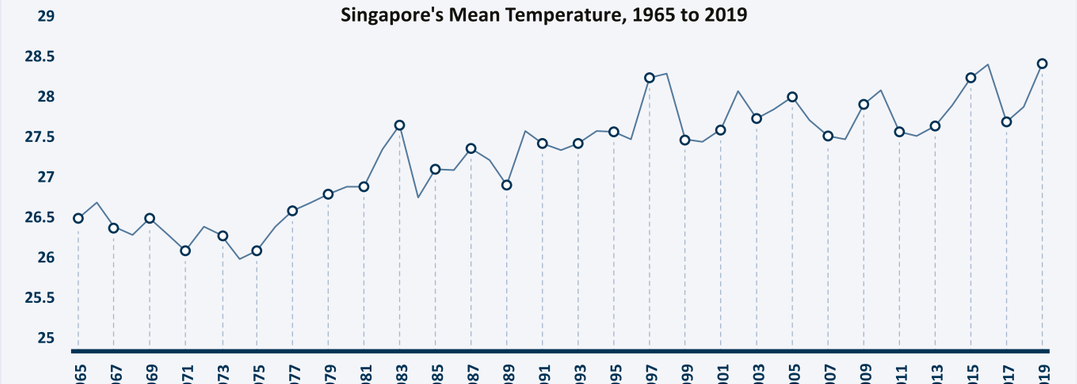
The following year, the MSS established the Centre for Climate Research Singapore (CCRS). This is the first centre in the world to focus on the understanding and prediction of tropical weather and climate. The CCRS also aims to develop research expertise in the areas of weather and climate for Singapore and Southeast Asia.

Under the Second National Climate Change Study released in early 2015, the CCRS carried out climate projections up to the year 2100 and beyond for variables such as rainfall, wind, temperature and rising sea levels to better understand climate change and support Singapore's climate resilience and adaptation planning. To understand how the current climate and its variability affect Singapore and the region, the CCRS uses dynamical climate models[31] and the latest statistical modelling techniques to produce seasonal forecasts of temperature and rainfall that are useful in managing water resources and public health. It has also conducted studies to improve the understanding of key weather and climate conditions such as the Sumatra squalls and the El Niño phenomenon.[32]

In July 2019, the MEWR announced that a Climate Science Research Programme Office would be set up in 2020 under the CCRS to lead and drive Singapore's national climate science research masterplan. The programme office will focus on pressing climate issues such as the rise in sea levels, the impact of climate change on Singapore's water resources, and the impact of rising temperatures on human health and the energy sector. Environment and Water Resources Minister Masagos Zulkifli said that the programme office would "work closely with scientists and researchers in [Singapore's] research institutes and universities to harness their expertise for cutting-edge climate science research".[33] ♦

The author would like to thank the Meteorological Service Singapore, especially Ms Patricia Ee, Director of the Weather Services Department, for reviewing this article.

One of the most important tools used by the Meteorological Service Singapore to study the weather is the Doppler weather radar shown here, which is able to detect the motion of rain droplets, measure the intensity of precipitation and estimate wind strengths. The data allows meteorologists to monitor the development and movement of weather systems and to analyse the structure of a storm. *Courtesy of the Meteorological Service Singapore.*



SINGAPORE IS GETTING WARMER

Records show that Singapore's mean temperature has been increasing from about the mid-1970s, which is when Singapore embarked on its rapid phase of urbanisation. The hotter weather could also have been influenced by regional variations in the man-made global warming effect, according to the Meteorological Service Singapore.

REFERENCES

Meteorological Services Malaya and Singapore. (1966). *Summary of observations for Malaya, Singapore, Sabah and Sarawak*. Singapore: G.P.O. (Call no.: RCLOS 551.5 MAL)

Singapore Meteorological Service. (1967–1994). *Summary of observations*. Singapore: G.P.O. (Call no.: RSING 551.5 SMSSO)

NOTES

1 Singapore's average sea level now 14 cm higher than 'pre-1970 levels': Met Service. (2020, March 23). *CNA*. Retrieved from Channel NewsAsia website.

2 Farquhar, W. (1827). Thermometrical and barometrical tables (pp. 585–586). *Transactions of the Royal Asiatic Society of Great Britain and Ireland, I*. (Accession no.: B29032746K); Malayan Meteorological Service. (1950). *Annual report of the Malayan Meteorological Service*, 1949 (p. 5). Singapore: G.P.O. (Call no.: RCLOS 551.5 MAL); Crawfurd, J. (1830). *Journal of an embassy from the governor-general of India to the courts of Siam and Cochin China* (Vol. II) (p. 345). London: H. Colburn and R. Bentley. (Call no.: RRARE 959.7 CRA); Makepeace, W., Brooke, G.E., & Braddell, R.S.J. (Eds.). (1991). *One hundred years of Singapore* (Vol. II) (pp. 478–479). Singapore: Oxford University Press. (Call no.: RSING 959.57 ONE-[HIS]); Buckley C.B. (1984). *An anecdotal history of old times in Singapore 1819–1867* (pp. 735–741). Singapore: Oxford University Press. (Call no.: RSING 959.57 BUC-[HIS]); Wheatley, J.J.T. (1881, June). Notes on the rainfall in Singapore. *Journal of the Straits Branch of the Royal Asiatic Society*, 7, 31–50, pp. 31–32. Retrieved from JSTOR via NLB's eResources website; Straits Settlements Government. (1865, January 20). *Straits Settlements Government Gazette* (p. 20). Singapore: Government Printing Press. (Accession no.: NL1003)

3 Malayan Meteorological Service, 1950, p. 5; The rainfall. (1874, May 16). *Straits Times Overland Journal*, p. 2. (Microfilm no.: NL1003]) Retrieved from NewspaperSG.

4 Straits Settlements Government. (1874, May 2). *Straits Settlements Government Gazette* (pp. 252–253). Singapore: Government Printing Press. (Call no.: RRARE 959.51 SGG); Williamson, F., & Wilkinson, C. (2017). Asian extremes: Experience and exchange in the development of meteorological knowledge c. 1840–1930. *History of Meteorology*, 8, 159–178, p. 169. Retrieved from Singapore Management University website; Straits Settlements Government. (1901, May 17). *Straits Settlements Government Gazette* (p. 828). Singapore: Government Printing Press. (Call no.: RRARE 959.51 SGG); Straits Settlements Government. (1905, March 10). *Straits Settlements Government Gazette* (p. 524). Singapore: Government Printing Press. (Call no.: RRARE 959.51 SGG)

5 A synoptic chart is a map that shows weather patterns over an area by putting together many weather reports from different locations all taken at the same moment in time.

6 Survey Department. (1928). Survey Department, Straits Settlements. *In Annual Departmental Reports of the Straits Settlements for the year 1927* (p. 84). Singapore: Government Printing Press. (Call no.: RRARE 325.3410959 SSADRS); Malayan Meteorological Service, 1950, pp. 9–10.

7 Aids to aviation in Malaya. (1929, May 18). *The Straits Times*, p. 13. Retrieved from NewspaperSG; Survey Department, 1928, p. 84; Malayan Meteorological Service, 1950, pp.9-10.

8 Survey Department. (1931). Survey Department, Straits Settlements. In *Annual Departmental Reports of the Straits Settlements for the year 1930* (p. 4). Singapore: Government Printing Press. (Call no.: RRARE 325.3410959 SSADRS); Malayan Meteorological Service. (1931). *Summary of Observations, 1930* (pp. 1–2). Singapore: Malayan Meteorological Service. (Microfilm No.: NL7550)

9 Survey Department. (1932). Survey Department, Straits Settlements. In *Annual Departmental Reports of the Straits Settlements for the year 1931* (p. 18). Singapore: Government Printing Press. (Call no.: RRARE 325.3410959 SSADRS); Meteorological station to move to Kallang. (1934, March 28). *The Straits Times*, p. 13. Retrieved from NewspaperSG.

10 Malaya knows all weather. (1935, September 16). *The Straits Times*, p. 13. Retrieved from NewspaperSG.

11 *The Straits Times*, 16 Sep 1935, p. 13; Malayan Meteorological Service, 1950, p.10; Balloon goes up for the weather men. (1938, February 27). *The Straits Times*, p. 28. Retrieved from NewspaperSG.

12 Making Malaya's air routes safe forecasting Malaya's weather. (1936, June 20). *Morning Tribune*, p. 11. Retrieved from NewspaperSG.

13 Malayan Meteorological Service, 1950, p. 11; Weather men back at work in Malaya. (1947, June 29). *The Straits Times*, p. 6; World's most modern weather forecast aids for Singapore. (1938, August 21). *The Straits Times*, p. 3. Retrieved from NewspaperSG.

14 Malayan Meteorological Service, 1950, p. 11; Singapore Meteorological Service. (1995). *Annual report 1994* (pp. 18–19). (Call no.: RSING 551.5095957 SMSAR); Malayan Meteorological Service. (1952). *Annual report of the Malayan Meteorological Service, 1951* (p. 1). Singapore: G.P.O. (Call no.: RCLOS 551.5 MAL); Colony of Singapore. (1959). *Annual report*, 1958 (pp. 253–254). Singapore: G.P.O. (Call no.: RCLOS 959.57 SIN); Singapore Meteorological Service. (1995). *Annual report 1994* (p. 22). (Call no.: RSING 551.5095957 SMSAR)

15 Malayan Meteorological Service. (1953). *Annual report of the Malayan Meteorological Service, 1952* (p. 2). Singapore: G.P.O. (Call no.: RCLOS 551.5 MAL); Malayan Meteorological Service. (1958). *Annual report of the Malayan Meteorological Service, 1957* (p. 4). Singapore: G.P.O. (Call no.: RCLOS 551.5 MAL); Weather report from 60,000 ft. (1952, August 21). *Singapore Standard*, p. 3. Retrieved from NewspaperSG.

16 Malayan Meteorological Service, 1953, p. 2; Malayan Meteorological Service, 1958, pp. 4–5; *Singapore Standard*, 21 Aug 1952, p. 3; State of Singapore. (1960). *Annual report, 1959* (p. 263–264). Singapore: G.P.O. (Call no.: RCLOS 959.57 SIN)

17 Separation causes S'pore to spend extra $6.4m. (1965, December 14). *The Straits Times*, p. 15. Retrieved from NewspaperSG; Meteorological Services Malaya and Singapore. (1966). *Summary of observations for Malaya, Singapore, Sabah and Sarawak* (p. i). Singapore: G.P.O. (RCLOS 551.5 MAL); National Archives of Singapore. (n.d.). *Ministry of Communications: Administrative history*. Retrieved from National Archives of Singapore website; Ministry of Culture. (1968, August 2). *Visit of Mr. Yong Nyuk Lin, Minister for Communications, to Meteorological and Marine Departments on Friday, 2nd August, 1968*. Retrieved from National Archives of Singapore website.

18 World Meteorological Organization. (n.d.). *Country profile database: Singapore*. Retrieved from World Meteoroglocial Organization website.

19 $500,000 weather radar for Paya Lebar. (1970, April 17). *The Straits Times*, p. 16. Retrieved from NewspaperSG.

20 Ministry of Culture. (1970, December 2). *Speech of Mr. Yong Nyuk Lin, Minister for Communications, at the official opening of the World Meteorological Organisation training seminar on synoptic analysis and forecasting in the tropics of Asia and Southwest Pacific at the Cultural Centre on Wednesday 2/12/70 @ 1000 hours*. Retrieved from National Archives of Singapore website; *The Straits Times*, 17 Apr 1970, p. 16; Latest weather forecast gear for our airport. (1970, December 3). *The Straits Times*, p. 2; S'pore may have new $1.5m weather system. (1977, March 9). *The Business Times*, p. 2; Gear to help weathermen. (1979, March 17). *The Business Times*, p. 2; Weather dept's new device for aircraft. (1979, March 17). *The Straits Times*, p. 7. Retrieved from NewspaperSG.

21 Singapore Meteorological Service. (1995). *Annual report 1994* (pp. 18–19). (Call no.: RSING 551.5095957 SMSAR)

22 Singapore plans met satellite station. (1978, May 18). *The Straits Times*, p. 10; Weather radar system. (1979, December 15). *The Business Times*, p. 2. Retrieved from NewspaperSG.

23 It only takes eight minutes now. (1986, February 24). *The Straits Times*, p. 1; High-tech forecasts. (1986, February 24). *The Straits Times*, p. 1; Halving the time taken for weather forecasts. (1985, July 2). *Singapore Monitor*, p. 2. Retrieved from NewspaperSG.

24 Singapore Meteorological Service. (1997). *Annual report 1996* (pp. 13, 17). (Call no.: RSING 551.5095957 SMSAR); Seismic stations for S'pore. (1995, April 18). *The Straits Times*, p. 28. Retrieved from NewspaperSG.

25 Yeo, S. (1997, March 24). Met offers lightning service. *The Straits Times*, p. 3. Retrieved from NewspaperSG; Singapore Meteorological Service. (1999). *Annual report 1997/98* (p. 12). (Call no.: RSING 551.5095957 SMSAR)

26 Wang, L.K. (1982, March 20). Televiewing may be ready by 1986/87, says Teng Cheong. *The Business Times*, p. 1; Enter the era of instant information. (1983, July 31). *Singapore Monitor*, p. 18. Retrieved from NewspaperSG; Ministry of Culture. (1984, July 4). *Speech by Dr. Yeo Ning Hong, Minister for Communications and Second Minister of Defence, at the launching of the Dial-A-Weather-Forecast Service at the PSA Auditorium*. Retrieved from National Archives of Singapore website.

27 Singapore Meteorological Service, 1995, p. 14; Singapore Meteorological Service. (1996). *Annual report 1995* (p. 7). (Call no.: RSING 551.5095957 SMSAR); Singapore Meteorological Service, 1999, p. 8; Weather report on Internet. (1995, November 11). *The Straits Times*, p. 30. Retrieved from NewspaperSG.

28 Singapore Meteorological Service, 1995, p. 22; Tan, C.H. (2012). *Safeguard, nurture, cherish our environment* (p. 126). Singapore: National Environment Agency. (Call no.: RSING 363.7095957 TAN); ASEAN Specialised Meteorological Centre. (2020). *About ASMC*. Retrieved from ASEAN Specialised Meteorological Centre website.

29 Tan, 2012, pp. 14, 124.

30 Tan, 2012, pp. 127, 197; Free phone app to track weather changes in S'pore. (2016, March 23). *Today*. Retrieved from Today's website.

31 A dynamical climate model uses the physics of the oceans, atmosphere, land and ice and the multiple complex interactions between them to estimate the most likely average climate state for several months ahead.

32 Centre for Climate Research Singapore. (2015). *Mission & vision*. Retrieved from Centre for Climate Research Singapore website; Centre for Climate Research Singapore. (2015). *Research areas*. Retrieved from Centre for Climate Research Singapore website.

33 Elangovan, N. (2019, July 17). New research office to boost Singapore's climate science capabilities: Masagos. *Today*. Retrieved from TODAYonline.

From Sea to Road

BUILDING THE CAUSEWAY

The foundation stone for the Causeway was laid 100 years ago on 24 April 1920. Building it was a major engineering feat at the time.

The Straits of Johor in the north of Singapore separates the Malaysian state of Johor at the southern tip of the Malay Peninsula from Singapore. It is 50 km in length, about 1.6 km wide and over 10 m deep for most of its length, with the depth being even greater towards the eastern end. At its narrowest point, the Johor Strait is a mere 600 m wide.

Native craft – such as the *perahu*, *kolek*, *sampan* and *tongkang* – were once a common sight in the Johor Strait. When conditions permitted, shallow-draught sailing craft, small boats and even steam launches navigated upstream from the estuaries along the strait. Before the Causeway opened in 1924, people from the Malay Peninsula travelled by sea directly to the town and harbour on the southern tip of Singapore island.

Early Connections

The Causeway was a product of the growing political and economic ties between Singapore and the Malay Peninsula. The strengthening of relations arose from the transformation of the Malayan economy – aided by growing British influence in the peninsula – from the latter half of the 19th century, which eventually led to the formation of the Federated Malay States (FMS) in 1896.[1]

A period of rapid economic growth soon followed, brought about by the production of rubber and tin. By the turn of the 20th century, Malaya – with its plantations, mining settlements, towns and ports – contributed close to 50 percent of the world's rubber production and over 30 percent of its tin. The flurry of economic activities resulted in a pressing need to improve the transportation and communications infrastructure across the Malay Peninsula.

One of the first things the British administration did was to invest heavily in a network of railway lines across Malaya to connect the mining settlements and plantations with the nearest towns and seaports. With the formation of the FMS, various railway companies that had developed separately in different parts of Malaya were consolidated in phases under a single operator known as the Federated Malay States Railways (FMSR), which was established in 1906.

A new north-south trunk line linking the existing railway lines was also constructed and by October 1906, this line extended all the way to Gemas, a small town near the Negeri Sembilan-Johor border. The line from Gemas to the town of Johor Bahru, however, would not materialise until three years later in June 1909.

By the late 19th century, Singapore had become a major regional and international entrepot in addition to its role as a key steamship coaling station. The port benefited immensely from Malaya's booming agricultural economy as well as the increasing demand for Malayan resources by the burgeoning industrial economies of the West. The rubber tyre and tin canning industries, in particular, saw rapid growth which in turn led to the development of a network of roads connecting Singapore town with plantations in the island's outskirts.

Singapore benefited from Johor's economic growth as it became the primary shipping port through which the latter's produce was exported to the world. Likewise, Johor in turn benefited from the capital invested in the state by British and Chinese business interests in Singapore. With Johor's growing prosperity and the increased opportunities for trade, travel and development, policy makers from both sides of the straits began to think of ways to improve the transportation infrastructure within their own territories and across the Johor Strait.

By Rail and then by Ferry

In 1899, the Colonial Secretary of the Straits Settlements,[2] James Alexander Swettenham, resurfaced an old motion at the Straits Settlements Legislative Council meeting: he suggested constructing a railway line across Singapore that would link the town and port to the Johor Strait. The idea was first raised in 1874 by Governor Andrew Clarke and then in 1889 by Governor Cecil Clementi Smith. On both occasions, however, the plan was shelved due to the high projected costs and limited profitability.

This time, prominent community leader Lim Boon Keng, who represented the Chinese business community in Singapore's Legislative Council, was instrumental in convincing the council to approve the plan. Seconding Swettenham's motion, Lim declared: "If I can rely on information given me by Chinese traders, I think the railway will be of the greatest benefit."[3]

In 1900, the Colonial Engineer's Department began constructing the railway. The main track, linking Tank Road in Singapore town and Woodlands in the north, opened in April 1903. Extension tracks connecting the main line to the wharves in Pasir Panjang would not be completed until 21 January 1907.[4]

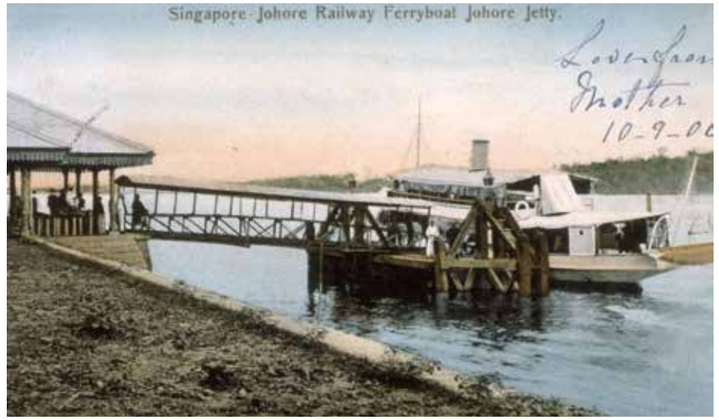
Although the railway was named Singapore-Kranji Railway, it actually terminated in Woodlands. Passengers disembarked at Woodlands Station and then boarded one of two steam-powered ferry boats – aptly named *Singapore* and *Johore* – across the Johor Strait to Johor Bahru and vice versa. Each ferry had a capacity of 160 passengers. By 1912, a third ferry named *Ibrahim* was deployed.

Initially, goods wagons were hitched to the passenger trains travelling on the Singapore-Kranji Railway but the increase in passengers and general goods traffic soon necessitated the use of separate trains for passengers and goods. In its first year of operation, the railway line carried a total of 426,044 passengers. Revenue

(Facing page) View of the Causeway from Singapore, c. 1970. *Courtesy of National Museum of Singapore, National Heritage Board.*

(Below) Bukit Timah Railway Station along the Singapore-Kranji Railway line, 1900s. The line would eventually link up with the Causeway. *Courtesy of National Museum of Singapore, National Heritage Board.*

(Bottom) The ferry boat docked at the jetty in Johor Bahru, 1906. Such boats were used to transport people and goods across the straits between Singapore and Johor before the Causeway was built. *Arshak C. Galstaun Collection, courtesy of National Archives of Singapore.*



from general goods traffic increased more than threefold, from 1,833 Straits dollars in 1903 to 6,266 Straits dollars in 1904.[5]

Passenger traffic was heaviest on Sundays when residents in Singapore travelled to Johor Bahru – regarded as a weekend resort town and a Monte Carlo of sorts – to try their luck at one of the many gambling farms, as they were called then, across the border. To entice customers, the proprietors of these gambling farms offered to pay their return fares from Johor on Sundays. Packed third-class train cabins returning to Singapore on Sundays were a common sight in the early 1900s.[6]

By 1909, the passenger and goods train and ferry system was under increasing pressure to keep pace with the rapidly growing movement of people and goods across the Johor Strait. An early attempt to alleviate cross-straits congestion was introduced in mid-1909 with the use of "wagon-ferries". Also known as train-ferries, these were barges specially outfitted with railway tracks, each capable of transporting up to six train carriages by sea to connect with the railway lines at either end. They complemented the passenger ferry boats and, for the first time, allowed the seamless carriage of goods from ferry to railway without having to unload and load goods.

From Wagon-Ferry to the Causeway

While the wagon-ferries were generally regarded as a successful step forward in improving the transportation of goods across the Johor Strait, demand for its services soon outstripped capacity. Between 1910 and 1911 alone, the volume of goods conveyed across the strait increased from 19,278 tons to 30,142 tons. Correspondingly, there were 1,541 wagon-ferry trips in 1911, increasing to 1,993 trips in 1912, with numbers projected to rise sharply in the years ahead.[7]

The pressure on the ferry service intensified when motor vehicles became more popular in Malaya in the 1910s. In 1913, wagon-ferries began transporting motor vehicles – together with the driver and passengers – in open railway trucks protected by tarpaulin sheets during the trip across the Johor Strait. In addition to traffic volume, the escalating costs of maintaining the ferries raised concerns about their long-term viability. As early as February 1912, the FMSR management cited the high cost of operating the ferries (to the tune of 53,750 Straits dollars annually) as an important reason for seeking an alternative. Eventually, governments on both sides of the Johor Strait agreed that a more effective mode of cross-straits transportation had to be found.

The suggestion by FMS Director of Public Works, W. Eyre Kenny, to build a causeway by dumping tons of rock and rubble across the strait soon gained traction. This proposal was preferred over a bridge as the price of steel and the cost of maintaining a bridge were deemed prohibitive. The foundation for the rubble causeway would be easier to lay over the soft "white and pink clays" at the proposed site, and constructing an opening for ships to pass through would not be overly complicated.

Moreover, there was an ample and inexpensive source of granite available from quarries at Pulau Ubin and Bukit Timah in Singapore. In 1918, detailed plans drawn up by consultant engineers Messrs Coode, Matthews, Fitzmaurice & Wilson were presented to the FMS, Straits Settlements and Johor governments. In 1919, the Straits Settlements government formally approved the Causeway project.[8]

Engineering the Causeway

The Causeway project was considered technically challenging by the standards of the time and deemed one of the "greatest engineering works" undertaken in the Far East. Construction was estimated to take between four and five years, and would require the labour of more than 2,000 workers – both locals and Europeans – as well as millions of tons of stone and other building materials.[9]

The proposed Causeway would be 3,465 ft long (1,056 m) and 60 ft wide (18.3 m),[10] and equipped with two lines of metre-gauge railway tracks and a 26-feet-wide (8 m) roadway, with provisions for the laying of water mains at a later date. The Causeway would also be equipped with a lock channel to allow the passage of small vessels, an electric liftbridge, water pipelines and flood gates to manage water flow.

Tidal studies carried out earlier in 1917 revealed that the construction of the Causeway would effectively separate the Johor Strait into two tidal compartments and give rise to differences in water levels on either side of the structure once it was completed. As a result, the consultant engineers came up with the ingenious idea of incorporating a set of double flood gates in the lock channel in order to control the tides alternating on either side of the Causeway.

On 30 June 1919, the contract to construct the Causeway was awarded to Messrs Topham, Jones & Railton Ltd. of London, an engineering firm that had successfully carried out several major public projects in Singapore, including King's Dock at Keppel Harbour and Empire Dock at Tanjong Pagar. The company had a team of experienced engineers and workmen, and all the necessary tools and equipment for the job.

Construction of the Causeway commenced in August 1919 and was scheduled to be completed in 1924, taking five years in all. Work began with the excavation of the lock channel, which was located at the Johor side in order to minimise disruption to the ferry services. The total cost of the project, estimated at 17 million Straits dollars, was borne by the FMS, Johor and Straits Settlements governments.

Laying the Foundation Stone

With work on the Causeway progressing smoothly, a ceremony to mark the laying of its foundation stone was held. On 24 April 1920, the ceremony took place on board the steam yacht *Sea Belle* anchored in the middle of the Johor Strait. It began with a procession by Johor religious officials bearing vessels containing ceremonial waters, incense and prayer sheets for the occasion. Upon the arrival of Sultan Ibrahim of Johor, the state anthem was played, followed by a short prayer by the mufti of Johor.

Governor of the Straits Settlements and High Commissioner of the FMS Laurence Nunns Guillemard – who officiated the ceremony – and his wife were ferried to the *Sea Belle* where they were received by Sultan Ibrahim. The ceremony commenced with prayers before Guillemard was invited to pull a silken cord, activating the first load of rubble comprising crushed stone and granite from a barge into the Johor Strait. A second barge then released its load of rubble before the ceremonial waters were poured into the strait. A five-gun salute marked the end of the ceremony.[11]

This ceremony took place amid a period of economic boom in Malaya. Prices of Malaya's main exports in the overseas market, such as rubber and tin, had reached record levels in the first half of 1920. In the second half of the year, however, a sudden worldwide economic depression took a severe hit on the Malayan economy, lasting until the latter part of 1922. Given the bleak economic conditions, the Causeway project came under increasing public scrutiny and criticism, and was nearly abandoned by the FMS and Straits Settlements governments.

Fortunately, the project was not aborted and in June 1921, enough rubble had been deposited at the Johor end, allowing the construction of the Causeway's superstructure – eventually comprising a two-way road as well as a railway line running alongside – to begin from both the Singapore and Johor sides.

The year 1923 was a milestone in the history of the Causeway. For the first time, a seamless road and railway link now connected Singapore and Johor. When the Causeway rail link first opened to goods trains on 17 September,[12] the wagon-ferry service between Johor Bahru and Woodlands was withdrawn. Two weeks later on 1 October, the FMSR opened the railway line for public use, ending the cross-strait passenger steam-ferry service that had been in operation for more than a decade.

(Below) The wagon-ferry jetty in Johor Bahru, 1919. Wagon-ferries were barges specially outfitted with railway tracks, each capable of transporting up to six train-carriages across the sea. They complemented the passenger ferry boats. *Courtesy of National Archives of Malaysia.*

(Bottom) The "Monte Carlo" gambling farm in Johor Bahru, 1900s. On Sundays, residents in Singapore travelled to Johor Bahru to try their luck at one of the many gambling farms there. To entice customers, proprietors of these gambling farms paid their return train fares from Johor on Sundays. *Gwee Thian Hock Collection, courtesy of National Archives of Singapore.*

JOURNEYING TO MALAYA BY SEA

In her book *To Siam and Malaya in the Duke of Sutherland's Yacht 'Sans Peur'*, published in 1889, British writer Mrs Florence Caddy describes her journey along the Straits of Johor and arrival in Johor on 4 March 1888. She notes that the *Sans Peur* passed through the "eastern passage" – an apparent reference to the Johor Strait – from Singapore to the Malay Peninsula, before dropping anchor at Johor Bahru, with the Malay village of Kranji visible on the Singapore side of the strait.

The jetty where she landed had a "sea-side portico", which had been built for the reception of the young Prince of Wales' visit to Johor in 1882. She also writes of her trip to Singapore (and back) the next day, crossing the strait in the sultan's steam launch to land at Kranji before travelling to Raffles Hotel and Istana Tyersall (Tyersall Palace) in a "four-in-hand" horsedrawn carriage. Her jottings in the book have helped the present-day reader identify jetties and landings used in early crossings of the strait.

A number of prominent foreign dignitaries and royalty also experienced crossing the Johor Strait in the 1880s and 90s – notably the Prince of Wales in 1882, the Duke of Sutherland in March 1888, the Archduke Franz Ferdinand of Austria in April 1893, King Chulalongkorn of Siam in May 1896 and Prince Henry of Prussia in February 1898.

Construction of the lock channel in the Johor Strait to create the Causeway, January 1922. *Courtesy of National Archives of Malaysia.*

The first passenger train to cross the Causeway was the night mail, which left Kuala Lumpur on 30 September 1923 and arrived at Tank Road Station in Singapore at 7.41 am on 1 October. *The Straits Times* described it as "a big train, including twelve bogey carriages and forming an imposing display of rolling stock for the auspicious occasion".[13] The daily schedule included a day mail and a night mail train to and from both destinations. On 1 October, the Johor Causeway Toll was introduced for both passenger and goods traffic conveyed over the Causeway, replacing the earlier ferry charges.

A Brilliant Opening

The construction of the Causeway was officially completed on 11 June 1924, three months ahead of the stipulated date. The opening ceremony, which took place on 28 June 1924 in Johor Bahru, was attended by more than 400 guests from the FMS, Straits Settlements and Johor. It was a lavish affair presided by Laurence Nunns Guillemard – in his capacity as the FMS High Commissioner and Straits Settlements Governor – in the presence of Sultan Ibrahim of Johor. Guests included Malay nobility, prominent government officials as well as "gentlemen in the banking and commercial worlds".[14]

A public holiday was declared in Johor Bahru, and train and pedestrian traffic around the Causeway was halted to dignify the occasion. Guests from Singapore and the FMS were conveyed by special trains to Johor Bahru Station in the morning.

In his speech, Guillemard recalled the engineering feat that made the construction of the Causeway possible, and paid tribute to the men who were involved in its planning and construction:

> "Your Highness, your Excellency, ladies and gentlemen, the duty which has fallen to my lot this morning is both a pleasure and an honour. I feel it a great honour to take part in this ceremony. In our time we have seen the miracles of yesterday become the commonplaces of today, but this great engineering feat ranks high even in an age of high achievement. It stands before you as a monument to the skill and patience of those who made it and the foresight of those who planned… I have much pleasure in declaring the Causeway open."[15]

Guillemard then severed the silken cord stretched across the entrance to the Causeway, using a specially commissioned golden knife presented to him by Sultan Ibrahim. After the Johor state anthem was played to conclude the ceremony, Guillemard turned to the sultan and said:

> "I thank your Highness, and hope that you will accept this pencil as a memento of this occasion. It is an English superstition that the gift of a knife of any kind, if accepted without a counter-gift, leads to the severance of the friendship between donor and recipient."[16]

After the event, an entourage comprising Guillemard, Sultan Ibrahim, and several Malay rulers and senior British officials were driven across the Causeway to Singapore in a convoy of 11 motorcars for lunch at Government House, thus opening the Causeway for public use.

The Causeway's opening marked an important milestone in regional communications and transportation. It established, for the first time, direct and uninterrupted rail communications from Singapore and through the Malay Peninsula to Bangkok, Siam (now Thailand).

The opening of the Causeway's roadway also marked the rise of motor transport as an increasingly significant means of transportation between Singapore and Malaya. What surprised its planners, however, was the rapid growth in vehicular traffic that soon outpaced the railway as the preferred mode of cross-straits transportation.

Above all, more than a physical link, the Causeway is a fitting symbol of the close ties and shared history that bind Singapore and Malaysia. ♦

(Left) The opening ceremony of the Causeway on 28 June 1924 was a lavish affair presided by Laurence Nunns Guillemard, Governor of the Straits Settlements and High Commissioner of the Federated Malay States. On the governor's left is Sultan Ibrahim of Johor with his left hand on the hilt of his sword. *Courtesy of National Archives of Malaysia.*

(Below) The completed Causeway viewed from Woodlands, June 1924. *Courtesy of National Archives of Malaysia.*

This essay was condensed from *The Causeway* (2011), jointly published by the National Archives of Malaysia and the National Archives of Singapore. It is available for reference at the Lee Kong Chian Reference Library and for loan at selected public libraries (Call nos.: RSING 388.132095957 CAU and SING 388.132095957 CAU).

All images from the National Archives of Malaysia reproduced in this essay are taken from this book.

On 31 January 1942, British troops set off two explosions on the Causeway The first wrecked the lock's lift-bridge, while the second caused a 70-foot gap in the structure. This photo shows Japanese troops crossing the Causeway into Singapore after constructing a girder bridge over the gap. *Lim Kheng Chye Collection, courtesy of National Archives of Singapore.*

BRIDGE OVER TROUBLED WATERS

The Causeway became a scene of action during World War II. On 8 December 1941, troops of the Japanese 25th Army – under the command of Lieutenant-General Tomoyuki Yamashita – landed in southern Thailand and Kota Bahru in northern Malaya. This was followed by an air raid over Singapore a few hours later when the first bombs were dropped on the island.

With air superiority established, Japanese forces swiftly advanced down the Malay Peninsula and reached Johor in mid-January 1942. Left with little choice, on 27 January, the British commander Lieutenant-General Arthur Percival ordered his forces to retreat. After the British and Commonwealth forces had crossed the Causeway from Johor to Singapore in the early hours of 31 January 1942, the order was given to blow it up. There were two great explosions: the first wrecked the lock's lift-bridge, while the second caused a 70-foot gap in the structure. The pipeline carrying water to Singapore was also severed.

Within weeks of Japan's surrender on 15 August 1945, the British returned to begin the post-war reconstruction of Singapore and Malaya. They replaced the girder bridge that the Japanese had constructed over the gap with two British Bailey bridges. Railway tracks across the Causeway were also re-laid, and the bridge resumed its role of facilitating travel and trade between the two territories.

NOTES

1 The FMS, which was established in 1895, was a federation of four British protected states comprising Selangor, Perak, Negeri Sembilan and Pahang, with Kuala Lumpur as its capital.
2 The Straits Settlements, comprising Penang, Melaka and Singapore, was formed in 1826 by the British colonial authorities.
3 Straits Settlements Legislative Council. (1899, August 22). *Proceedings of the Legislative Council of the Straits Settlements with appendix* (p. B 114). Singapore: Government Printing Office. Retrieved from BookSG.
4 Singapore and Kranji Railway. (1907, January 21). *The Straits Times*, p. 3. Retrieved from NewspaperSG.
5 Wright, A., & Cartwright, H.A. (Eds.). (1989). *Twentieth century impressions of British Malaya: Its history, people, commerce, industries, and resources* (p. 184). Singapore: G. Brash. (Call no.: RSING q959.9 TWE)
6 Wright & Cartwright, 1989, p. 285.
7 Johore Annual Reports 1910–1913 (Microfilm no.: CO 715/1). Retrieved from National Archives of Singapore; Federated Malay States Railways Report for the Year 1912 (Not available in NLB holdings).
8 Federated Malay States. (1917, November 13). *Proceedings of the Federal Council of the Federated Malay States for the year 1917* (p. B57). Singapore: Government Microfilm Unit. (Microfilm no.: NL6390); The National Archives (United Kingdom). (1917, November 7). *Extract of letter from Messrs Coode, Matthews, Fitzmaurice & Wilson to Crown Agents* (p. 267) (Accession no.: CO 273/462). Retrieved from National Archives of Singapore website.
9 The Causeway. (1924, June 27). *The Straits Times*, p. 9. Retrieved from NewspaperSG.
10 Between 1964 and 1988, the Causeway was widened three times to accommodate the increased trade volume and human traffic between Malaysia and Singapore. It was further widened between 1989 and 1991.
11 Johore Causeway. (1920, April 26). *The Straits Times*, p. 9. Retrieved from NewspaperSG.
12 Federated Malay States Report for the Year 1923.
13 Johore Causeway. (1923, October 1). *The Straits Times*, p. 10. Retrieved from NewpaperSG.
14 Johor Causeway. (1924, May 27). *The Straits Times*, p. 9; The Johore Causeway. (1924, July 5). *Malayan Saturday Post*, p. 7. Retrieved from NewspaperSG.
15 The Causeway. (1924, June 28). *The Straits Times*, p. 9. Retrieved from NewspaperSG.
16 *The Straits Times*, 28 Jun 1924, p. 9.

THE CHINESE SPIRIT-MEDIUM

Ancient Rituals and Practices in a Modern World

Margaret Chan examines the fascinating world of *tangki* worship and explains the symbolism behind its elaborate rituals.

Dr Margaret Chan is a retired associate professor of theatre and performance (studies) at the Singapore Management University, and has worked as a journalist and food critic. Also known as a stage and television actress, she played the titular role in the acclaimed play, *Emily of Emerald Hill*.

In Singapore, the sprit-medium stares straight ahead as five long skewers are driven through the flesh of his back. In Phuket, an umbrella is grotesquely twisted into a gaping wound on the face of his Thai counterpart. Meanwhile in West Kalimantan, steel wires bristle like catfish whiskers around the mouth of an Indonesian medium.

These men, and they are usually men, are Chinese spirit-mediums. They are known by various names: in Singapore, they are called *tangki*, which is Hokkien for spirit-medium (in Mandarin, they are known as *tongji* 童乩, which means "child diviner", or *jitong* 乩童, which means "divining child"). In Thailand, they are known as *masong* (马送 in Mandarin), while in Kalimantan they are called *tatung* (*datong* 大同 in Mandarin).

Tangki allow their bodies to be possessed by gods, spirits and deities, and they serve as a vessel for these entities. When they are possessed, *tangki* are regarded as incarnated gods.

Tangki spirit-medium worship has its origins in the people of the Minnan (闽南) region of Fujian province, located along China's southeastern coast. The Minnan diaspora comprises the Hokkien, Hockchew, Henghua and Hainanese communities, which are well represented in Singapore. As these people are also found in Taiwan, Malaysia, Indonesia, Thailand and Cambodia, *tangki* worship is also practised in these countries, including Singapore.

Under the Tangki Tent

It used to be a common sight on weekends in housing estates in Singapore: colourful flags planted on grass verges marking a trail to a large tent where Chinese spirit-mediums would be hard at work. Under the tent, one would encounter large crowds, noisy drums and gongs, and bare-chested men going into a trance, hitting themselves with weapons and drawing blood, and moving in a strange fashion. The casual observer might struggle to understand what is going on, but here, as with most religious rituals, things have a certain structure and logic.

Within the tent, the major elements are arranged along cardinal points. The main stage is erected at the northern end of the tent. Here, banners bearing images of the San Qing (三清) – the Daoist triumvirate representing the emanations of pure Tao cosmic energy – are hung. The San Qing altar, which is the main altar to the Three Pure Ones,[1] and to the patron god of the *tangki*, is placed on this stage.

To the left of the San Qing altar (that is, the eastern part of the tent) is the altar of the Five Celestial Armies (五营兵将).[2] On the right of the San Qing altar (the western side of the tent) is the altar to the spirits of the Underworld.[3]

At the southern end of the tent is the altar to Tiangong (天公), the Heavenly Emperor, and his three-tiered papier-mâché palace. From this side of the tent, devotees step out to pray to the open sky, where the face of Heaven is.

Tangki Possession and Performance

According to Chinese folk religion, humans are likened to vessels. Adults are fully filled vessels, while children are half-full vessels that fill up only in adulthood. However, by dint of the date and time they are born (called the Eight Characters, or *sheng chen ba zi*, 生辰八字, in Mandarin), some adults never become fully filled vessels. Although they are physically adults, they remain as children spiritually. Such people are destined to live a short life but they can prolong their lifespan by agreeing to serve the gods. One way is to be a spirit-medium and become a vessel for gods who descend to the mortal realm to help the people. As spirit-mediums are only "half-filled," they have "space" for spirits and deities to enter and take control of their bodies.

To denote their status as a spiritual child, many *tangki* don a *dudou* (肚兜) over their bare torsos – the diamond-shaped cloth called a stomacher traditionally worn by Chinese babies to prevent colic.

In preparation for the possession ritual, the *tangki* sits on a chair in the tent as the beating of hand drums and gongs reverberates through the air. The *tangki* begins to yawn and then retch, signs that possession has begun. A leg balanced on the ball of the foot begins to shake, at first imperceptibly, then faster and faster. His head sways from side to side, picking up speed, and the eyes roll back to show the whites. Suddenly, the *tangki* leaps up and freezes into a pose typical of the possessing god, such as the Monkey God for instance.

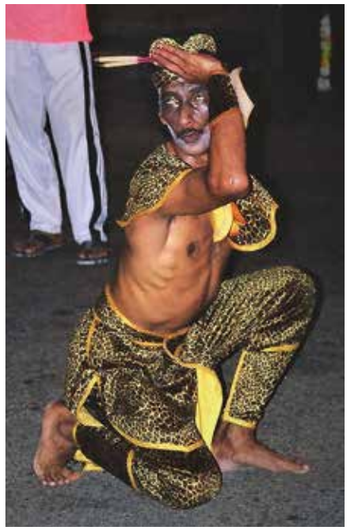
The music now changes. The beat quickens to a fast, steady tempo, which signals to observers that in place of the mortal medium now stands a god-incarnate. Assistants rush forward to dress the medium-turned-god in appropriate costumes. Other than the *dudou*, the *tangki* now has on riding chaps, represented by what is known as a three-apron "dragon skirt" (*longqun* 龙裙).

The dragon skirt is typically worn by the character of the military general in Chinese opera. By wearing riding chaps, the *tangki* is seen as a high-ranking spirit warrior who has travelled on horseback from heaven to earth. This is why the Thai name for spirit-mediums is *masong*, which means "sent upon a horse".

Tangki are believed to be spirit warriors who can cure illnesses by vanquishing disease-causing demons and driving them out from the afflicted person. Devotees also believe that *tangki* bring good fortune when they defeat the spirits of misfortune.[4] Popular *tangki* gods include Guangong (关公), the red-faced hero of the Three Kingdoms era;[5] Sun Wukong (孙悟空) the Monkey God;[6] and Nezha (哪吒), the child spirit-fighter

(Facing page) A medium possessed by the hell deity Toa Ah Pek, 1978. Dressed in white, he is one half of the two deities known as Heibai Wuchang (黑白无常). Toa Ah Pek, the White Deity, is said to calculate the length of a person's life. When it is time for the person to die, he orders his counterpart, the Black Deity, or Ji Ah Pek, to fetch that person's soul to hell. *Ronni Pinsler Collection, courtesy of National Archives of Singapore.*

(Below) A *tangki* possessed by the Monkey God in a pose that demonstrates how the god can see far into the distance and can recognise demons even when they are in disguise. *Photo taken by Margaret Chan in Singapore, 1999. First used in Chan, M. (2006). Ritual is Theatre, and Theatre is Ritual: Tang-ki, Chinese Spirit-medium Worship. Singapore: SNP Reference. (Call no.: RSING 299.51 CHA)*



who fought in the Zhou armies against the Shang empire.[7] Even if the medium is possessed by Guanyin (观音) the Bodhisattva of Compassion, it would be in her manifestation as the one who subdues evil spirits.[8]

Some people denounce *tangki* practices as devil worship, especially when the medium is possessed by the hell deities of Toa Ah Pek and Ji Ah Pek (together they are known as Da Er Yebo 大二爷伯). Although unnerving to look at, Toa Ah Pek (Elder Uncle), who is dressed in white and has a lolling tongue, and Ji Ah Pek (Second Uncle), who is dressed in black and carries chains and a magistrate's arrest order, are not demons in the usual sense of the word.

In Chinese folk religion, the two deities, also known as Heibai Wuchang (黑白无常), literally "Black and White Impermanence", are in charge of escorting the spirits of the dead to the Underworld. Toa Ah Pek, or the White Deity, calculates the length of a person's life, which is why the *tangki* possessed by this deity often carries an abacus as a prop. At the end of a person's life, the White Deity orders his black counterpart to fetch the soul to hell. Ji Ah Pek, or the Black Deity, then goes to the mortal world with his chains and court order to take the soul of that person to the Underworld. Both deities are worshipped in the hope that they might delay the hour of death.[9]

The two deities are also popular among Taiwanese, Singaporean and Malaysian devotees as gods of wealth. Indeed, emblazoned on the White Deity's tall hat are the Chinese characters 见生财 (*jian sheng cai*), which mean "fortune at one glance". Devotees believe that the Elder and Second Uncle deities can be petitioned for lucky lottery numbers.

The Limping Walk of the Great Yu

After they are possessed, *tangki* perform a ritual dance known as the magical Yu Step (*yubu* 禹步). The choreography is known as the "Pacing of the Seven Stars Constellation" (*qi xing gang bu* 七星罡步) or "Pacing of the Big Dipper" (*bu gang ta dou* 步罡踏斗). (The Big Dipper is a group of seven bright stars of the constellation Ursa Major, also known as the Great Bear.)

According to Chinese mythology, the Yu Step dates back some four thousand years. During a period of great flooding in China, Yu the Great, the mythological founder of the proto-Chinese Xia dynasty (2070–1600 BCE), received the Luoshu[10] (洛书) – or magic map of the seven stars – from heaven. This map was imprinted on the shell of a turtle that had emerged from the Luo River (a tributary of the Yellow River). The Luoshu sets out the Eight Trigrams, or Bagua (八卦),[11] surrounding a central number, in which all numbers connect into a pattern of zig-zag lines.

To combat the flood, Yu the Great performed a dance that traced this zig-zag pattern for 13 years without stopping until he eventually defeated the flood demons. In the process, Yu became lame but he persevered until his task was completed.[12]

While in a trance, the *tangki* performs the zig-zag stagger of the Yu Step. During the dance, the *tangki* steps out with one foot (say the right foot) and then moves his left foot forward, touching the toes of this foot against the heel of the right without any transfer of weight. The left foot then steps out, and the right foot is brought forward to meet it. The *Tangki* also sometimes hops on one foot.

Tangki Self-mortification

One of the more dramatic elements of *tangki* spirit-medium worship is self-mortification, or self-wounding, specifically by cutting the body with swords or mace-like weapons. *Tangki* may also have their flesh pierced with rods, swords and skewers while in a state of trance.

Worshippers believe that cutting the body spills the *tangki*'s blood, which can then be used to exorcise malevolent spirits. The blood is smeared onto talismans which are taken home by devotees to affix on their front doors as protection against evil spirits.

Although *tangki* can be physically injured, they derive power from being pierced with weapons and skewers. It is believed that inherently aggressive spirits reside in weapons as such instruments are created specifically for the purpose of maiming or killing. During self-mortification, as the *tangki* is pierced or cut by the weapon, the god that possesses the *tangki* becomes supercharged by the aggressive spirit of the weapon.

There is also symbolism in the various forms of self-mortification. Some *tangki* will have five skewers driven into their backs, which fan out over their shoulders. These rods represent the Celestial Armies of the Five Directions. Each army is represented by a different flag colour: the army of the East is represented by the blue or green flags; the South army uses the red flag; the white flag symbolises the West army; while the North army uses the black flag. The yellow flag, on the other hand, represents the Central army.[13]

The weapons can transmit the power of the five armies if they are topped with the carved wooden god-heads of the five generals commanding these celestial forces. Bristling with pierced skewers and waving a sword or spear, the *tangki* goes around exorcising evil from the precinct.

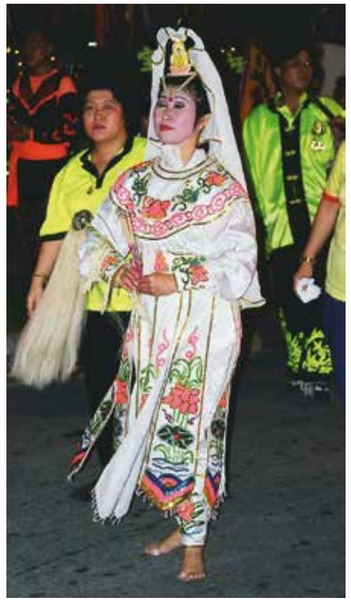
A Singaporean Tangki

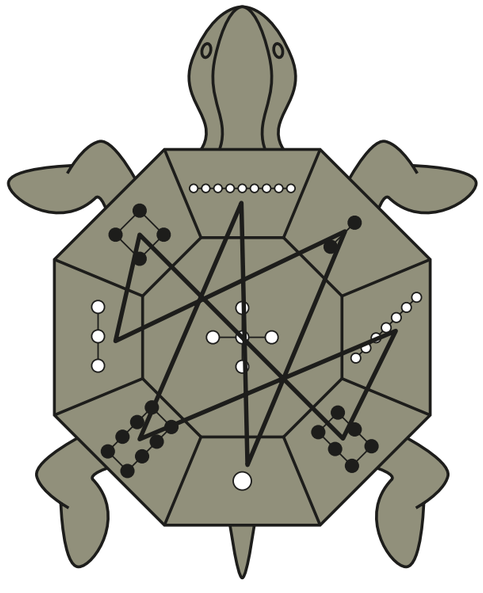
One of Singapore's most respected *tangki* was Tan Ah Choon (陈亚春), who died in 2010 at the age of 82.[14]

Born in Singapore in 1928, Tan became a medium in his early 20s, after the deity Tiong Tan (Zhong Tan Yuan Shuai 中坛元帅) appeared to him in a dream. Tan went to the Hui Hian Beo temple (Fei Xuan Miao 飞玄庙) in Bukit Ho Swee to learn how to become a medium and he eventually served the deity Siong De Kong (Shang Di Gong 上帝公, also known as Xuan Tian Shang Di 玄天上帝), among the highest gods in the Chinese pantheon.

Tan was at the height of his powers in the 1960s and was regarded then as the "wisest, most powerful spirit-medium in the Singapore *tangki* community". He was given the moniker "Tangki Ong", the King of Spirit Mediums.

Tangki in Singapore typically hold regular jobs in addition to working as spirit-mediums, and Tan was no exception. He started out as a pirate taxi driver before eventually driving buses and, at one point, a fire engine. Tan worked during the day and held consultations at night. During such sessions, Tan would either fall into a trance to become the deity-incarnate, or he would channel the spirit of the deity into a palanquin that would rock violently when carried by helpers. The heavy chair needed four people to lift and stabilise it.





(Far left) Buddhist deities are popular in *tangki* worship. Shown here is a *tangki* of Guanyin, the Bodhisattva of Compassion or Goddess of Mercy. *Photo taken by Margaret Chan in Singapore, 1999. First used in Chan, M. (2006). Ritual is Theatre, and Theatre is Ritual: Tangki, Chinese Spirit-medium Worship. Singapore: SNP Reference. (Call no.: RSING 299.51 CHA)*

(Left) The Luoshu, or magic map of the seven stars, that Yu the Great found imprinted on the shell of a turtle emerging from the Luo River. The Luoshu sets out the Eight Trigrams surrounding a central number where all numbers connect into a pattern of zig-zag lines. To defeat the flood demons, Yu the Great danced according to this zig-zag pattern for 13 years. While in a trance, the *tangki* performs this zig-zag dance choreography known as the Yu Step.

(Left) The five skewers running through the back of the *tangki* represent the Celestial Armies of the Five Directions. *Photo courtesy of Victor Yue. First used in Chan, M. (2014). Tangki War Magic: The Virtuality of Spirit Warfare and the Actuality of Peace. Social Analysis, 58 (1), 25–46. Retrieved from Singapore Management University website.*

(Below) Mr Tan Ah Choon (陈亚春) with a skewer through both cheeks, c. 1960s. Tan was regarded as the "Tangki King", the most respected *tangki* in Singapore at one time. *Photo taken in Singapore and provided by his family. First used in Chan, M., & Yue, V. (2010, July). Tan Ah Choon: The Singapore 'King of Spirit Mediums' (1928–2010). South China Research Resource Station Newsletter, 60 (15), 1–4, p. 4. Retrieved from Singapore Management University website.*

Tan was also sought after as a "piercer", i.e. the person who drives the long skewers and rods into the bodies of the *tangki* when they are possessed. Standing on a chair, Tan and two other men would drive the skewers into the flesh of the *tangki* in one clean movement.

In Singapore, *tangki* worship practices flourish as small cults centred around charismatic individuals such as Tan. They operate as informal groups to celebrate the feast days of their respective deities. However, after the passing of the *tangki*, the group will often break up.

Tangki usually operate independently of Chinese temples as the latter are mostly run by management committees made up of local businessmen who generally do not want interference from individuals who purport to speak as gods. However, this does not preclude the occasional collaboration at festivals.

While it might appear that *tangki* events are on the decline, compared with the situation decades ago, younger *tangki* are still appearing on the scene to take on the mantle (and skewers) of the older generation. They include people like Tan Eng Hing, a 51-year-old medium who started going into trances when he was just 16. When possessed, he channels Shan Cai Tong Zi (善才童子), the child god of wealth whose Sanskrit name is Sudhana.[15] Tan holds his consultations at Chia Leng Kong Heng Kang Tian (正龙宫玄江殿) temple at 85 Silat Road. He is also an expert in Chinese astrology known as *bazi* (八字) and *fengshui* (风水).

Tangki Practices Across Asia

Thanks to immigration from the Minnan region of China into Southeast Asia, *tangki* practices can also be found where migrant Chinese communities have a significant presence. These include parts of Thailand and Indonesia.

Phuket, Thailand

The Chinese in Phuket are mainly descendants of Fujian migrants who arrived in the region in the 19th century and worked as tin miners.[16] In Phuket, an important occasion for *tangki* worship is the Nine Emperor Gods Festival which is also celebrated in many parts of Southeast Asia, including Singapore. As the festival runs from the eve of the ninth lunar month to the ninth day of the month, it is also known as the double-nine celebrations. During this period, devotees abstain from meat for nine days, which is why the festival is sometimes referred to as the Vegetarian Festival.

On the first day of the festival, i.e. the last day of the eighth lunar month, temple elders go out to sea in a boat, carrying with them a giant censer. At sea, the spirits of the star gods (of the Big Dipper) will possess the censer. When the censer is brought back, it is placed on a palanquin to be borne to the temple. A number of strong men are needed to carry the sedan chair because the spirits in the censer will violently rock the chair, pushing the men in different directions and even causing them to spin in circles. The festival of the Nine Emperor Gods culminates in a great procession on the ninth day of the ninth month.

In Phuket, this festival has gained notoriety for the spectacular displays of *tangki* self-mortification. Thai *masong* parade through the streets of old Phuket town with all manner of objects pierced through their cheek: a standing fan; a giant parasol; two petrol pump dispensers with one spout in each cheek; a large toy wooden boat; and even an entire bicycle with the shaft driven through the cheeks. The *masong* are seen as self-sacrificing gods who endure pain in order to transfer good karma to the community.

Tan Eng Hing started going into trances when he was just 16. When possessed, he channels Shan Cai Tong Zi (善才童子), the child god of wealth whose Sanskrit name is Sudhana. *Photo taken by Victor Yue in Singapore, 2012.*

Singkawang, West Kalimantan

Singkawang is the second-largest town in West Kalimantan on the island of Borneo. It is an enclave of descendants of Hakka immigrants who arrived in the 18th century to work as gold miners.[17] On the 15th day of the Lunar New Year (known as Imlek in Indonesia), around 300 to 500 spirit-mediums will parade on the main streets of Singkawang. The spirit-mediums, known as *tatung*, or Lao Ye (老爷), are carried through the streets of the town on wooden palanquins with special chairs.

The Singkawang spirit-mediums are possessed by earth gods, i.e. the spirits of ancestors who lived and died in the region. Walking alongside the palanquins are other Chinese and Dayak mediums dressed as Chinese, Dayak and Malay spirit-warriors. This parade of Chinese ancestor-spirits marching in brotherhood with Malay and Dayak ancestor-spirits demonstrates that the Chinese have a place among the indigenous spirits of Indonesia.[18]

A *tatung* possessed by the spirit of a Chinese soldier rides on a knife palanquin. Walking alongside are other Chinese and Dayak mediums dressed as Malay, Dayak and Chinese spirit-warriors. *Photo taken by Margaret Chan in Singkawang, 2008.*

China

In 2001, while on a field trip to Quanzhou, China, I met an elderly Chinese man who testified to the existence of *tangki* worship in China before the arrival of the Communists.

The man lived in the shadow of the main Tiangong temple in the city. *Tangki* used to visit the temple on feast days and my interviewee revealed how wild-eyed *tangki*, in hot pursuit of unseen demons, would burst into his house uninvited.

In the late 19th century, *tangki* worship began to lose favour in China as Western science became entrenched among the intelligentsia in China, and folk beliefs were regarded as superstition.[19] The Nationalist and Communist governments of the 20th century further worked to rid Chinese society of these religious practices.

The reforms initiated by President Deng Xiaoping in 1978, however, permitted a revival of community temples. These are now visited by *tangki* groups from Singapore, Malaysia and especially Taiwan, who gather in the city as part of their regular pilgrimages.

The elders of these Chinese temples enthusiastically put together processional parades of music bands, dancing women (made up of retired folk) and student marching groups to accompany the visiting deity in style. They charge for the service and in China today, these parades have become more important as a money-making venture rather than a religious practice. ♦

NOTES

1 The Three Pure Ones (San Qing 三清) refer to the Daoist Trinity, the three highest gods in the Daoist pantheon. The three gods are Yuanshi Tianzhun (元始天尊), Lingbao Tianzhun (灵宝天尊) and Daode Tianzhun (道德天尊).

2 The Five Celestial Armies or Five Celestial Camps represent the five cardinal directions: North, East, South, West and Central. The five generals of these armies are believed to have the ability to scare away demons and banish plague and evil spirits.

3 See Mair, V. (2014, May 27). North, south, east, west. Language Log. Retrieved from *Language Log* website.

4 Chan, M. (2014). Tangki war magic: The virtuality of spirit warfare and the actuality of peace. *Social Analysis, 58* (1), 25–46. Retrieved from Singapore Management University website; Chan, M. (2016). Tangki war magic: Spirit warfare in Singapore. In D.S. Farrer (Ed.), *War magic: Religion, sorcery, and performance* (pp. 25–46). New York: Berghahn Books. (Not available in NLB holdings)

5 Luo, G.Z. (1995). *Three kingdoms* (vols. 1–4). Beijing: Foreign Language Press. (Not available in NLB holdings)

6 See Wu, C.E. (1993). *Journey to the West*. Beijing: Foreign Language Press. (Not available in NLB holdings)

7 Xu, Z.L. (1992). *Creation of the gods*. (2 vols.). Beijing: New World Press. (Not available in NLB holdings)

8 See *Chapter twenty-five: The universal door of Guanshi Yin bodhisattva* (The bodhisattva who contemplates the sounds of the world) (n.d.). Retrieved from buddhistdoor.com website.

9 Webb, W. (2012, May 24). Tua Ji Peh: The intricacies of liminality in the deification of Chinese non-Buddhist supernatural beings in Chinese-Malaysian communities. *ASIANetwork Exchange 19* (2), 4–13. Retrieved from Asian Network Exchange website.

10 The *Luoshu* is widely used in Chinese geomancy and *fengshui* today. It is a three-by-three grid of dots representing the numbers one to nine. The numbers in each of the rows, columns and diagonals add up to 15 (which is the number of days in each of the 24 solar terms in the traditional Chinese calendar).

11 The Eight Trigrams are eight symbols used in Daoist cosmology to understand the organisation of life and the universe.

12 The legend of Yu the Great is popular folklore. Researchers have linked the story with a great flood of 1920 BCE which occurred when an earthquake caused a dam on the Yellow River to break. See Wu, Q.L. et al. (2016, August 5). Outburst flood at 1920 BCE supports historicity of China's Great Flood and the Xia dynasty. *Science, 353* (6299), 579–582.

13 Also see earlier explanation in Note 2 on Celestial Armies.

14 All information on Tan Ah Choon was obtained from Chan, M. & Yue, V. (2010, July). Tan Ah Choon: The Singapore 'King of Spirit Mediums' (1928–2010). *South China Research Resource Station Newsletter, 60* (15), 1–4, p. 4. Retrieved from Singapore Management University website.

15 Sudhana is an acolyte of Guanyin, the the Bodhisattva of Compassion or Goddess of Mercy. Sudhana is a pious Indian pilgrim whose story is told in the *Gandavyuha Sūtra*, a 4th-century Mahayana Buddhist text. [See Fontein, J. (1967). *The pilgrimage of Sudhana: A study of Gandavyuha illustrations in China, Japan and Java.* The Hague and Paris: Mouton & Co. (Not available in NLB holdings.] Sudhana should not to be mistaken for The Little Red Boy (红孩儿), a character in the Chinese classic *Journey to the West* (西游记). The Little Red Boy is a demon who is subdued by Guanyin who renames him Sudhana and makes him an acolyte. Because of the popularity of *Journey to the West*, Sudhana *tangki* often have to point out that the deity who possesses them is the holy pilgrim, and not The Little Red Boy.

16 Khoo, S.N. (2009). Hokkien Chinese on the Phuket mining frontier: The Penang connection and the emergence of the Phuket Baba community. *Journal of the Malaysian Branch of the Royal Asiatic Society, 82* (2) (297), 81–112. Retrieved from JSTOR via NLB's eResources website.

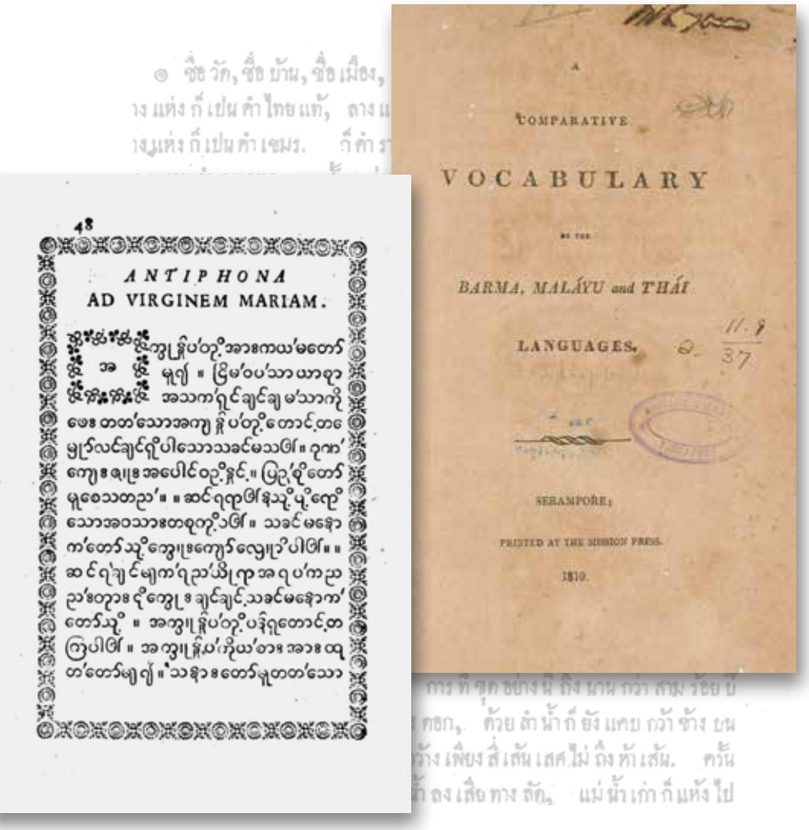
17 About the Chinese in Singkawang, see Heidhues, M.S. (2018). *Golddiggers, farmers, and traders in the "Chinese districts" of West Kalimantan, Indonesia*. Ithaca, NY: Cornell University Press. (Not available in NLB holdings)

18 Chan, M. (2009). Chinese New Year in West Kalimantan: Ritual theatre and political circus. *Chinese Southern Diaspora Studies*, 3, 106–142. Retrieved from Singapore Management University website; Chan, M. (2013). The spirit-mediums of Singkawang: Performing 'peoplehood'. In S.M. Sai & C.Y. Hoon (Eds.), *Chinese Indonesians reassessed: History, religion and belonging* (pp. 138–158). London, New York: Routledge. (Call no.: RSEA 305.89510598 CHI)

19 Huang, K.-W. (2016). The origin and evolution of the concept of *mixin* (superstition): A review of May Fourth scientific views. *Chinese Studies in History, 49* (2), 54–79. Retrieved from Taylor & Francis Online.

EARLY PRINTING IN MYANMAR AND THAILAND

In the second of two essays on the history of printing in mainland Southeast Asia, **Gracie Lee** recounts how Christian missionaries brought printing technology to Myanmar and Thailand.*



The story of modern printing in Myanmar and Thailand shares some similarities with each other. In both countries, printing technology arrived through the work of missionaries. This was before local and colonial governments, and commercial publishers began establishing their own printing presses. Catholic and Protestant missionaries developed typefaces appropriate to Burma and Thailand and shipped over printing presses so that religious literature could be published in the local languages. This, in turn, seeded the development of printing in other areas.

Myanmar

The earliest printed works in Burma (now Myanmar) emerged with the arrival of Catholic missionaries in the early 18th century. In 1773, Father Percoto, an Italian priest residing in Burma, entrusted his manuscripts to his co-worker, Father Melchior Carpani, and instructed him to procure a printing press and Burmese fonts from Rome.

In Rome, Father Carpani published *Alphabetum Barmanum* (1776), a primer based on Father Percoto's manuscript, with the Propaganda de Fide press, the missionary arm of the Roman Catholic Church. This is regarded as the oldest extant Burmese printed book. The work, in Latin and Burmese, contains an introduction by Father Carpani and sections devoted to the Lord's Prayer, the Ave Maria, the Apostle's Creed, an antiphon of the Virgin Mary and the Ten Commandments. A second edition, *Alphabetum Barmanorum*, was revised by Father Gaetano M. Montegazza and published in 1787, with assistance from U Tsaw, a Burmese convert who contributed new styles of Burmese characters that were used for the recasting of the Burmese font.[1]

(Far left) *Alphabetum Barmanum* (1776) by Father Carpani is widely regarded as the oldest extant printed book in Burmese. The Catholic prayer the Ave Maria is shown here. *Retrieved from Internet Archive website.*

(Left) *A Comparative Vocabulary of the Barma, Maláyu and T'hái Languages* (1810) by the Scottish linguist John Leyden. This is one of the earliest printed works in Burmese published by the Serampore Mission Press. The book also contains Jawi script. *Collection of the National Library, Singapore. (Accession no.: B03013686E)*

Gracie Lee is a Senior Librarian with the National Library, Singapore. She works with the rare materials collections, and her research areas include Singapore's publishing history and the Japanese Occupation.

(Above left) A wood engraving depicting the shipwreck of Felix Carey. He lost his wife and children when the boat that carried the first printing press in Myanmar capsized in the Irrawaddy River in August 1814. *Image reproduced from Burns, J. (1854). Missionary Enterprises in Many Lands (p. 220). London: Knight & Son. Original Source The British Library, 1366.b.9.*

(Above) The American Baptist Mission on Merchant Street, Rangoon, in the early 20th century. *Image reproduced from Wright, A., Cartwright, H.A., & Breakspear, O.T. (Eds.). (1910). Twentieth Century Impressions of Burma: Its History, People, Commerce, Industries, and Resources (p. 137). London; Durban; Perth (W.A.): Lloyd's Greater Britain Pub. Co. Retrieved from Cornell Southeast Asia Visions website.*

In 1814, Carey and his family set sail with the printing press for the capital Ava, where he had been summoned into service by the Burmese court. Tragically, the boat capsized en route, drowning his wife and two young children. Although Carey survived, the Burmese types were lost in the watery depths of the Irrawaddy River.[4]

The British mission in Burma was brought to a standstill by this setback, and the work was turned over to Adoniram Judson, the first American Baptist missionary to Burma. He had arrived in Rangoon (now Yangon) in 1813 and spent the next 37 years of his life in Burma. Among his many achievements was the development of the American Mission Press in Rangoon, which produced some of the earliest printed works in Burma, both religious and secular. These include translations of the Bible, catechisms, religious tracts, dictionaries, school textbooks and the *Maulmain Almanac and Directory*.[5]

In 1816, Burma finally received its first operational printing press when fellow American George Henry Hough joined Judson in Burma, bringing with him a printing press and a font of Burmese type donated by the Serampore Mission. The press was used to print a tract, a catechism and a translation of the *Gospel of Matthew* completed by Judson. Although there are no known extant copies of the tract and catechism, a copy of Judson's *Gospel of Matthew* (1817) can be found in The British Library, making it the oldest known surviving work printed in Burma. After these initial efforts, there appears to be very little printing done in the country as the printing press was relocated to India before the onset of the First Anglo-Burmese War (1824–26).[6]

Judson was able to revive printing activities in 1830 when Cephas Bennett, another American Baptist missionary who was also a printer, joined him in Moulmein (now Mawlamyine) bearing a press and types donated by the American Baptist church. In the early years, the American Baptist Mission Press was responsible for almost all the printing carried out in Burma, producing both Christian and secular works such as textbooks and language books, until the emergence of private presses in the mid-19th century.

The Burma Herald Press, which was the first commercial press to make Burmese works widely available to the reading public, began publishing general works, legal texts, moral tracts and popular Burmese plays (*pya-zat*) in 1868.

In 1886, Philip Ripley, who was born in Burma, started the Hanthawaddy Press in Rangoon which became a leading publishing house in Burma in the early 20th century, known in particular for its publication of Burmese classics and Buddhist texts such as the *Tripitaka*. In 1864, the first royal printing press in Mandalay was established by King Mindon.[7]

In 1807, the Serampore Mission extended its work to Burma, and Felix Carey was appointed one of its first missionaries. Carey was a trained doctor, and having apprenticed under William Ward, had become a proficient printer. The younger Carey was also particularly adept at languages and quickly attained fluency in Burmese and Pali. These skills put him in good stead when he oversaw the production of Burmese font types, which were used in the printing of his translation of the *Gospel of Matthew*.[3] Progress was slow, however, as the Burmese station lacked a printing press and all the printing had to be done in Serampore.

To this end, Carey made an appeal to King Bodawpaya for permission to set up a Christian printing press in Burma. Having found favour with the Burmese court for his medical skills, and coupled with the king's interest in having a press for government printing, the request was granted.

* For the first essay titled "Early Printing in Indochina", see *BiblioAsia*, Jan–Mar 2020 (Vol. 15, Issue 4).

Thailand

In many ways, the development of printing in Thailand is similar to that of Myanmar. Catholic missionaries began settling in Thailand from the 16th century. Printing was later introduced by the Society of Foreign Missions of Paris (Société des Missions Étrangères de Paris), which had established a presence in Thailand from the 17th century. Most sources concur that *Kham son Christang Phàc ton* is the earliest known publication in the Thai language in the kingdom. This book of Christian teachings was printed in Romanised Thai in 1796 by Father Arnaud Garnault of the Church of Santa Cruz in Thonburi (an area in modern Bangkok).

Another prominent figure in Catholic printing was Father Jean-Baptiste Pallegoix who arrived in Thailand in 1830. In 1838, Father Pallegoix secured his first press which he used to print a primer in Romanised Thai. A second press, made of iron, was received in 1841. With these, Father Pallegoix printed works in Thai, Annamese, Cochinese and Malay, but all in Roman script. Most of the materials he produced were school textbooks and religious literature. One of his most notable publications is *Grammatica Linguae Thai* (1850), a Thai grammar written in Latin with text in Thai script produced from type acquired from American Protestant missionaries. Pallegoix also published *Dictionarium Latinum Thai* (1850), a Latin-Thai dictionary, in the same year.[8]

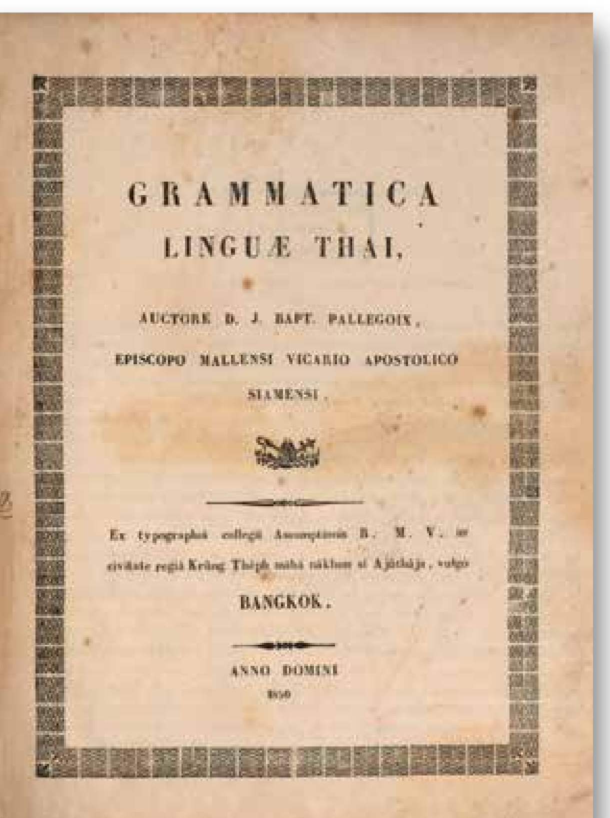
The oldest publication in Thai script was, however, produced outside of Thailand. A catechism by Ann Hasseltine Judson, the wife of Adoniram Judson, was printed in Serampore in 1819. The oldest known surviving publication with substantial Thai script was printed in India. In 1828, *A Grammar of the Thai, or Siamese Language* written by James Low, a captain with the British East India Company, was published by the Baptist Mission Press in Calcutta (now Kolkata). The manuscript was first presented to the Asiatic Society of Calcutta in 1822 and later published on the urging of Robert Fullerton, then Governor of the Straits Settlements, in view of British commercial interests in Thailand. This early work, which featured Thai script printed from type and lithography was, unfortunately, riddled with typographical errors that revealed Low's inadequate grasp of the language and the challenges of vernacular printing.[9]

Interestingly, some of the earliest printing in the Thai script took place in Singapore. The first Siamese type and printing press in Thailand were also acquired from Singapore. The oldest record of Thai printing in Singapore dates back to 1822 when Samuel Milton, an agent of the London Missionary Society stationed in Singapore, wrote to the London headquarters to inform them that three men were cutting Siamese type for the printing of a Christian tract. The following year, Milton reported that he had purchased a font of Siamese type from Calcutta and that a Siamese translation of the *Book of Genesis* – the first book in the Christian Bible – was already in the press.[10]

An undated portrait of the American missionary John Taylor Jones, one of the earliest Protestant missionaries to Thailand. *Image reproduced from The Missionary Magazine, Vol. XXXIV, No. 1, January 1853. Retrieved from Wikimedia Commons.*

In the early 19th century, the presses of the London Missionary Society and the American Board of Commissioners of Foreign Missions (ABCFM) based in Singapore were responsible for printing hundreds of Siamese tracts distributed in the kingdom.[11] A rare example of one of these tracts survives in the collection of The British Library. The pamphlet carries an inscription that reads "Tract of Sermon on the Mount in Siamese by J.T. Jones. Printed at Singapore, 1835". This is very likely the work of John Taylor Jones of the American Baptist Mission, one of the earliest Protestant missionaries to Thailand.[12]

In 1835, Jones visited Singapore to publish his first translation of the *Gospel of Matthew* into the Thai language. The printing was completed using ABCFM's font of Siamese metallic type that had been cast from the matrices made under the supervision of the Serampore Mission Press. This type and a wooden press were subsequently brought to Bangkok from Singapore by American missionary Dan Beach Bradley in 1835. Many regard this as Thailand's first Siamese type and printing press.[13] Bradley also later developed a Thai typeface that became widely used, and oversaw the production of many of Thailand's early printed works.[14]


GRAMMATICA LINGUÆ THAI,
AUCTORE D. J. BAPT. PALLEGOIX,
EPISCOPO MALLENSI VICARIO APOSTOLICO SIAMENSI.
Ex typographia collegii Assumptionis B. M. V. in civitate regia Krung Thêph mahá nákhon si Ajúthaja, vulgo
BANGKOK.
ANNO DOMINI
1850

(Left) *Grammatica Linguae Thai* (1850), a Thai grammar in Latin with some text in Thai script written by Father Jean-Baptiste Pallegoix and published in Bangkok. *Courtesy of Bayerische Staatsbibliothek München, 4 L.as. 271 h, title page, urn:nbn:de:bvb:12-bsb10522371-0.*

(Below) An undated portrait of Father Jean-Baptiste Pallegoix. He was the Vicar Apostolic of Eastern Siam and one of the earliest printers in Thailand. One of his most notable publications is *Grammatica Linguae Thai* (1850), a Thai grammar which contains both Latin and Thai script. *Retrieved from Wikimedia Commons.*

The ABCFM and the American Baptist Mission were running presses in Thailand by 1836.[15] One of the earliest surviving examples from this period is a Christian tract, *Ruang Phrasasana*, published in 1837.[16] Besides Christian literature, the ABCFM press under the direction of Bradley also published secular works such as the first Thai newspaper, *The Bangkok Recorder* (1844–45), the *Bangkok Calendar*, and *A Journal of the Tour of the Siamese Embassy to & from London in the Year of our Lord 1857 & 1858* (1861) by Mom Rajodai.

By the late 19th century, there were several commercial printing houses operating in Bangkok. In 1865, missionary Samuel Smith established Bang Kho Laem Publishing House, which initially produced Christian literature and Buddhist sermons but later became a profitable business in publishing classical Thai epic poems such as *Khun Chang Khun Phaen* and *Phra Aphai Mani*.[17]

In addition to missionary and commercial presses, the Thai monarchy and Buddhist temples were also involved in various forms of publishing. The first printed government document in Thailand, issued in 1839, was a royal proclamation on the ban of the opium trade. Prince Mongkut (later King Rama IV) became the first Thai to set up a press while he was an abbot at the Wat Pavaranivesa monastery. He formally established the official government press in 1858 when he became king.

The government press took charge of publishing the *Ratchakitchanubeksa* (Royal Gazette), administrative papers and records (*chomaihet*), handbooks, laws and speeches. Various members of the royal household continued to play active roles in publishing Thai literature right up to the early 20th century.[18]

Mention should also be made of the important role that Buddhist monasteries performed in the publication of cremation volumes to honour those who had died. Distributed to guests during funerals, these books contain information and details on the lives of the deceased.[19]

In examining how printing technology spread to mainland Southeast Asia, we can see the role of the colonial government (in French Indochina) and Christian missionaries (in Myanmar and Thailand) in bringing and applying the know-how to the region.

However, it is equally clear that the local inhabitants of mainland Southeast Asia – whether they were kings, Buddhist clergy or the intelligentsia – saw the potential of the printing press to quickly disseminate information and ideas. Local presses were thus established to serve the people's needs. ♦


๏หนังสือจดหมายเหตุ
THE BANGKOK RECORDER.

The front page of *The Bangkok Recorder* (1 March 1865), the first Thai newspaper. It was published by American missionary Dan Beach Bradley. *Retrieved from Wikimedia Commons.*

NOTES

1 Herbert, P., & Milner, A. (Eds.). (1989). *South-East Asia: Languages and literature: A select guide* (p. 9). Arran, Scotland: Kiscadale Publications. (Call no.: RSING 495 SOU); San, S.M. (2010, December). Early printing in Burma. *Southeast Asia Library Group Newsletter*, 42, 32–33. Retrieved from Southeast Asia Library Group website; Pearn, B.R. (1960). Burmese printed books before Judson (pp. 475–476). *Fiftieth Anniversary Publications, No. 2*. Rangoon: Burma Research Society. (Call no.: RCLOS 959.1 BUR-[GBH]); Bigandet, P.A. (1996; orig. 1887). *An outline of the history of the Catholic Burmese mission from the year 1720 to 1887* (pp. 12–23). Bangkok, Thailand: White Orchid Press. (Call no.: RSEA 266.2591 BIG); National Library of Australia. (n.d.) *Alphabetum barmanum, seu, bomanum: Regni avae finitimarum regionum*. Retrieved from National Library of Australia website; Thae, T.H. (2011, January 3). *Barnabite legacy a treasure for collectors*. Retrieved from Myanmar Times website.

2 Herbert & Milner, 1989, p. 9; San, Dec 2010, pp. 33–34; Pearn, 1960, pp. 475–476.

3 Wylie, M. (1854). *Bengal as a field of missions* (pp. 52–59). London: W.H. Dalton. Retrieved from Internet Archive website; Baptist General Convention. (1841). *Baptist Missionary Magazine*, 21, p. 211. Retrieved from HathiTrust website.

4 Marshman, J.C. (1864). *The story of Carey, Marshman & Ward: The Serampore missionaries* (pp. 198–199). London: A. Strahan & Co.. Retrieved from HathiTrust website; Baptist Missionary Society. (1815). *The Baptist Magazine for 1815*, 7, pp. 207, 519. Retrieved from HathiTrust website.

5 Rhodes, D.E. (1969). *India, Pakistan, Ceylon, Burma and Thailand* (pp. 81–86). Amsterdam: [A. L.] van Gendt; New York: Schram. (Call no.: RSEA 686.2095 RHO)

6 Herbert & Milner, 1989, p. 9; Rhodes, 1969, p. 82; San, Dec 2010, p. 34.

7 Herbert & Milner, 1989, p. 10; Rhodes, 1969, pp. 83–86; San, Dec 2010, p. 34; Suarez, M.F., & Woudhuysen, H.R. (Eds.). (2013). *The book: A global history* (p. 633). Oxford: Oxford University Press. (Call no.: 002.09 BOO); Wright, A., Cartwright, H.A., & Breakspear, O.T. (Eds.). (1910). *Twentieth century impressions of Burma: Its history, people, commerce, industries, and resources* (pp. 132–139). London; Durban; Perth (W.A.): Lloyd's Greater Britain Pub. Co. Retrieved from Cornell University Library website.

8 Winship, M. (1986). Early Thai printing: The beginning to 1851. *Crossroads: An Interdisciplinary Journal of Southeast Asian Studies*, 3 (1), 45–47. Retrieved from JSTOR via NLB's eResources website; Bressan, L. (2003). The first printed sentence in Thai: A.D. 1646. *Journal of the Siam Society*, 91, p. 241. Retrieved from Siam Society website; Kantaphong, C. (2017). Khâm Són Christang: A witness of the French missionnaries' knowledge of Thai language during the Ayutthaya era of Siam (Thailand). *Proceedings*, pp. 184–186. Retrieved from the 13th International Conference on Thai Studies website; Smyth, D. (2001). Farangs and Siamese: A brief history of learning Thai (p. 279). In K. Tingsabadh & A. Abramson. (Eds.), *Essays in Tai linguistics*. Bangkok: Chulalongkorn University Press. Retrieved from SEAlang website; Herbert & Milner, 1989, p. 30.

9 Herbert & Milner, 1989, p. 30; Winship, 1986, pp. 48–49; Smyth, D. (2007). James Low, on Siamese Literature (1839). *Journal of the Siam Society*, 95, pp. 159–160. Retrieved from The Siam Society website; Low, J. (1828). *A Grammar of the T,hai or Siamese Language*. Calcutta: Baptist Mission Press. Retrieved from HathiTrust website; Nida, E.A. (Ed.). (1972). *The book of a thousand tongues* (Rev. ed., p. 427). London: United Bible Societie. Retrieved from Internet Archive website.

10 Byrd, C.K. (1970). *Early printing in the Straits Settlements, 1806–1858* (pp. 13–16). Singapore: National Library. (Call no.: RSING 686.2095957 BYR); Su, C. (1996). The printing presses of the London Missionary Society among the Chinese (pp. 154–163) [Unpublished dissertation]. Retrieved from University College of London website; Church Missionary Society. (1825, January). *The Missionary Register*, 13, p. 46. London: L.B. Seeley & Son. Retrieved from HathiTrust website.

11 Byrd, 1970, pp. 13–16; Su, 1996, pp. 154–163; Baptist General Convention. (June, 1840). *The Baptist Missionary Magazine*, 20, p. 144. Retrieved from HathiTrust website.

12 Igunma, J. (2014, June 2). *The beginnings of Thai book production: Thai books at the British Library*. Retrieved from The British Library website; The British Library. (n.d.). *Catalogue of [Tract and sermon on the Mount (in Thai). Singapore: s.n., 1835]*. Retrieved from The British Library catalogue; The British Library. (n.d.). *Catalogue of [The Gospel by Matthew in Thai. Singapore: s.n., 1835]*. Retrieved from The British Library catalogue; Columbia University Libraries. (n.d.) *Catalogue record of [St. Matthew's gospel in Siamese / tr. by J. Taylor Jones and Charles Robinson]. [Singapore: s.n., 1835]*. Retrieved from Columbia University Libraries website; Nida, 1972, p. 427.

13 Winship. 1986, pp. 49–51; Bradley, D.C. (1861). *Bangkok calendar for the year of our Lord 1861* (p. 82). Bangkok: American Missionary Association. Retrieved from HathiTrust website; Bradley, D.C. (1869). *Bangkok calendar for the year of our Lord 1869* (p. 65). Bangkok: American Missionary Association. Retrieved from Google Books website; American Tract Society. (1836). *Eleventh annual report of the American Tract Society* (p. 89). New York: Society's House. Retrieved from HathiTrust website.

14 Mattani, M.R. (1988). *Modern Thai literature: The process of modernization and the transformation of values* (pp. 7–9). Bangkok: Thammasat University. (Call no.: RDET 895.91308 MAT); Winship, 1986, pp. 51–54.

15 Winship, 1986, p. 51.

16 Ginsburg, H. (2000). *Thai art and culture: Historic manuscripts from Western collections* (p. 40). London: The British Library. (Call no.: RART 745.6709593 GIN)

17 Herbert & Milner, 1989, pp. 30–31; Wibha, S.K. (1975). *The genesis of the novel in Thailand* (pp. 23–25). Bangkok: Thai Watana Panich Co. (Call no.: RDET 895.913009 WIB); Mattani, 1988, pp. 8–10.

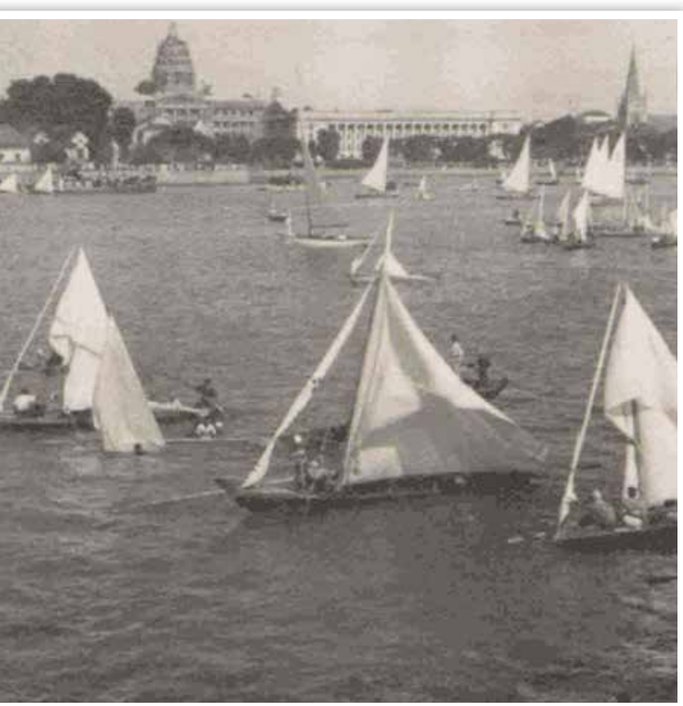
18 Herbert & Milner, 1989, pp. 30–31;Winship, 1986, p. 51; Wibha, 1975, pp. 27, 31; Sulak, S. (1990). *Siam in crisis: A collection of articles* (pp. 134–157). Bangkok: Thai Inter-Religious Commission for Development. (Call no.: RSEA 306.09593 SUL); Suarez & Woudhuysen, 2013, p. 633.

19 Herbert & Milner, 1989, p. 31; Igunma, 2 Jun 2014; National Library of Australia. (n.d.) *Thai cremation volumes*. Retrieved from National Library of Australia website; Svasti, P. (2014, October 27). *Cremation books bring history to life*. Retrieved from Bangkok Post website.

Picturing Singapore

A VISUAL HISTORY

Photographs are an important means to understand Singapore's history and heritage. **Janice Loo** shares highlights from the National Library's PictureSG Collection.



Janice Loo is a Librarian with the National Library, Singapore. Her responsibilities include collection management and content development as well as research and reference assistance on topics relating to Singapore and Southeast Asia.

In one image, a man is pulling a rickshaw outside the Thian Hock Keng Temple on Telok Ayer Street. In another, Malay sailboats (or *kolek*) race at the harbour on New Year's Day. In a third photograph, a family poses for a portrait in front of the National Theatre on River Valley Road.

All these images capture scenes of Singapore that no longer exist. The Thian Hock Keng Temple photo dates to the 1890s, hence the rickshaws. These days, *kolek* no longer race in the waters off Collyer Quay on New Year's Day. And while the National Theatre is certainly Instagram-worthy, that building was demolished in 1986.

Photographs like these are why the National Library's online PictureSG Collection is so valuable. Consisting of more than 35,000 digitised and "born-digital" (images originally shot in digital format) photographs, PictureSG allows anyone with an internet connection to explore Singapore's history from the 19th century to modern times.

PictureSG exists because a key function of the National Library is to collect, preserve and make available the published and documentary heritage of the nation. To this end, the National Library has been acquiring, organising and digitising all manner of Singapore-related content, including monographs,[1] newspapers,[2] music recordings[3] and photographs. Over the years, the library has created online platforms to facilitate the search and discovery of the library's wide array of materials by format. For images and photographs, that platform is PictureSG.

Photographs of Early Singapore

Some of the oldest works in the National Library's photograph collection were taken by early commercial photography studios – such as Sachtler & Co. and G.R. Lambert & Co. – that operated in Singapore in the 19th and early 20th centuries. These studios produced picturesque scenes and portraits of people that became popular tourist souvenirs at the time. Today, the prints serve as an invaluable source of visual documentation on early Singapore.[4]

Other than the works of professional photo studios, the collection also includes rare photographs from the personal collections of former European residents of Singapore. These provide another perspective on life during the colonial period.

One such collection belonged to Percy Reginald Hill (1888–1950). In 2007, his daughter Mrs Eleanor O'Hara offered the National Library her father's collection of 60 glass slides (images printed on glass) featuring scenes of Singapore and Malaya in the early 20th century. Hill was a chartered accountant who worked for the accounting firm Evatt & Company in Singapore and Kuala Lumpur between 1906 and 1919.

A keen photographer, Hill spent his free time documenting everyday life in Malaya, including people, rubber plantations, coastal and riverine settlements, temples, tropical fruits, and street and market scenes. He apparently hand-coloured some of the slides himself.[5]

A year later, another major donation was made by the family of Edwin A. Brown (1878–1955). The Edwin A. Brown Collection comprises some 170 photographic prints of Singapore mainly taken in the 1920s and 30s. The photographs reflect the colourful civic and cultural life of pre-war Singapore in which Brown, a businessman, participated.

Highlights of this collection include photographs of the Prince of Wales' visit in 1922; the opening of Kallang Airport in 1937; a performance of *The Pirates of Penzance* at the Victoria Theatre in 1937; the opening of the King George VI Graving Dock in 1938; various scouting activities and the annual New Year's Day regatta at Collyer Quay in the 1930s.

(Far left) Scene of the New Year Sea Sports, 1939. This was an annual regatta that took place in the harbour, off Collyer Quay. The Supreme Court building and Municipal Building can be seen in the background. *Edwin A. Brown Collection, PictureSG, National Library, Singapore.*

(Top left) A family posing outside the National Theatre, 1965. Designed by local architect Alfred H.K. Wong, the National Theatre was built to commemorate Singapore's attainment of self-government in 1959. The theatre was situated at the corner of Clemenceau Avenue and River Valley Road. It was closed in 1984 and subsequently demolished to make way for the Central Expressway. *Donated by Chang Wei Jie Jerroy, PictureSG, National Library, Singapore.*

(Left) Thian Hock Keng Temple, 1900s. Located on Telok Ayer Street, Thian Hock Keng is the oldest Hokkien temple in Singapore. It began as a shrine where newly arrived Chinese immigrants gave thanks to Ma Zu (妈祖), Goddess of the Sea, for their safe voyage. *Percy Hill Collection, PictureSG, National Library, Singapore.*

A row of two-storey shophouses on Kitchener Road, 1966. These dwellings have typical Peranakan features such as the half-length swinging doors (*pintu pagar*) at the entrance. *Lee Kip Lin Collection, PictureSG, National Library, Singapore.*

Modern Singapore

The majority of photographs in the National Library's collection date to the first three decades of Singapore's independence and were donated by prominent individuals, professional photographers as well as the general public. These images document the changing physical and social landscape as the country underwent rapid development and urbanisation.

Among the photographs of this period are the library's own collection of prints that capture the history of library services in Singapore, including the former National Library building on Stamford Road,[6] the first mobile library service started in 1960[7] and the first branch library in Queenstown,[8] which was officially opened by founding Prime Minister Lee Kuan Yew in 1970.

The National Library also receives photographs as part of larger donations, which can include books, maps, photographers' notes, manuscripts and other materials that provide valuable supporting information. A case in point is the donation in 2009 by the family of Lee Kip Lin (1925–2011) of some 17,000 photographic materials, making up the single largest collection of images in PictureSG. In addition to rare prints by G.R. Lambert & Co. and photos of modern Singapore personally taken by Lee himself, the Lee Kip Lin Collection also includes monographs and maps of Singapore and Southeast Asia.

Lee was an architectural historian, educator and professional architect. His passion for Singaporean architectural history led him to research and publish several books on the subject, including his seminal work *The Singapore House: 1819–1942*,[9] first published in 1988 and reprinted in 2015.

An advocate of conservation, Lee undertook extensive photographic surveys to support his cause. Between 1965 and 1995, Lee traversed the island documenting streets, buildings and places in a methodical fashion, and where possible, from exterior to interior views. The outcome of this painstaking endeavour is a meticulous visual record of Singapore's architectural heritage and spatial transformation over a 30-year period. Most of the photographs were shot on black-and-white film, which rendered architectural details with greater contrast and clarity compared to colour film.[10]

In addition to the quality of the photographs, the value of the Lee Kip Lin Collection lies in its diverse subject matter. The photos were taken in the city centre as well as outlying areas, and showcase a variety of building types such as bungalows, shophouses, markets, flats, schools and places of worship. Studied together with maps, building plans and other historical records in the National Library's collections, the photographs allow the viewer to reconstruct the past through places and spaces in Singapore that have been altered beyond recognition or no longer exist today.

Another collection of photographs that showcase Singapore's architecture was donated in 2007 by the family

THE MAKING OF PICTURESG

Photographs form part of the special materials collection at the National Library. As photographs of Singapore are generally difficult to find on the market, the library has made concerted efforts to grow its photograph collection through donations by individuals, groups and organisations in addition to acquisitions.

The National Library is interested in collecting photographs that document national events and the activities of notable individuals and organisations in Singapore, including those that chronicle themes of national significance such as urban redevelopment, or are representative of Singapore society in a particular time period. These photographs tend to mostly remain in private collections or are held in organisational archives.

The National Library has put in place a Donors Programme to promote the library's mission of collecting and preserving published and unpublished materials of national significance and heritage value.

The library collects works by both professional and amateur photographers. The main criteria for selection is that they must contain documentary or historical content about Singapore. As photographs are important for their informational and evidential value, preference is given to those that capture the subject with accuracy and detail, and include information such as dates, locations and names.

Reproductions or duplicates of original photographs are only accepted in exceptional circumstances, such as when the original cannot be obtained or is in poor condition. In evaluating an item, the library also considers its physical condition and its suitability for long-term preservation.

To make its collections accessible, the National Library launched an online database of visual materials on Singapore as early as 2005. Known as Singapore Pictures, the website started with some 400 contemporary and historical images covering a variety of subjects, ranging from nature and landscapes to prominent personalities and historical events in Singapore. In 2008, the database was renamed Singapore National Album of Pictures (SNAP).

Initially, the digital image collection was made up primarily of photographs featuring places of interest, buildings and monuments in Singapore taken by the staff of the National Library in the course of their work.[1] These were captioned and uploaded on the SNAP portal. In 2008, to reach out to more users, the library collaborated with Flickr – a photo-sharing website – to mirror the SNAP collection on its site. This helped to raise the visibility and accessibility of the SNAP collection through better search engine indexing and enabled the public to contribute additional information about the images as well as share these photographs on social media platforms such as Facebook and Twitter.

In 2011, SNAP was revamped and relaunched as PictureSG.[2] The collection has since grown substantially due to donations and public contributions.

Among the new features that improved the usability of the PictureSG database are the inclusion of thumbnails in the search results, which reduced the number of clicks needed to access the desired image. Previously, the search results in SNAP were limited to text descriptions and users had to click on each link to ascertain if the image matched what they were looking for.

The photograph collection of the National Library complements that of the National Archives of Singapore (NAS) and other collecting institutions in Singapore. To promote content discovery across collections, text analytics are used to recommend related images within PictureSG as well as those from the NAS.[3] In addition, PictureSG images are featured on other National Library websites such as Singapore Infopedia, an electronic encyclopedia of articles about Singapore.

OneSearch is another platform that provides access to PictureSG resources. This online portal facilitates the search and retrieval of resources from the National Library Board's library and archives databases as well as those from the National Heritage Board's repository of artefacts and artworks held by its museums.

In PictureSG, each image comes with its own metadata,[4] which includes its title, estimated date of creation, name of creator, a brief description, the subject and a rights statement. In describing and captioning each item, library staff rely on the original accompanying caption or notes and conduct some research to verify the information. The title describes the subject depicted, and contains the date and the orientation of the image – for example, whether it is a general view, an interior or exterior view, a close-up – as well as the estimated date of creation.

Members of the public have occasionally written in to provide feedback or make enquiries about image descriptions. The feedback received thus far tends to address inaccuracies rather than provide supplementary information. When feedback is received, library staff verify the claims and amend the metadata if necessary. This process can be onerous as image research often requires cross-referencing with other images of the same location from different time periods. Furthermore, the information provided by the user is sometimes based on tacit knowledge, for example, the user's own experience or family history, and this can be challenging to verify in the absence of readily available documentary sources.

One way to make it more convenient for the public to help enrich content is to enable crowdsourced annotations. This is being done by the National Archives via its Citizen Archivist Project, where the public is encouraged to contribute by providing descriptions of photographs and transcribing documents in the archives' collections.

NOTES

1 Ang, S.H., & Pwee, T. (2008). Working with the public: Flickr SNAP (Singapore National Album of Pictures). *CDNLAO Newsletter*, 63. Retrieved from National Diet Library website.

2 Ng, H.L. (2012). A visual memoir of Singapore: PictureSG. *CDNLAO Newsletter*, 73. Retrieved from National Diet Library website.

3 Kia, S.H., Liau, Y.C., & Ong, I. (2016). Interconnected network of knowledge: The NLB journey. In L. Bultrini, S. McCallum, W. Newman, W., & J. Sempéré. (Eds.), *Knowledge management in libraries and organizations* (pp. 87–102). Berlin/Munich: De Gruyter Saur.

4 A set of data that describes and gives information about other data.

of Kouo Shang-Wei (1924–88). The Kouo Shang-Wei Collection comprises over 6,700 photographic prints, slides and negatives.[11] Kouo was a talented photographer and a pioneer in the art photography scene of Singapore and Malaya. His contemporaries include well-known names such as K.F. Wong,[12] Yip Cheong Fun[13] and Lee Lim.

Kouo captured streetscapes and panoramic views of the Singapore River, the Marina Bay area and Raffles Place from the 1950s to the 80s. Highlights of the collection are photographs of buildings that have become enduring downtown icons, such as OCBC Centre (Kouo was commissioned to photograph the construction and opening of this building). Designed by renowned architect I.M. Pei, the 52-storey building was the tallest in Southeast Asia when it was completed in 1976.

Kouo's streetscapes document itinerant trades that were once common sights in Singapore, such as trishaw riders, storytellers, letter writers, calligraphers and satay vendors. The collection also includes photographs of various National Day celebrations, samsui women at work in the 1980s as well as the newly constructed Marine Parade estate – Singapore's first public housing project built on reclaimed land.

Another notable part of the PictureSG Collection is a donation by French photographer Paul Piollet in 2013. Piollet contributed 160 colour slides featuring scenes of Singapore taken from the 1970s to the 90s, particularly of the Chinatown area. These photographs document the social life as well as the cultural and religious practices that are no longer seen in the city centre today. These include Teochew opera (including shots of the performers on stage, backstage as well as the audience), funeral processions, businesses operating along five-footways and hawkers.

Performing Arts Photographs

The National Library also has a collection of more than 4,500 images capturing the activities of local arts groups and organisations, with the majority of them coming from established Chinese performing arts groups. These materials were received as part of larger donations that included publications, ephemera, and audio and video recordings.

In 2008, the National Library obtained permission to digitise some 1,000 photographs and publications from the Thau Yong Amateur Musical

In 1984, this dramatic shot by Kouo Shang-Wei bagged him the first prize in the Singapore Cityscape Today photo competition organised by the Urban Redevelopment Authority. The photo shows pigeons in flight against the backdrop of skyscrapers like OCBC Centre and UOB Plaza in the Central Business District in the 1970s. In the foreground are bumboats clustered along the Singapore River. *Kouo Shang-Wei Collection, PictureSG, National Library, Singapore.*

Association (陶融儒乐社). The association was formed in 1931 and continues to stage regular performances of Waijiang (外江)[14] and Teochew opera and music today.[15] The collection comprises photographs of the association's members, costumes, performances, stage design and anniversary events.

In 2014, the Singapore Children's Playhouse (新加坡儿童剧社), a Mandarin theatre group for children and youths, donated over 1,500 photographs and about 100 other items comprising books, brochures, periodicals, sound recordings, certificates, reels and vinyl records to the National Library. These materials document the performances and theatre productions of the group from the 1960s to the 80s. That same year, the National Library also received some 500 images from Siong Leng Musical Association (湘音社), which has been actively promoting traditional Nanyin music (南音) and Liyuan (梨園) opera[16] in Singapore since its founding in 1941. The association remains active today and has won international awards for its performances.

The library received a major donation of arts-related materials from The Substation, Singapore's first independent contemporary arts centre, in 2015. Comprising 2,700 items, The Substation Collection comprises publications, print and digital photographs, sound recordings and ephemera. The materials chronicle the activities of The Substation since its founding in 1990 by playwright-dramatist and Cultural Medallion recipient Kuo Pao Kun.[17]

The 1,600 print and digital images in this collection provide visual documentation of over 150 events, programmes, exhibitions and performances held at The Substation from 1990 to 2013. The collection is useful to researchers who wish to trace the development of the contemporary art scene, artists, arts programming and independent art spaces in Singapore.

Public Contributions

In 2007 and 2008, the library organised a series of Heritage Roadshows during which people were invited to contribute photographs of historic buildings, landmarks, places and street scenes of Singapore from before the 1980s.

About 800 photographs – mainly of family events, everyday life and leisure activities – were loaned to the library for digitisation. Unlike documentary or professional photography, such images were created in the course of daily life and were intended as personal keepsakes. Many of the scenes depict individuals, groups and families posing at places of attraction and landmarks that no longer exist, such as the National Theatre, Van Kleef Aquarium and Great World Amusement Park. Photographs of kampongs and old-style dwellings capture living conditions of the past and a bygone way of life that has since given way to the modern-day high-rise living in public housing flats.

These photographs provide insights into Singaporean life, society and popular culture from the 1950s to the 70s gleaned from the intimate perspectives of personal and family photographs.

我们爱打乒乓球 (*Wo men ai da ping pang qiu*; "We Love to Play Ping Pong") by the Singapore Children's Playhouse at Victoria Theatre, February 1975. *Singapore Children's Playhouse Collection, PictureSG, National Library, Singapore.*

The "Harmony of the Spheres" performance held at The Substation's Music Space from 18 to 20 July 1997. *The Substation Collection, PictureSG, National Library, Singapore.*

Picturing the Future

Today, images of Singapore are being created and disseminated at an unprecedented speed and volume due to the widespread use of smartphone cameras and the proliferation of social media platforms such as Instagram. While technology has made it easier to capture scenes of events as they unfold, such photographs are transient and may be difficult to locate subsequently unless they are properly indexed and archived.

In seeking to build a robust pictorial record of Singapore, the challenge today lies in handling this deluge with the help of technology to sift through, select, describe and organise an ever-increasing number of images for discovery, learning and research. ♦

NOTES

1 BookSG is a collection of books and other printed materials digitised from the collections of the National Library of Singapore, and complemented by selected works from The British Library's Oriental & India Office Collection.

2 NewspaperSG is an online resource of current and archived newspapers from Singapore and Malaya.

3 NORA (National Online Repository of the Arts) is a collection of digitised works in the areas of literary, performing and visual arts by prominent Singaporean artists. Notable collections in NORA include the digital archive of Singapore Tamil theatre, music and dance, which features digitised and born-digital photographs, recordings, ephemera and publications.

4 Loo, J. (2019, Oct). Daguerreotypes to dry plates: Photography in 19th-century Singapore. *BiblioAsia*, *15* (*3*). Retrieved from BiblioAsia website.

5 National Library Board. (2013, June 26). *Percy Reginald Hill* written by Duncan Suntherland. Retrieved from Singapore Infopedia website; Low, E. (2008, July). The Percy R Hill Collection. *BiblioAsia, 4* (*2*), 56–57.

6 National Library Board. (2020, June). *National Library (1960–1995)* written by Goh Lee Kim. Retrieved from Singapore Infopedia website.

7 National Library Board. (1999). *Mobile Library Services (1960-1991)* written by Wong Heng and Thulaja Naidu. Retrieved from Singapore Infopedia website.

8 National Library Board. (2000). *Queenstown Community Library* written by Wong Heng. Retrieved from Singapore Infopedia website.

9 Lee, K.L. (1988). *The Singapore House: 1819–1942*. Singapore: Times Editions for Preservation of Monuments Board. (Call no.: RSING 728.095957 LEE); Lee, K.L. (2015). *The Singapore House: 1819–1942*. Singapore: Marshall Cavendish Editions and National Library Board. (Call no.: RSING 728.095957 LEE)

10 Lai, C.K. (2015). *Through the lens of Lee Kip Lin: Photographs of Singapore 1965–1995* (pp. 10–11, 22). Singapore: National Library Board and Editions Didier Millet. (Call no.: RSING 779.45957 LAI)

11 National Library Board. (2009). *Koua Shang Wei* written by Nurhaizatul Jamila Jamil. Retrieved from Singapore Infopedia website; Zhuang, W.B. (2018). *Shifting currents: Glimpses of a changing nation*. Singapore: National Library Board and Marshall Cavendish Editions. (Call no.: RSING 915.957 KUO)

12 Zhuang, W.B. (2019, Jul–Sep). From the archives: The work of photographer K.F. Wong. *BiblioAsia, 15* (2). Retrieved from BiblioAsia website. Select photographs by K.F. Wong are available at the National Archives of Singapore and can be viewed via the Archives Online portal.

13 Tan B.T. (2006). *An ingenious reverie: The photography of Yip Cheong Fun*. Singapore: National Library Board and Singapore Heritage Society. (Call no.: RSING 779.092 TAN)

14 Waijiang music and opera originated from Northern China and later came to be enjoyed by the Teochew community in Chaoshan (southeastern part of Guangdong province) and Singapore by the end of the 19th century. See Chua, S.P. (2019). Chinese performing arts (p. 579). In C.G. Kwa & B.L. Kua. (Eds.), *A general history of the Chinese in Singapore*. Singapore: Singapore Federation of Chinese Clan Associations; World Scientific. (Call no.: RSING 305.895105957 GEN)

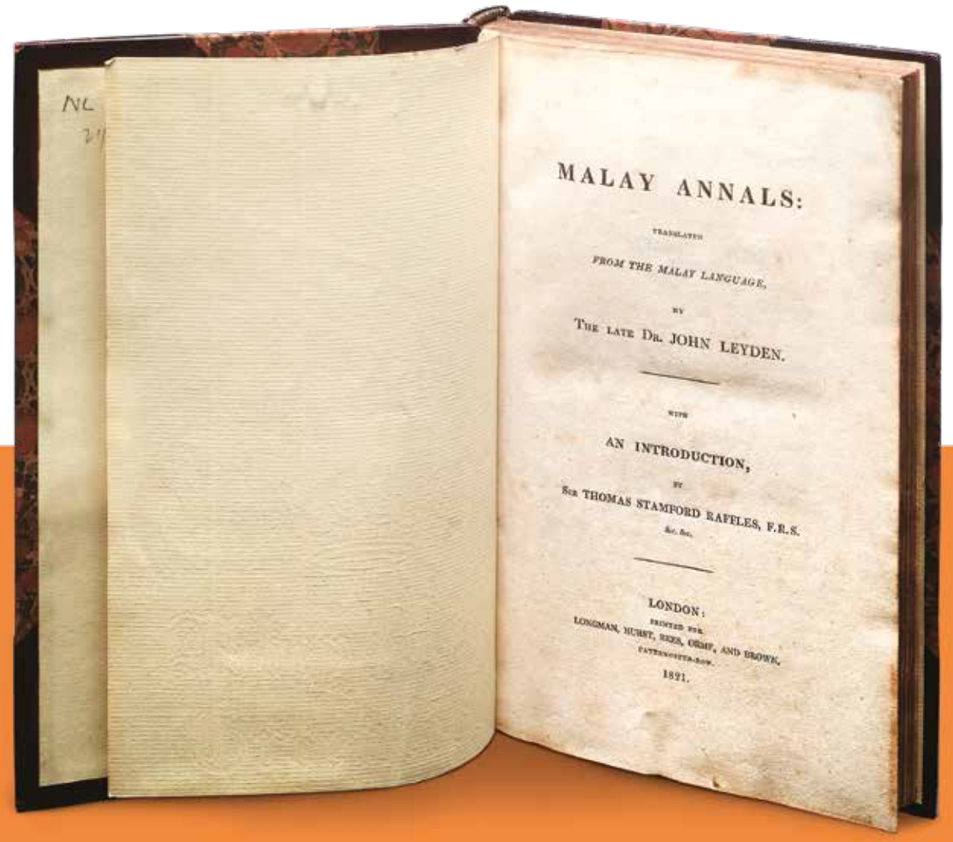
15 National Library Board. (2016). *Thau Yong Amateur Musical Association* written by Alvin Chua. Retrieved from Singapore Infopedia website.

16 Nanyin music and Liyuan opera are traditional musical and performance arts genres of the Minnan or Hokkien dialect group from southern Fujian province in China. Retrieved from UNESCO website.

17 National Library Board. (2016). *The Substation* written by Heman Chong. Retrieved from Singapore Infopedia website.

Sang Nila Utama

SEPARATING MYTH FROM REALITY



The Malay prince who founded Singapura in the 13th-century is a controversial figure – depending on which account of the *Sejarah Melayu* you read, says **Derek Heng**.

The 17th-century *Sulalat al-Salatin*[1] (Genealogy of Kings), better known as *Sejarah Melayu* or *Malay Annals*, holds an important place in the imagination and collective memory of Singaporeans. Its first six chapters – which focus on Singapore – provide a mythical narrative of the port-polity of Singapura in the late 13th and 14th centuries, and also places Singapore in the larger pre-modern and early modern Malay world. It links the island to the histories of important kingdoms such as Melaka and Johor, Pasai on the north coast of Sumatra, the Majapahit empire on Java and Ayutthaya in Siam (now Thailand), to name but a few.

The text mentions a number of characters, including Alexander the Great of Macedonia; Raja Chulan of the Chola dynasty in South India; Sang Nila Utama, a Sriwijayan prince from Palembang; and Badang,[2] the champion of Singapura who possessed supernatural strength.

Among these, the character who probably looms the largest in the Singaporean imagination is Sang Nila Utama, the mythical prince of Palembang who founded the city of Singapura on the island of Temasik (Temasek) around 1299, about a century prior to the founding of Melaka by his descendant.

As no other historical document or evidence corroborates the founding of Singapore as described in the *Sejarah Melayu*, the account – and the character – occupies the ambiguous space between history and myth. However, Sang Nila Utama is more than just a mythical character who founded Singapura – the precursor to the illustrious Melaka Sultanate (1400–1511). The character "Sang Nila Utama" was used to create a genealogy for the rulers of Melaka, and provided the means by which political legitimacy, the role of political charisma and the expansion of the sphere of influence of the Melakan rulers could be articulated.

Sang Nila Utama also provided the means by which a revisionist history of the founding of Melaka could be effected

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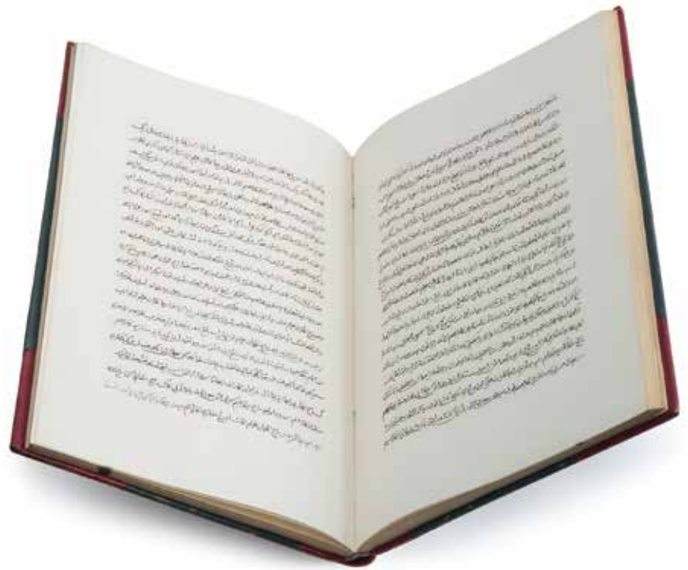


(Facing page) The title page of John Leyden's English translation of the *Sejarah Melayu* (*Malay Annals*), which was published posthumously in London in 1821. It includes an introduction by Stamford Raffles. Leyden was a Scottish poet and linguist who spoke several languages, including Malay. *Collection of the National Library, Singapore (Accession no.: B02633069G).*

(Above) The Raffles MS 18 version of the *Sejarah Melayu* is based on the earliest edition of the text (dated to 1612) and likely transcribed for Stamford Raffles in 1816. This publication can be accessed on the National Library's BookSG portal. *Courtesy of the Royal Asiatic Society of Great Britain and Ireland, United Kingdom.*

and, in the process, elevate the stature of the Melakan royal lineage. In short, the character – while seemingly benign and cloistered in the pre-modern and primordial myths of the Malay region – in fact served a critical and real-world purpose of historical discourse in the context of the Melaka Straits region in the late 16th and early 17th centuries.

To understand the role played by Sang Nila Utama, we will examine his origins as outlined in two major variants of the *Sejarah Melayu* (as many as 30 variants have been identified by scholars so far). The first is the John Leyden version,[3] which was transcribed and translated from Jawi into English around 1810 and published posthumously in 1821.[4] The second is the Raffles Manuscript (MS) 18, based on the earliest version of the text (dated 1612) and likely transcribed for Stamford Raffles in 1816.[5] While the overarching narratives in both versions are similar, certain minor differences exist regarding the stories they tell of Sang Nila Utama.

Who was Sang Nila Utama?

The *Sejarah Melayu* begins with Alexander the Great of Macedonia (also known as Iskandar Shah or Secander Zulkarneini) embarking on a military expedition to the Indian subcontinent. He married a princess of one of the pacified kingdoms and from that union came a series of rulers, culminating in Raja Chulan, the ruler of the Chola kingdom in South India. In the *Sejarah Melayu*, Raja Chulan set off on a military campaign across the Bay of Bengal and arrived at the southern tip of the Malay Peninsula. There, according to legend, he descended below the sea where he married the princess of the marine people. They had three sons who, as young princes, descended from heaven and appeared on the sacred hill of Bukit Seguntang in Palembang.

This is where the accounts in the two versions of the *Sejarah Melayu* differ. In the Leyden version, Bichitram Shah, one of the three young princes who identified himself as raja, was conferred the name Sang Sapurba. He became the ruler of Palembang following the abdication of the erstwhile local ruler, Demang Lebar Daun. Sang Sapurba's political legitimacy was further sealed by his marriage to Demang Lebar Daun's daughter. Among their children was Sang Nila Utama, who later married the daughter of the queen

of Bentan (now Bintan) and became its raja. Sang Nila Utama eventually went on to found Singapura, upon which he was conferred the title Sri Tri Buana.

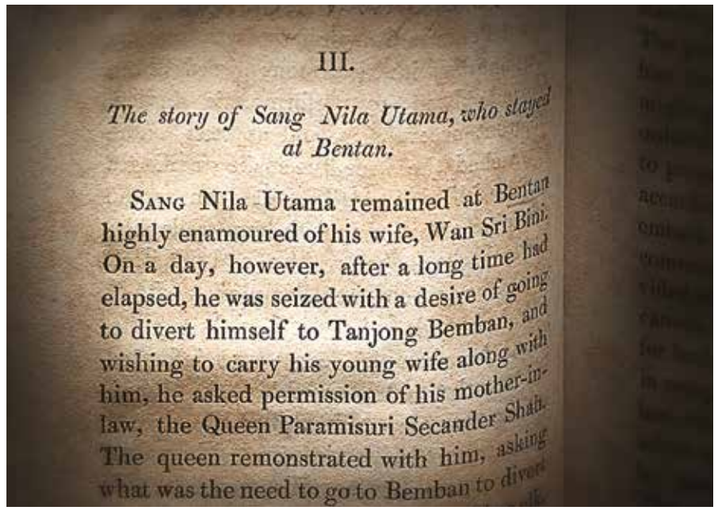
In the Raffles MS 18 version, the three princes – Bichitram, Paludatani and Nilatanam – were each appointed ruler of a kingdom in the Malay world. The eldest, Bichitram, became the ruler of the Minangkabau in western Sumatra and was titled Sang Sapurba. The second son, Paludatani, was invited by the people of Tanjong Pura in western Kalimantan to be their ruler and given the title Sang Maniaka. The youngest prince, Nilatanam, remained at Palembang in southeastern Sumatra and was made raja there and given the title Sang Utama.

Nilatanam became the ruler of Palembang following the abdication of Demang Lebar Daun. After his marriage to the latter's daughter, a ritual bath and coronation ceremony were carried out, and he was conferred the title Sri Tri Buana. Sri Tri Buana subsequently travelled to Bentan and thence to Temasik, where he founded the port-city of Singapura.[6]

In summary, in the Leyden version, Sang Nila Utama is the child of a union between Sang Sapurba (Raja Chulan's son) and the daughter of Demang Lebar Daun. In the Raffles MS 18 version, Sang Nila Utama is the son of Raja Chulan himself, while Sang Sapurba is Sang Utama's brother. In this version, it is Sang Utama who marries the daughter of Demang Lebar Daun.

(Below) Artefacts recovered from the first excavation carried out in 1984 on the eastern slope of Fort Canning Hill, near the Keramat Iskandar Shah, point to the existence of a late-13th to 14th-century settlement on the hill, as eulogised in the *Sejarah Melayu*. *Daoyi zhilue* (岛夷志略; *Description of the Barbarians of the Isles*) by the 14th-century Chinese traveller Wang Dayuan (汪大渊) mentions two trading settlements on Temasik: Banzu, located on and around Fort Canning Hill, and Longyamen (present-day Keppel Straits). Far left: Fragment of a stem-cup excavated from Fort Canning Hill. *Image reproduced from Kwa, C.G., Heng, D., Borschberg, P., & Tan, T.Y. (2019). Seven Hundred Years: A History of Singapore (p. 36). Singapore: National Library Board and Marshall Cavendish International. (Call no.: RSING 959.57 KWA-[HIS]).* Middle and right: A blue-and-white stem-cup (top and side views). *Collection of the Asian Civilisations Museum.*

(Bottom) Chapter 3 of John Leyden's English translation of the *Sejarah Melayu* tells the story of Sang Nila Utama and his life in Bentan (Bintan). Sang Nila Utama had married Wan Sri Bini, the daughter of the queen of Bentan. *Collection of the National Library, Singapore (Accession no.: B02633069G).*



III.

The story of Sang Nila Utama, who stayed at Bentan.

Sang Nila Utama remained at Bentan highly enamoured of his wife, Wan Sri Bini. On a day, however, after a long time had elapsed, he was seized with a desire of going to divert himself to Tanjong Bemban, and wishing to carry his young wife along with him, he asked permission of his mother-in-law, the Queen Paramisuri Secander Shah. The queen remonstrated with him, asking what was the need to go to Bemban to divert

Sang Nila Utama and the Genealogy of Melakan Royalty

One of Sang Nila Utama's primary functions in the *Sejarah Melayu* is to provide the genealogical connections to the key classical cultures of the Malay world. The first connection is made through Sang Nila Utama's lineage to the Chola rulers of South India through the person of Raja Chulan, which forms the link between the Melakan royalty and the Indian subcontinent. Since the late first millennium BCE, there had been continuous and intense interactions between the Malay world and this part of India.

The second connection described in the *Sejarah Melayu* is Raja Chulan's genealogy that stretches all the way back to Alexander the Great and, in effect, extending the lineage of the Melakan sultans further westward to include the Hellenistic and Gandharan spheres.[7]

The third geographical sphere that formed the basis of the lineage of the Melaka Sultanate is the people of the deep sea, or maritime realm, which, according to the *Sejarah Melayu*, was located off the shores at the southern tip of the Malay Peninsula.

These three geographical spheres represented religions that were integral to the pre-Islamic Malay world. The Hellenistic/Gandharan sphere was the centre for the spread of Buddhism while the Indian subcontinent, specifically during the period of the Chola dynasty, saw the rise of Hinduism. The people of the maritime realm – with their close ties to the sea – practised the animist beliefs of the Malay region. The fact that these three religious-cultural spheres formed the basis of Melakan royal lineage is an important point made by the *Sejarah Melayu*.

The focal point of the genealogy in the *Sejarah Melayu* is where the central place of the geographical and cultural sphere of the Malay world is articulated. In this regard, the Leyden and Raffles MS 18 versions provide differing accounts.

In the Leyden version, Sang Sapurba is presented as the prime generation in the genealogy. Sang Sapurba's ancestry could be regarded as representations of the primordial period of the past and constitutes the primary influences from the broader world that would later come to define the Malay world. Sang Sapurba's marriage to the daughter of Demang Lebar Daun, the ruler of Palembang, is instrumental in conjoining the royal lineage of the Chola kingdom with the land-based Malays located in Andalas, also known as the lowlands of Sumatra.

Sang Sapurba's succeeding generation cemented his lineage with those of China (one of Sang Sapurba's daughters married the ruler of China) as well as the people of Bentan. Sang Sapurba eventually left Bentan and returned to Sumatra where he subsequently became the ruler of the Minangkabau in the highlands of Sumatra. The Leyden version of the *Sejarah Melayu* thus locates the central place of Melakan royalty as the Sumatran world, i.e. the lowlands of the Muara Jambi River, Palembang, the Riau-Lingga Archipelago as well as the Minangkabau highlands. Temasik, or Singapore, and subsequently Melaka, were peripheral areas that only later became the focus of the narrative.

In contrast, the Raffles MS 18 version of the *Sejarah Melayu* has a different central focus. In this version, Sang Utama, along with his two brothers Sang Sapurba and Sang Maniaka, are presented as the prime characters in the genealogy. Sang Utama's lineage is regarded as a representation of the primordial past. However, in the Raffles version, all subsequent conjoining of the royal lineage occurred in Sang Utama's generation only. The union of his lineage with the land-based Malays of lowland-coastal Sumatra is represented by his marriage to the daughter of Demang Lebar Daun, the ruler of Palembang.

Sang Utama subsequently settled first in Bentan, where he was adopted by Wan Sri Benian, the queen of Bentan, before proceeding to Temasik where he established the city of Singapura. It is only when two of Sang Nila Utama's sons married the granddaughters of Wan Sri Benian that the *orang laut*[8] in Bentan became linked with the royal lineage. Hence, the Raffles MS 18 version of the *Sejarah Melayu* places the

REMEMBERING SANG NILA UTAMA

In Singapore, Sang Nila Utama was memorialised in a school named after him. Formerly located on Upper Aljunied Road, the now-defunct Sang Nila Utama Secondary School officially opened in 1961 and ceased operations in 1988. Its alumni include Yatiman Yusof and Mohamad Maidin, both former members of parliament. Well-known writer Masuri Salikun (also known as Masuri S.N.) once taught at the school.

Sang Nila Utama Secondary School was significant because it was Singapore's first Malay-medium secondary school. It was also the third secondary school built after Singapore attained self-government in 1959.

From 1965, the school added two Malay-medium pre-university classes to the existing secondary classes. Three years later, it started two English-medium secondary classes. However, the school stopped conducting pre-university classes from 1979 in line with the Ministry of Education's decision to phase out non-English pre-university centres by 1981. Only two Malay-stream secondary classes remained in 1984.

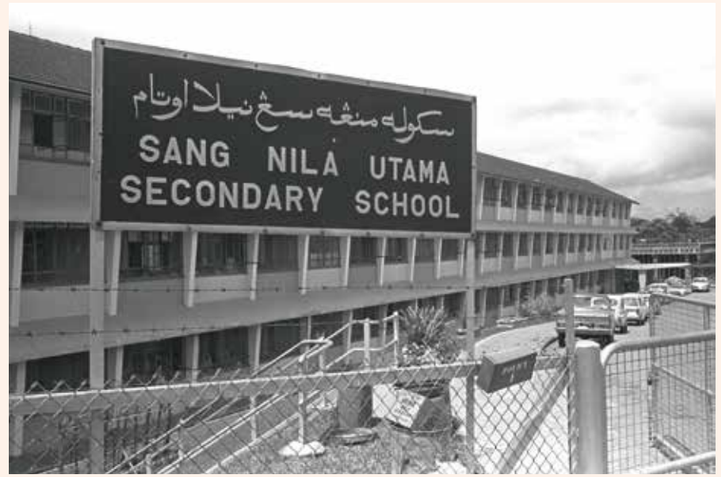
By 1988, Sang Nila Utama Secondary School had ceased operations due to falling enrolment. The school building has since been demolished to make way for Bidadari housing estate, on the site of the former Bidadari Cemetery.

Although the school no longer exists, the name Sang Nila Utama will live on in two roads. In November 2019, Deputy Prime Minister Heng Swee Keat announced that a road in the Bidadari estate – located next to the site of the former Sang Nila Utama Secondary School – will be named Sang Nila Utama Road. "This is something that the Malay community has been asking for, because of the important role that Sang Nila Utama Secondary School played in developing Malay education in Singapore," he said.

A section of the new Heritage Walk cutting across the 10-hectare Bidadari Park in the estate will be called Sang Nila Utama Boulevard. This is the current Upper Aljunied Road, which is now pedestrianised. The housing estate and park are slated to be completed by 2022.

Sang Nila Utama is also memorialised by way of the Sang Nila Utama Garden in Fort Canning Park. Launched in 2019, the garden is a re-creation of Southeast Asian gardens of the 14th century.

Sang Nila Utama Secondary School on Upper Aljunied Road, 1968. *Ministry of Information and the Arts Collection, courtesy of National Archives of Singapore.*



REFERENCES

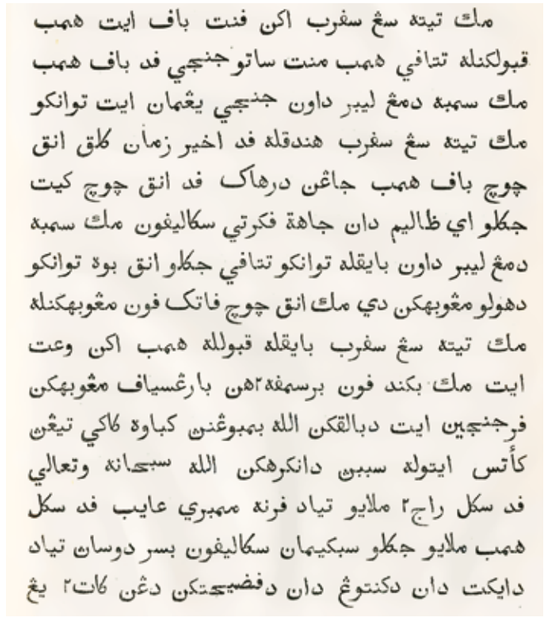
Lin, C. (2019, May 5). HDB unveils plans for new park in Bidadari estate. *CNA*. Retrieved from Channel NewsAsia website.

National Library Board. (2011). *Sang Nila Utama Secondary School* written by Chow Yaw Huah. Retrieved from Singapore Infopedia website.

Ng, M. (2020, January 6). Bidadari HDB estate taking shape as residents move in. *The Straits Times*. Retrieved from The Straits Times website.

Prime Minister's Office, Singapore. (2019, November 3). *DPM Heng Swee Keat at the grand reunion of the alumnus from Sang Nila Utama Secondary School and Tun Seri Lanang Secondary School*. Retrieved from Prime Minister's Office, Singapore website.

Yuen, S. (2019, November 3). Road in Bidadari estate near former Malay secondary school site to be named Sang Nila Utama Road. *The Straits Times*. Retrieved from The Straits Times website.



According to the *Sejarah Melayu*, the ruler of Palembang, Demang Lebar Daun, concluded a covenant with Sang Nila Utama which stated that in return for the undivided loyalty of his subjects, Sang Nila Utama and all his descendants would be fair and just in their rule. This extract is from the 1840 edited version by Munsyi Abdullah. *Collection of the National Library, Singapore (Accession no.: B31655050C)*

central location of Melakan royal lineage as Palembang, the Riau Archipelago and the island of Singapore.

Why does the seat of power of the Melakan kings differ so vastly in these two accounts? In a 2001 essay, academics Virgina and Michael Hooker noted that John Leyden's transcriptions and translations were based on the oral recitation of the *Sejarah Melayu* by Ibrahim Candu, a Tamil-Muslim scribe from Penang who had collected the text in Melaka and recited it to Leyden in Calcutta in 1810.[9] This version, at least in terms of the narrative on the genealogy of the rulers of Melaka, is similar to that found in missionary William Girdlestone Shellabear's 1896 translation of the text in Rumi (romanised Malay).[10]

Raffles MS 18, on the other hand, is purportedly based on a version written in Melaka in the late 16th century. Given this, one possibility is that Leyden's version of the *Sejarah Melayu* is a later rendition of the Raffles MS 18 version and not earlier as it has been officially documented. The two versions may reflect the different geo-political and cultural concerns of the Melaka Straits region in these two time periods.

Articulation of Charisma and Sovereignty

Sang Nila Utama also plays an important role in establishing sovereignty, though again, both the Raffles MS 18 and Leyden versions portray this differently.

In the Raffles MS 18 version, following Sang Utama's appointment as ruler of Palembang, a ritual officiator named Bath emerged from the vomit of the cow owned by Wan Empok and Wan Malini, two women who lived on Bukit Seguntang, where Sang Utama and his two brothers had suddenly appeared. Bath proceeded to pronounce Sang Utama's rule over all of Suvarnabhumi (the Golden Land),[11] and bestowed on him the title Sri Tri Buana, which means "Lord of the Three Worlds".[12]

While "Sang Utama" – a Malay name containing a prefix title denoting a person of high status – was reflective of sovereignty over a localised sphere (i.e. Palembang), "Sri Tri Buana" – a Buddhist Sanskrit name containing a prefix title denoting a person of high status – symbolises sovereignty over a larger ecumenical sphere.

In the Leyden version, the three young princes, sons of Raja Chulan, appeared on Bukit Seguntang. Of these, only one – Bichitram Shah – proclaimed himself as raja. The two women who lived on Bukit Seguntang gave Bichitram Shah the title Sang Sapurba. The bull on which Bichitram Shah was riding then vomited foam, out of which appeared a man named Bath. Bath then proceeded to recite the praises of Sang Sapurba, and gave him the title Sang Sapurba Trimari Tribhuvena.[13]

Following this, Demang Lebar Daun, the chief of Palembang, as well as the rajas of the neighbouring countries, came to pay their respects to Sang Sapurba. It was only after Sang Sapurba married the daughter of Demang Lebar Daun did Sang Sapurba become the ruler of Palembang.

Sang Sapurba eventually left with his entourage to establish a new settlement elsewhere. He arrived in Bentan at the invitation of the queen. The queen then chose Sang Nila Utama, the son of Sang Sapurba, to be the husband of her daughter Wan Sri Bini; thereafter Sang Nila Utama became the raja of Bentan.

During a hunting trip one day, Sang Nila Utama noticed the white sands of Temasik in the distance and sailed to visit the island. He decided to form a settlement on Temasik, naming it Singhapura (Singapura)[14] and to reign over it. Bath, who had earlier panegyrized over Sang Sapurba and given him the title Sang Sapurba Trimari Tribhuvera, now sang the praises of Sang Nila Utama, the son of Sang Sapurba, and accorded him the title Sri Tri Buana.

Singapore probably received its epithet "Lion City" because the lion was an auspicious symbol of Buddhism practised in 14th-century Southeast Asia. The *Sejarah Melayu* descriptions of Sri Tri Buana suggest he was consecrated as an incarnation of a Bodhisattva, probably the Amoghapasa form of Avalokitesvara, thereby justifying his claim to rulership over the Malays, who had yet to convert to Islam. As an incarnation of Avalokitesvara, he would have been seated on a lion throne or *singhasana* – as depicted in this 13th–14th-century Chinese figure, in gilt bronze with silver inlay, of Guanyin, the Chinese form of Avalokitesvara. *Collection of the Asian Civilisations Museum.*

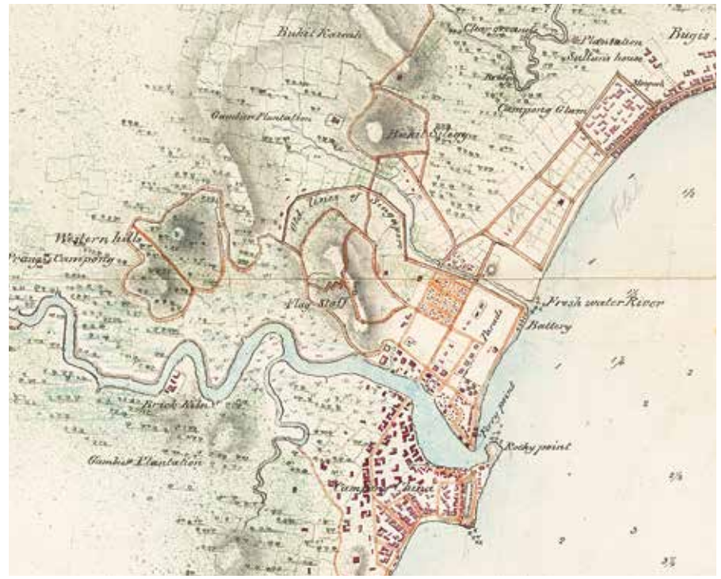
While the two versions of the *Sejarah Melayu* differ in terms of the details of the narrative, they nonetheless highlight two important functions. First, in both accounts, the panegyrization and declaration of the new name signified an elevation of status, in terms of personal charisma as well as the scope of influence. Following the panegyrization and name declaration, the scope of the individual's influence extended, both geographically (in terms of world, spheres and states) and also in the number of people who would come to pay him homage (i.e. charisma).[15] As such, the name "Sang Nila Utama" is significant in the *Sejarah Melayu* as it represents the transitional phase in the enhancement of the stature of a person of importance.

Second, the panegyrization and declaration of a new name typically, though not always, heralded the establishment of local authority of a person over an existing territory and its people. In specific situations, such as the founding of Singhapura on Temasik by Sang Nila Utama, it also resulted in a new polity. In this regard, the use of Sang Nila Utama as a character in the *Sejarah Melayu* is critical in articulating political charisma and sovereignty in the pre-modern Malay world.

The Revisionist History of the Melaka Sultanate

There has been much discussion among scholars about the place of the pre-Melakan period – as narrated in the *Sejarah Melayu* – in the historiography of the early modern Malay world. The general consensus is that the pre-Melakan account seeks to establish a genealogy for the rulers of the Melaka Sultanate. As a codified oral tradition, the text was intended as a bridge between the historical period, and the pre-historic and semi-mythical stories of the ancient past.

One of the challenges facing the *Sejarah Melayu* as a historical text is that the historicity of the pre-Melakan era, in which the Singapura period falls, cannot be verified by other sources. In contrast, events during the time of the Melaka Sultanate (which existed from around 1400 to 1511 until it was captured by the Portuguese) may be corroborated by Chinese, European and Middle Eastern texts, a number of which were contemporaneous to the Melakan period. There is just one text, *Daoyi zhilue*[16] (c. 1349), by the 14th-century Chinese traveller Wang Dayuan, which refers to a polity in



(Above right) Detail from "Town & Harbour of Singapore, from Sentosa to Tanjong Rhu", c. 1823. Several features that may be dated to the Temasik period of Singapore's history are recorded on this. These include the "Old Lines of Singapore", denoting the earth rampart, and the "Fresh Water River", denoting the moat that ran alongside it. *© The British Library Board (IOR/X/3346).*

(Right) An artist's impression of the Royal Residence, Temple, Servants' Quarter and Artisans' Quarter on Fort Canning Hill. In the 14th century, a thriving port-settlement was located in the area comprising the north bank of the Singapore River and Fort Canning Hill. Historical accounts and important archaeological discoveries have shed light on the physical features, economic activities and social nature of this settlement, enabling us to visualise what life in Singapura might have been like seven centuries ago. This is a detail taken from a much bigger illustration showing the reconstruction of Fort Canning Hill. *Image reproduced from Kwa, C.G., Heng, D., Borschberg, P., & Tan, T.Y. (2019). Seven Hundred Years: A History of Singapore (p. 30). Singapore: National Library Board and Marshall Cavendish International. (Call no.: RSING 959.57 KWA-[HIS]).*

Singapura. The text mentions a diadem (a type of crown) worn by the ruler of Longyamen (龙牙门; Dragon's Teeth Strait), which refers to present-day Keppel Harbour.[17] The only corroborative evidence thus far has been archaeological, which cannot be tied definitively to the narrative of the Singapura period in the *Sejarah Melayu*.

Scholars have also attempted to reconcile, in particular, Portuguese accounts of Melaka's founding with that of the pre-Melakan narrative in the *Sejarah Melayu*. According to the *Suma Oriental*[18] (c. 1513) by the Portuguese apothecary and chronicler Tomé Pires, a prince of Palembang by the name of Parameswara fled to Temasik after failing to overthrow Javanese overlordship in an uprising and was welcomed by the local ruler there. Parameswara then murdered the ruler and usurped his throne. After a few years as the ruler of Singapura, Paramesara was forced to flee when he received news of an impending Siamese expedition taking revenge for the usurpation. Parameswara fled northwards to Muar and then to Melaka. Following his conversion to Islam, Parameswara changed his name to Iskandar Shah.[19]

Various scholars have argued that the Parameswara/Iskandar Shah in the Portuguese accounts was likely to have been the Iskandar Shah of the *Sejarah Melayu*, a fourth-generation direct descendant of Sri Tri Buana, and the fifth and last ruler of Singapura, who fled to Melaka following a successful attack on Temasik by the Javanese.

Some scholars have argued that the author of the *Sejarah Melayu* utilised the Temasik and pre-Temasik narrative to conceal the murder committed by Parameswara and thus erase the bloody event that marked the founding of Melaka. This revisionist account that was composed at the patronage of the Melakan court was also possibly designed to excise the stigma associated with the title Parameswara, which denotes a male consort of a lower rank than that of his royal wife.

As a result, the founder of Melaka and the progenitor of the Melakan royal family had to be elevated to a status that was befitting of a ruler of Singapura who was descended from the divine lineage of Sri Tri Buana. This impeccable genealogy, as mentioned previously, is traced back to the maritime realm of island Southeast Asia, the Hindu sphere of the Chola kingdom, and the Buddhist sphere of the Hellenistic and Gandharan worlds.

In this regard, the framing of Sang Nila Utama as a character in the pre-Melakan period serves as a lynchpin that enables the revisionist insertion of a royal lineage, which was transregional and possessed a high charisma that resounded throughout the entire Malay world. Sang Nila Utama's story is thus a tool that conferred pedigree, charisma and status upon the rulers of the Melaka Sultanate. This argument has been made by scholars such as Kwa Chong Guan, who notes that Parameswara's violent act was mythologised into the figure of Sang Nila Utama as early as 1436.[20] The new narrative conferred legitimacy through panegyrization, name giving and the conduct of ritual – all of which are centered on the mythical character known as Sang Nila Utama.

As such, although a literary character, Sang Nila Utama played a large and important historiographical role in the region and beyond. He was critical to the primordial, pre-modern and early modern history of the Melaka Sultanate, conferring pedigree, charisma and an extensive sphere of influence on Melakan royalty. Although the account of Singapura's founding may have been mythical, it had very real historical and political implications in the Malay world of the time. ♦

NOTES

1 *Sulalat al-Salatin* (Genealogy of Kings) is one of the most important works in Malay literature and was likely composed in the 17th century by Bendahara Tun Seri Lanang, the prime minister of the Johor Sultanate.

2 During the reign of Sang Nila Utama's son, Sri Pikrama Wira, Singapura was strong enough to challenge Majapahit, the major power in the archipelago. This escalated into a major Majapahit invasion of Singapura, which was successfully repelled. Sri Pikrama Wira's marriage to the daughter of the Tamil ruler of Kalinga illustrates Singapura's wealth and stature among Indian kingdoms. The *Sejarah Melayu* also describes the story of the Raja of Kalinga pitting his strongman against Singapura's reigning champion, Badang, which can be interpreted as a competition for power between the two states. See Kwa, C.G., Heng, D., Borschberg, P., & Tan, T.Y. (2019). *Seven hundred years: A history of Singapore* (pp. 54–55). Singapore: National Library Board and Marshall Cavendish International. (Call no.: RSING 959.57 KWA-[HIS])

3 Leyden, J. (1821). *Malay Annals: Translated from the Malay language by the late Dr. John Leyden with an introduction by Sir Thomas Stamford Raffles*. London: Longman, Hurst, Rees, Orme, and Brown. Retrieved from BookSG; Winstedt, R.O. (1938, December). The Malay Annals of Sejarah Melayu. *Journal of the Malayan Branch of the Royal Asiatic Society*, *16* (3) (132), 1–226. The English translation of Raffles MS 18 may be found in C.C. Brown. (1952, October). The Malay Annals. *Journal of the Malayan Branch of the Royal Asiatic Society, 25* (2 & 3) (159), 5–276. Retrieved from JSTOR via NLB's eResources website.

4 John Leyden was a Scottish poet and linguist who spoke several languages, including Malay. Ibrahim Candu, a Tamil-Muslim scribe from Penang was said to have made a copy of the *Sejarah Melayu* in Jawi which he brought to Calcutta in 1810. Ibrahim explained the text to Leyden who wrote it down. Unfortunately, Leyden died two weeks after arriving in Java in August 1811. After his death, Leyden's close friend, Stamford Raffles, kept many of his papers, including the *Sejarah Melayu*. In 1816, Raffles wrote the introduction to Leyden's English translation of the text, which was published in 1821.

5 Kwa, C.G. (2010). Singapura as a central place in Malay history and identity (p. 135). In K. Delaye, K. Hack & J.L. Margolin (Eds.), *Singapore from Temasek to the 21st century*. Singapore: NUS Press. (Call no.: RSING 959.57 SIN-[HIS]). For a discussion on the provenance of the Leyden version, refer to Hooker, V.M., & Hooker, M.B. (2001). Opening the annals (pp. 31– 51). In V.M. Hooker & M.B. Hooker (Eds.), *John Leyden's Malay Annals*. Kuala Lumpur: Malaysian Branch of the Royal Asiatic Society. (Call no.: RSING 959.51 JOH). For a discussion of the various versions and renditions of the *Sejarah Melayu*, refer to Roolvink, R. (1967). The variant versions of the Malay Annals. *Bijdragen tot de Taal-, Land- en Volkenkunde, 123* (3), 301–324. Retrieved from JSTOR via NLB's eResources website.

6 For a more detailed discussion of the history of Singapura and Temasik, refer to chapters one and two in Kwa, et al., 2019.

7 The Hellenistic age refers to the period between the death of Alexander the Great in 323 BCE and the conquest of Egypt by Rome in 30 BCE. Gandhara was an ancient region corresponding to present-day northwest Pakistan and north-east Afghanistan. Gandhara was conquered by Alexander the Great in 327 BCE.

8 The *orang laut*, which means "sea people" in Malay, refers to the indigenous sea nomads living along the coastlines of Singapore, the Malay Peninsula and the Riau Islands.

9 Hooker & Hooker, 2001, p. 32.

10 Shellabear, W.G. (1896). *Sejarah Melayu*. Singapore: American Mission Press. (Available via PublicationSG)

11 The Sanskrit term "Suvarnabhumi", which means "Land of Gold", is of Indic origin and appears in important Indian texts such as the Hindu *Ramayana*, the Buddhist *Mahavansa* and the *Jatakas*.

12 The three worlds, according to Buddhist cosmology, are the realm of the world of desires of man, the world of form of the Buddha and the world without form or pure perception. See Kwa, 2010, p. 153.

13 Iain Sinclair provides a composite translation of this title as "absolute righteous ruler of the three worlds". See Sinclair, I. (2019, Mar–May). Sang Sapurba/ Maulivarmadeva, First of the last Indo-Malay kings. *NSC Highlights*, 12, 6–8, p. 7. Retrieved from ISEAS website.

14 Singapura is derived from the Sanskrit words *simha*, which means "lion", and *pura*, which means "city".

15 Drakard, J. (1990). *A Malay frontier: Unity and duality in a Sumatra kingdom* (pp. 16–18). Ithaca, NY: Cornell Southeast Asia Program. (Not available in NLB holdings)

16 *Daoyi zhilue* (岛夷志略; *Description of the Barbarians of the Isles*) was written by Wang Dayuan (汪大渊), a traveller from the Yuan dynasty, who recounted his visits and travels to Southeast Asia, South Asia and Africa. The publication describes the people, customs, products, weather and geography of the places he visited. According to Wang, there were two trading settlements on Temasik: Banzu, located on and around Fort Canning Hill, and Longyamen (proposed by historians to have been located at present-day Keppel Straits). See Kwa et al, 2019, pp. 26–27.

17 Wheatley, P. (1966). *The golden Khersonese: Studies in the historical geography of the Malay Peninsula before A.D. 1500* (pp. 75–88). Kuala Lumpur: University of Malaya Press. (Call no.: RCLOS 959.5 WHE)

18 *Suma Oriental* is the oldest and most extensive account of the Portuguese East at the beginning of the 16th century. Tomé Pires included information on the history, geography, ethnography, and the commerce and trade of not only Melaka but also other countries and port-cities in India, China and the East Indies that he visited. See Kwa et al, 2019, p. 57.

19 Cortesão, A. (1944). *The Suma oriental of Tomé Pires: An account of the East, from the Red Sea to Japan, written in Malacca and India in 1512–1515, and The Book of Francisco Rodrigues, rutter of a voyage in the Red Sea, nautical rules, almanach and maps, written and drawn in the East before 1515* (pp. 229–238). London: Hakluyt Society. (Microfilm nos.: NL14208, NL26012)

20 Kwa, 2010, p. 140.

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A Chinese street barber offering barbering services as well as neck massages and ear-cleaning, 1890s. *Lim Keng Chye Collection, courtesy of National Archives of Singapore.*