

200: Points In Singapore's Natural History

This book was first published on 3 June 2019 at the launch of '200: a natural history', an exhibition at the Lee Kong Chian Natural History Museum (LKCNHM) at the National University of Singapore (NUS) to commemorate the Singapore Bicentennial. The book encapsulates the 200 stories contained in the exhibition.

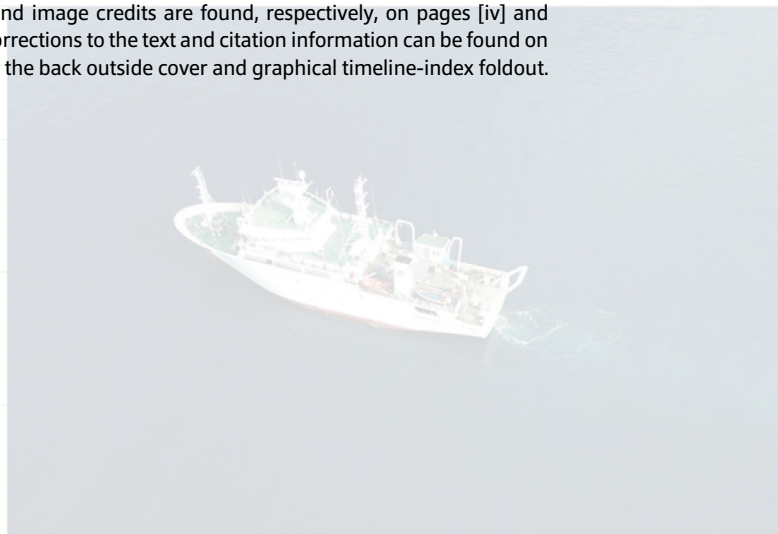
This book was made possible through the generous support of the National Heritage Board of Singapore, Singapore Bicentennial and Our SG Fund.

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1897.6



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200
YEARS
OF
NATURAL
HISTORY

1800

1820

1840

1860

1880



1821.3

200: POINTS IN SINGAPORE NATURAL HISTORY



1897.6

1980

2000



2018.2

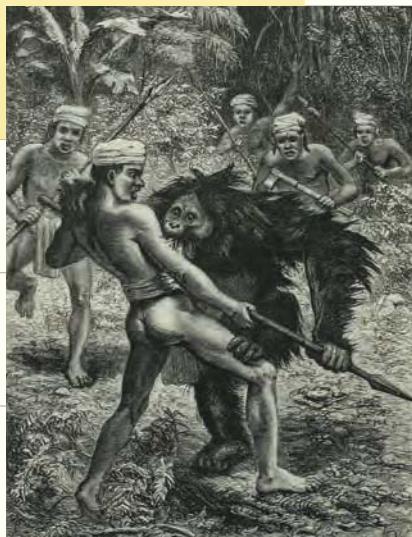
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1820.2



1.2



1854.1

The natural history of Singapore abounds with stories that are as remarkable as they are diverse. There are explorers who eat wild animals. And wild animals which eat people. Some discoveries are field-changing, like the only land snail that produces light. Research and discoveries made in Singapore also give rise to the commoditization of natural resources. This has geopolitical ramifications. As this knowledge solidifies into a more formal natural history, a place to store and study the resulting material arises. This leads to the foundation of one of the oldest museums in Southeast Asia, and with it the story of a whale that “still haunts the minds of those who saw it”. The origins of Singapore’s very own natural history museum are another remarkable story. In conjunction with ‘200: a natural history’, a Bicentennial exhibition at the Lee Kong Chian Natural History Museum, this book gathers these stories and locates them in the larger context of Singapore’s natural history.

200
POINTS
IN
SINGAPORE
NATURAL
HISTORY

1800

1820

1840

1860

1880

1900

1920

1940

1960

1980

2000



200: POINTS IN SINGAPORE NATURAL HISTORY

1821.3

1897.6

2018.2

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SINGAPORE



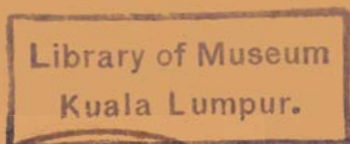
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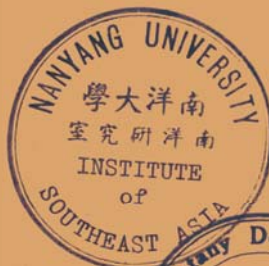


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200: POINTS IN SINGAPORE'S NATURAL HISTORY

200: POINTS IN SINGAPORE'S NATURAL HISTORY

Martyn E. Y. Low
Kate Pocklington

With an exordium
by Peter K. L. Ng



Lee Kong Chian
Natural History Museum

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Published by:
Lee Kong Chian Natural History Museum
Faculty of Science
National University of Singapore
2 Conservatory Drive
Singapore 117377
lkcnhm.nus.edu.sg

Text © Martyn E. Y. Low and Kate Pocklington
Foreword text © Peter K. L. Ng
Design and layout: Currency

ISBN: 978-981-14-1729-0

First edition

Printed and bound in Singapore by First Printers
This book uses environmentally friendly paper
from an FSC certified source

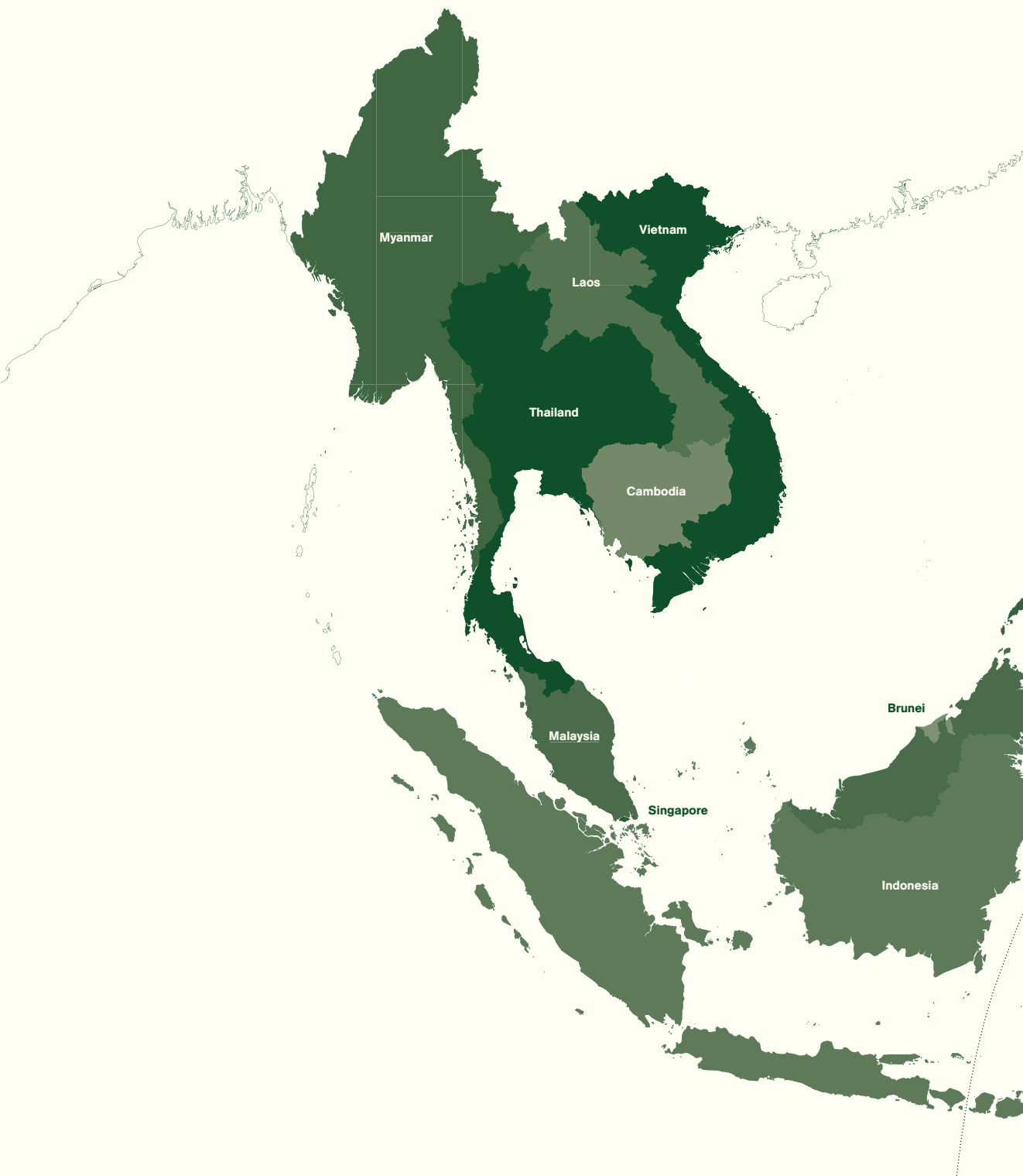
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Map of the
Southeast Asian Region

Lee Kong Chian
Natural History Museum

MAP OF THE
*SOUTHEAST
ASIAN*
REGION



Philippines

Wallace's Line

East Timor

200: Points in
Singapore's Natural History



Exordium

Natural History, Natural Heritage, and the Wisdom of Pythagoras

by Peter K. L. Ng

Museums are strange institutions. Both for what they do (or are supposed to do) and for the people contained in them (and those who support it). They are archaic and some may argue, an anachronism – something “old-fashioned”. They are the natural home of natural history and natural historians. A home for ‘chronologically misaligned’ men and women who have charged themselves with the “economically frivolous task” of discovering the diversity of life on earth.

This essay is my trifecta on the nature of natural history. In 2014, I explored what a natural history museum is and what it must continue to be – a tomb and a library of life for the ages. I mused on the nature of fate and Ouroboros in 2015, with the resonating theme that what goes around, comes around. It is now, perhaps, time to have a discourse on the underlying philosophy that blends science and art in the realm known as natural history and heritage. About science, history and memories ...

Natural history is a strange discipline. Natural history is neither an entity nor a discipline. It is also neither science nor history. It is none of the above ... it is all of the above. As a natural historian (which I know I am), I am also perplexed as to how to define myself. Yes, I am a scientist, who is out to discover nature’s secrets, make them known to the world and in the process, push for their conservation. That is the exciting part – to be like Captain Kirk in ‘Star Trek’, “To explore strange new worlds, to seek out new life and new civilizations, to boldly go where no man has gone before.” And we do not even have to travel the galaxy to do this. Earth provides well enough vistas and opportunities for that. But to be a discoverer of nature, we must also know the history of our science. Man has been studying Nature and its denizens for thousands of years of course, and even for modern biodiversity science, this discipline goes back to the time of the great Swedish biologist Carolus Linnaeus who first established a system of classification we follow today. And the “start date” for this is January 1st 1758. To discover, to know what plants and animals are, to give them names and understand them, we must know their scientific history. Scientific names given 260 years ago are still valid, even if they were done with antiquated knowledge and incorrect information. Even if the specimens connected to them are long lost and we are unsure where exactly they came from. To discover and name animals and plants – you must know the history of all the groups of organisms you study.

The study of History, however, is singularly challenging and very different from Science. How do you study human activities and decisions which are buried in deep time? How do you in-

interpret the relicts and documents you find in archives and libraries (if and when they exist in different degrees of completeness), diagnose their accuracy and the scribe's reliability, in dozens of different languages and deep-rooted nuances that may or may not be obvious? A historian's task is Herculean. The respected historian Edward Gibbons (1776) observed "The theologian may indulge in the pleasing task of describing religion as she descended from Heaven, arrayed in her native purity. A more melancholy duty is imposed on the historian. He must discover the inevitable mixture of error and corruption which she contracted in a long residence upon Earth, among a weak and degenerate race of beings." Very hard to do but it must be done regardless. Science is generally more objective as it more often than not deals with hard data and facts. With specimens and testable hypotheses. History cannot be subjected to the same degree of Popperian falsifiability that Science is obliged to follow.

That being said, knowing one's history is extremely important – the study of the past must serve as a lesson to the future; a wisdom highlighted as far back as 63 BC by Roman statesman Marcus Tullius Cicero. More recently, Filipino nationalist and polymath José Rizal advised his countrymen that "He who does not know how to look back at where he came from will never get to his destination." Indeed. But one must remember "History is not a cookbook of pretested recipes. It teaches by analogy, not by maxims. It can illuminate the consequences of actions in comparable situations, yet each generation must discover for itself what situations are in fact comparable." (Henry Kissinger, 2011). The past is prologue – only when we know (or believe we know) our past can we perhaps understand our present and contemplate our future.

The discipline of "Natural History" brings science and history together. Two strange "bed fellows" as some will say, perhaps of "two cultures", as the late novelist and chemist Lord Charles Percy Snow would opine. I will, however, argue they are one and the same. A merged duality that cannot exist on their own. Gilbert Ryle's 1949 concept of the ghost in the machine comes to mind. The same, yet different, one feeding and affecting the other, but whose destinies and fates are intrinsically linked even if neither is aware of it.

And what of heritage? Many people easily identify with cultural heritage – that which deals with human history and accomplishments. Man-made achievements and activities over our time on Earth as far back as our scientists and historians can trace. It makes sense – we are after all sentient beings conscious of our own past and present. Philosophers and historians will argue that without knowing, keeping and sharing this history, our species will lack a soul. We need memories. Anthony Quayle stated so eloquently in the acclaimed documentary 'The Heart of the Dragon' (1984): "To understand a man, you must know his memories. The same is true of a nation." Verily so even for a small nation like Singapore.

What about natural heritage? Is it even heritage at all and why should we bother if it is just about animals and plants? "Shouldn't only human things matter?" is a recurring question that has been asked many times of me. UNESCO (The United Nations Educational, Scientific and Cultural Organisation) in 1972 defines natural heritage as "Natural features, geological and physio-

graphical formations and delineated areas that constitute the habitat of threatened species of animals and plants and natural sites of value from the point of view of science, conservation or natural beauty. It includes nature parks and reserves, zoos, aquaria and botanical gardens.” But this definition, is over-simplistic. It may work for managers and politicians striving to bring their nation’s natural treasures to the world’s attention and conserve them, but its scope is too narrow – there is a strong human emotional link that is unmentioned. Natural heritage’s link to natural history and museums, however, is obvious – it is the flip side of cultural heritage, the other side to the coin. And like a coin, it must be two-sided.

Humans, at the end of the day, are still living organisms like everything else that inhabits this planet. We are constrained by the planet we live in, and the environment and resources it possesses. Regardless of how we manipulate, modify or change it, it is still only one planet. We are reined in by this reality. The Argentinian philosopher and physician José Ingenieros wrote in 1913: “Of all human emotions, none is more natural than the love for the town, the valley or the neighbourhood where we grew up. Our homeland speaks to our most intimate memories, moves our deepest emotions. Everything that is part of it belongs to us in some measure. And in a way, we belong to it, too, as a leaf belongs to a tree.” The land and the man are one. The natural environment we grew up with as well as all the plants and animals that shared our lives with (the good, the bad and the ugly) are part of our collective human memories. The blend of memories binds us. The influences of cultural and natural heritage make us what we are. And what we may be. Can be.

When we look back at Singapore’s natural heritage, we cannot help by being enlightened, amused and/or horrified by the multitude of ‘fortuitous’ events that occurred, echoing Gibbon’s words so fabulously. So many silly things done (or not done) and so many twists and turns, fateful events and strange circumstances that resulted in no-end of remarkable happenings, discoveries and findings. And all the skullduggery and wicked conspiracies that took place to be the first to discover and name iconic animals so as to accumulate honours. It is hard to imagine the kind of narcissistic egos that prevailed at times – academia after all, demands gentlemanly behavior in practicing the science. Then again, perhaps not. We are humans – and humans do stupid, selfish and illogical things at regular intervals. Sceptics have long known that Linnaeus’ scientific name for humans – *Homo sapiens* – Latin for “thinking man” is an unequivocal oxymoron. Was Linnaeus being sarcastic? Or just being remarkably perceptive of what his kind was really like?

Studying the history of natural history is poignant. It tells us that the more things change, the more they remain the same. It forces us to reminisce and contemplate. To ponder our about ourselves today and what the future may bring. We are forced to reflect and stare into the future. The words of Roger Rosenblatt in his wonderful piece, ‘A Letter to the Year 2086’, echo in my mind ... “Look back to us as we look at you; we are related by our imaginations. If we are able to touch, it is because we have imagined each other’s existence, our dreams running back and forth along a cable from age to age. Hold this paper to the light. It is a mirror, a delusion, a fact in

the brief continuous mystery we share. Do you see starlight? So do we. Smell the fire? We do too. Draw close. Let us tell each other a story.”

And what a story it is. The natural historian of Linnaeus’s era 260 years ago is the same man living today. Because the soul of a natural historian, after all, is a philosophical one. Its essence is beyond science. Beyond history. It is to understand that everything is connected and that the spirit of enquiry and curiosity of our natural world never dies.

All things are changing, nothing dies ...
the Spirit wanders, comes now here, now there,
and occupies whatever frame it pleases ...
But never perishes

— Pythagoras



0.1
Pythagoras of Samos (570?–495? BC)
and a Malayan Tapir



By Way of Introduction

Bringing Together 200

‘200: a natural history’ is an exhibition at the Lee Kong Chian Natural History Museum that is part of Singapore’s Bicentennial. The 200 events, animals, plants, people and places that are brought together are the significant interweaving threads of Singapore’s Nature. In this exhibition, the strands identified are analysed both in isolation and in relation to each other. They are also presented chronologically—one-per-year.

This book brings these threads back together thematically to present an overview of Singapore’s natural history. This publication also provides a historical context that extends beyond the 200. The 200 are (re)arranged in 18 thematic parts, each with an overview of its own. To better show the interconnectedness of the stories, an icon is used to link the strand from one year with that of another. The icon is the hoof-print of the Malayan Tapir 🦋1909. The significance of this animal should become apparent in the pages that follow.

The additional sections at the end outline the sources for the information and images that are presented, as well as the materials in the exhibition ‘200: a natural history’. These sources are listed to fulfil another of the book’s aims—to highlight the availability of huge volumes of natural history literature that are now available on the internet. In this respect, the Biodiversity Heritage Library and Biodiversity Library of Southeast Asia initiatives deserve particular mention.

These sources provide not just written information but also images and other media—many in the public domain. This wealth of resources means that it is a good time to be a natural historian. And we can think of many potential projects for the future: a reconstruction of Singapore’s historical coastal habitats from old postcards; consumption patterns of fish and other marine animals from old newspaper reports. The possibilities are endless!

Through the stories that are told, we hope this book adds one more point to the 200 (and beyond)—another step towards a comprehensive natural history of Singapore.

Part 1

Part 1 Empire in the East

The earliest stirrings of natural history

The English fight each other. The English fight the French. The French defeat the English in an act of ‘espionage’. And the Dutch have a role to play as well. But it is the Chinese who are ultimately gain the upper hand. But this is not the clash of empires that it sounds like. It is simply the natural history of the Malayan Tapir.

This natural history tells the story of exploration, empire, colonialism, intrigue as well as the quest for and control over knowledge. It brings together an unlikely tale of eunuchs, colonial administrators, statesmen, linguists, historians, collectors and zoologists. It is a tale almost as unlikely as the existence of the black-and-white Malayan Tapir.

The first strand begins in Melaka on 29 January 1816, when William Farquhar sends his manuscript on the Malayan Tapir to the ‘Asiatick Researches’ in India.

Farquhar and Thomas Stamford Raffles are already swimming in a sea of acrimony, with competing claims to natural history discoveries being just one of the sources of this animosity. When Raffles hears of this tapir manuscript, he reaches out to Nathaniel Wallich, who is asked to intervene to have Farquhar’s manuscript withdrawn in favour of Raffles’. It is not known if Wallich deigns to respond to Raffles.

At the same time that Farquhar’s manuscript languishes at the offices of the ‘Asiatick Researches’, Raffles (also in India) becomes acquainted with the Frenchmen Pierre-Médard Diard and Alfred Duvaucel. In that significant year of 1819, the trio collect natural history material in Singapore, possibly one of the earliest such collecting events that is known.

Unfortunately for the English, Diard and Duvaucel are also close to French naturalist Georges Cuvier (1769–1832). Diard is Cuvier’s student while Duvaucel is Cuvier’s godson. While in India, Diard is able to copy parts of Farquhar’s manuscript and sends this information to Cuvier. From Diard’s information, Cuvier publishes what is at the time the first known description of the Malayan Tapir in March 1819. His paper also includes a painting of the animal. Cuvier calls this animal ‘Tapir de l’Inde’ to distinguish it from the South American species. Some months later, another associate of Cuvier’s, Anselme Gaëtan Desmarest (1784–1838) writes an entry on tapirs in the ‘Nouveau dictionnaire d’histoire naturelle’. Under the entry for ‘Tapir de l’Inde’, Desmarest gives the Malayan Tapir the Latin name *Tapirus indicus*. So in September 1819, the Malayan Tapir now has a scientific name.

Farquhar’s paper appears in print in the ‘Asiatick Researches’ only in 1820 but includes a drawing of a skull and full-length painting of a Malayan Tapir. Farquhar’s well-known collection of paintings made by local artists, which is now at the National Museum of Singapore, includes

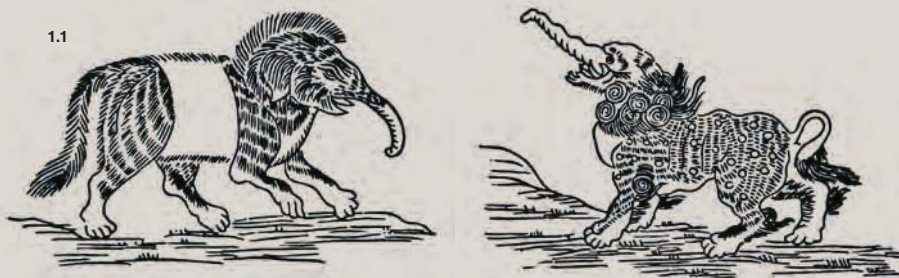
two paintings of the Malayan Tapir, one of an adult and one of a juvenile. As a consolation for Raffles, a drawing of a skull that is sent back to England by him appears in a paper by Everard Home in the ‘Transactions of the Royal Society of London’—a year after Farquhar’s paper in the ‘Asiatick Researches’.

So the French scoop the English both in publishing an account of the discovery of the Malayan Tapir and in naming it.

But the story does not end there. The orientalist William Marsden (1754–1836) lists “hippopotamus” in the first two editions of his ‘History of Sumatra’ (of 1783 and 1784). In the third edition of 1811, Marsden elaborates that the animal he refers to is also called the “kūda ayer” (meaning “water horse” in Malay and therefore equivalent to the Greek “hippopotamus”). Marsden tantalisingly states that his information is from “a drawing made by Mr. Whalfeldt, an officer employed on a survey of the coast, who had met with it at the mouth of one of the southern rivers, and transmitted the sketch along with his report to the government, of which I was then secretary”.

Is this mysterious creature the Malayan Tapir as has been suggested by several authors? If the “kūda ayer” is indeed the Malayan Tapir, then Marsden or the enigmatic Whalfeldt are possibly the first Europeans to write about this animal. But its scientific naming remains attributable to Desmarest.

Enter the empire in the East. Ma Huan (1380–1460) is the author of the ‘Yíngya shènglǎn’ (traditional: 瀛涯勝覽; simplified: 瀛涯胜览; ‘The Overall Survey of the Ocean’s Shores’). He accompanies Zheng He on several of his voyages during the reign of Emperor Yongle (the ‘Zhèng Hé Xià Xīyáng’; traditional: 鄭和下西洋; simplified: 郑和下西洋). These are the so-called “Ming treasure voyages”. Ma provides



1.1
The ‘Mó’ (貳) is a mythical Chinese creature that is said to eat metal. It is also the modern Chinese name for the tapir

Part 1

a description of the “divine stag” that he encounters when the fleet visits Palembang in Sumatra, Indonesia. Interestingly, the earliest known preface to the ‘Yingya Shenglan’ is dated 1416 (four centuries before Farquhar completes his manuscript in Melaka).

In 1879, Qu Molin (瞿墨林) identifies the “divine stag”. Better known as the Dutch colonial administrator and linguist Willem Pieter Groeneveldt (1841–1915), he writes in a footnote in his ‘Notes on the Malay Archipelago and Malacca’: “神鹿, evidently the tapir, a native of eastern Sumatra”. And so Ma Huan becomes the first person to write an account of a Malayan Tapir, antedating the Europeans by about four centuries.

In hindsight, Ma Huan’s account of the “divine stag” can only refer to the Malayan Tapir: “fore-part of the body is black, the hind part white”. Nonetheless the derivation of the name “divine stag” (神鹿) is a puzzle. One that is only solved in 1909.

Another puzzle is the modern Chinese name for the tapir, the ‘Mó’ (貘). In olden times this name is used for a mythical creature. The mythical creature is related to the ‘Niè tiè’ which means “iron-chewer” (traditional: 齧鐵; simplified: 啮铁). In 1823, Jean-Pierre Abel-Rémusat (1788–1832) is the first to identify the ‘Mó’ with the Malayan Tapir in an article in the ‘Journal Asiatique’. Linguist and historian Donald Harper discusses that until Abel-Rémusat made this suggestion, the ‘Mó’ more likely refers to the Giant Panda (*Ailuropoda melanoleuca* David, 1869). The usurpation of ‘Mó’ for the Malayan Tapir means that the more recent (and made-up) ‘Bear Cat’ (traditional: 熊貓; simplified: 熊猫) is used for the Giant Panda instead.

And now back to Ma Huan’s “divine stag”.

1.2



1.2

This painting of the Malayan Tapir accompanies Cuvier’s chapter on ‘Le Maiba’. This is the earliest known depiction of the Malayan Tapir. Although Cuvier describes the animal in detail, he does not name it. It will be Desmarest who bestows the scientific name *Tapirus malayanus*

1.3



The earliest
stirrings of natural history

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1.4



1.3

This is the drawing of a Malayan Tapir skull that is sent back by Raffles to England. It appears in a paper by Everard Home in the 'Transactions of the Royal Society of London' in 1821, a year after Farquhar's 'Asiatick Researches' paper

1.4

This engraving from J. G. Wood's 'Illustrated Natural History' from the late nineteenth century, the name 'Kuda-Ayer' ("Water-Horse") is still used. The name is a direct translation for the Greek "hippopotamus" which is said by Marsden to be found in Sumatra

1.5

Farquhar's paper in the 'Asiatick Researches' is published in 1820, five years after he submits it. In that time, Diard copies parts of the manuscript and sends the information to Cuvier. This painting of a skull and an adult animal accompany Farquhar's paper

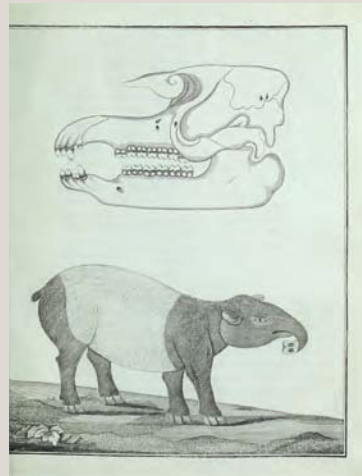
1.6

This painting from the Farquhar collection shows an adult Malayan Tapir with "forepart of the body is black, the hind part white" as Ma Huan describes in the 'Yingya Shenglan'

1.7

This painting from the Farquhar collection shows a juvenile Malayan Tapir with its characteristic brown and white colouration

1.5



1.6



1.7

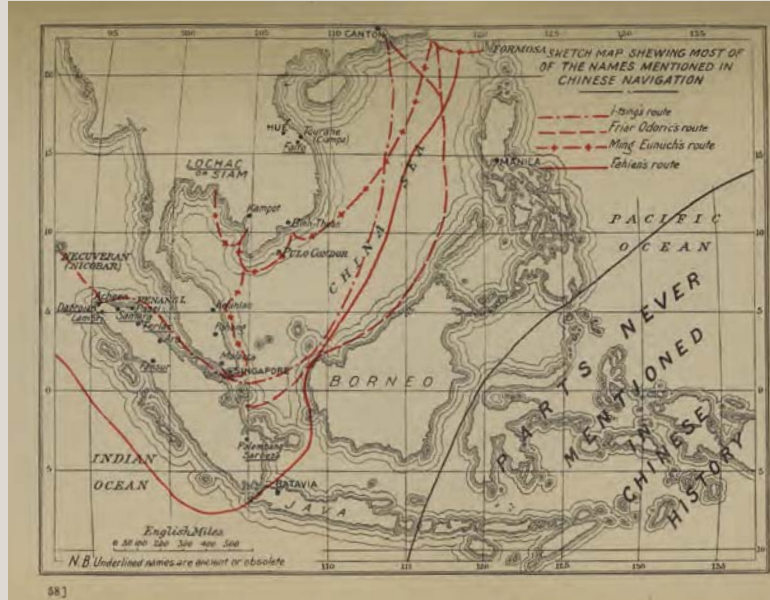


Part 1

1.8



1.9



1.10



The earliest
stirrings of natural history

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1.8

Zheng He is an admiral who commands
Emperor Yongle's fleets of 'treasure
ships' on several westward voyages to
Southeast Asia and beyond

1.9

This map from 1917 shows the various Chinese voyages including Zheng He's, here marked as "Ming Eunuch's route"

1.10

This modern reconstruction of part of a 'treasure ship' shows the scale

1.11

Willem Pieter Groeneveldt
(1841–1915), Dutch linguist and
colonial administrator

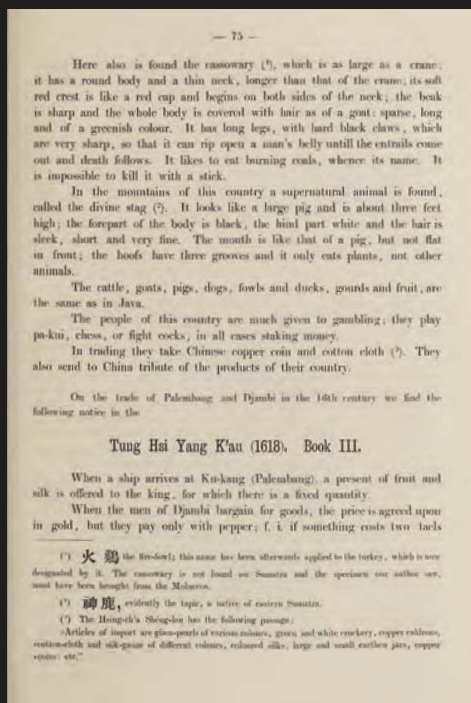
1.12

The page from Groeneveldt's 'Notes on the Malay Archipelago and Malacca' on which the footnote on the "divine stag" appears. This is the first publication to identify this creature as the Malayan Tapir

1.13

This engraving of the 'Mó' accompanies Abel-Rémusat's article which suggests that this animal is actually the Malayan Tapir. This conclusion is disputed, most recently by linguist and historian Donald Harper in his paper 'The cultural history of the Giant Panda (*Ailuropoda melanoleuca*) in early China'

1.12



1.13

1.11



1909 Called the divine stag

Is Ma Huan a Hainanese speaker?

“In the mountains of this country a supernatural animal is found, called the divine stag. It looks like a large pig and is about three feet high; the forepart of the body is black, the hind part white and the hair is sleek, short and very fine. The mouth is like that of a pig, but not flat in front; the hoofs have three grooves and it only eats plants, not other animals.” — Ma Huan

1909.1

Some Early Accounts of the Malay Tapir.

By W. GEORGE MAXWELL.

In Groeneveldt's translation* of the Ying-yai Shêng-lan, an account of Sumatra written by a Chinese traveller in A. D. 1416, there is the following quaint statement:—

"In the mountains of this country a supernatural animal is found, called *The Divine Stag*. It looks like a large pig, and is about three feet high; the forepart of the body is black, the hind part white, and the hair is sleek, short, and very fine. The mouth is like that of a pig, but not flat in front; the hoofs have three grooves, and it only eats plants, not other animals."

The tapir (*tapirus malayanus*) is of course the animal here described, and the account, for all its quaintness, is excellent. The question is why should the tapir be called "The Divine Stag." Groeneveldt in a foot note gives the two Chinese ideographs, which he has translated by these words.

The ideographs are 神 (pronounced *shên* in the Mandarin dialect) which means spirit or soul, and 鹿 (pronounced *lok*) which means a deer or stag; and "divine stag" is thus the straightforward translation of the two words.

The obvious difficulty however is that the tapir most certainly is not called "the divine stag" by the inhabitants either of Sumatra or of any other country in which it is found. There is nothing divine or stag-like in its appearance, nor is there, so far as I am aware, any folk-lore or folk story that could be distorted, by the natural mistake of a traveller or by any stretch of imagination on his part, into such an expression as "the divine stag."

* Notes on the Malay Archipelago and Malacca. W. P. Groeneveldt (Verhandelingen van het Genootschap van Kunsten en Wetenschappen. Volume XXXIX. Batavia, 1879.) Miscellaneous Papers relating to Indo-China, Second Series Vol. I. p. 190.

Jour. Straits Branch R. A. Soc., No. 12, 1908.

98 ACCOUNTS OF THE MALAY TAPIR.

The Malay name of the tapir is *tenok* (تنق) and what we should expect would be that the writer, who was of course describing an animal that was quite new and unknown to his readers, would endeavour to render this word in the ideographs of the language in which he was writing. What we should expect him to say is "in the mountains of this country a supernatural" (or, perhaps, rather, "extraordinary") animal is found called the *tenok*.

And this is, I venture to suggest, what the author has actually written.

Searching through the various dialects of the Chinese language for a dialect in which 神鹿 will represent the sound *tenok*, we find that in the Hylam dialect 神 is pronounced "tin" whilst in the greater number of the other dialects it is "sin" or "shin."

The Hylam dialect would therefore appear to be indicated 鹿 however remains "lok" as in the Mandarin dialect. We therefore get "tin-lok," which, though it takes us a good part of the way, is not entirely satisfactory. I am informed however by the Chinese interpreters of the Supreme Court that there is no ideograph which represents the word "nok." It would therefore appear either that 鹿 represents the nearest sound possible in the Chinese language to the Malay word *tenok*, or else that, in A. D. 1416, it was pronounced "nok."

The passage in the Ying-yai Shêng-lan is interesting in more than one respect. Firstly, if my suggestion that these two ideographs represent the word *tenok* is correct, it shows that the writer of that work was a Hylam; a native, that is to say, of the Island of Hainan, a fact which both the geographical position of that island with regard to the countries mentioned in the account, and the skill and daring in navigation of its inhabitants render extremely probable.

I am more inclined to believe the writer of the Ying-yai Shêng-lan to have been a Hylam from the passage in the work where, also in an account of Sumatra, he gives (according to

Jour. Straits Branch.

The earliest
stirrings of natural history

Lee Kong Chian
Natural History Museum

It is three decades after Groeneveldt that British colonial administrator William George Maxwell (1871–1959) suggests that the name “divine stag” originates from the phonetic transliteration of the Malay name ‘tenok’ into 神鹿 which is in turn pronounced as ‘tin lok’ in Hainanese. To support his hypothesis of a Hainanese pronunciation, Maxwell provides another example from the ‘Yingya Shenglan’, this time of a fruit, the 奄拔. Groeneveldt translates it a type of mango and in Mandarin, the name 奄拔 is rendered as the rather meaningless ‘yam-pa’. Following the same Hainanese pronunciation scheme, Maxwell suggests that this fruit becomes the more familiar ‘jan-bu’ or ‘jambu’ (Malay for guava). Maxwell publishes his study on the divine stag in March 1909.

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♣ 1909

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1909.1

These are the first two pages of George Maxwell's article the 'Journal of the Straits Branch of the Royal Asiatic Society' that discuss the origins of the “divine stag”. The article is published in March 1909

1909.2

William George Maxwell (1871–1959), British colonial administrator. He works out the etymology of the “divine stag” in a paper that appears in the 'Journal of the Straits Branch of the Royal Asiatic Society' in March 1909

1909.3

Almost as if to commemorate the “divine stag” and the publication of Maxwell's paper on its origins, the British protectorate of North Borneo issues this stamp in 1909. This territory is now the Malaysian state of Sabah. The choice of the Malayan Tapir is interesting—the animal is only known for certain from the fossil record in Borneo, although there is anecdotal evidence of their survival there into the Recent era

1909.2



1909.3



Part 2

Part 2

In the Shadow of John Company

The Beginnings of Natural History in Singapore

John Company or the Honourable (or British) East India Company begins life on the last day of 1600 when a company comprising of 218 merchants are granted a monopoly on trade east of the Cape of Good Hope. The ‘Economist’ suggests that on that day, the modern world begins. By virtue of John Company’s geographical reach, shipping networks and logistical support, employees leave a permanent impression on the places they fan out to. John Company brings with it remarkable innovations in both the civilian and military spheres. The company, through its employees, also make great contributions to the study of natural history. The actors and events that lead to the first scientific description of a plant from Singapore 🌿1827 provide a good example of this.

Company men (and they are all men) such as Thomas Hardwicke 🌿1819, Thomas Stamford Raffles 🌿1820 and William Farquhar 🌿1822 find the time to make natural history collections while also administering places such as Penang, Melaka and Singapore. Being men of means, they also engage the services of local collectors and artists. All three men accumulate large numbers of natural history drawings and paintings. Only those of Farquhar and Raffles are well-studied. Hardwicke’s collection will benefit from a close examination.

Hardwicke has the distinction of being the first person to name a living organism from Singapore according to Western scientific tradition. This is announced at a meeting in 1819 and appears in print the following year. Raffles is possibly unique in engaging the services of European collectors and naturalists—a collector of collectors. Raffles meets Pierre-Médard Diard 🌿1823 and Alfred Duvaucel 🌿1824 in India and perhaps the earliest known collections from Singapore are made by them in 1819. Two others whom Raffles ‘collects’ are the botanists Joseph Arnold (1782–1818) and William Jack (1795–1822).

Besides company administrators, the scores of other company employees contribute to the development of a natural history of Singapore. The physicians Theodore Cantor ♣️1846 and William Traill ♣️1847 use their official assignments to the Straits Settlements to collect specimens and study them. Traill writes the first treatise that is dedicated solely to the study of malacology in Singapore. Thomas Horsfield ♣️1821 is an American doctor who comes into the spheres of influence of John Company and Raffles through the geopolitical events unfolding in the East Indies.

Of Raffles, Richard Conniff says in ‘The Species Seekers’: “It was as if, however reluctantly, he had swapped his flesh-and-blood for the glories of empire. And this was a bargain many men implicitly accepted when they went out into the world as naturalists and colonizers—their lives, marriages, children, even perhaps their souls, for the glory of a new city or a new species”. The same holds true for many of those under the shadow of John Company.

2.1



2.1

These marks first appear on Indian postage stamps (left) and coins (right) in the territories that the Honourable East India Company administers

1819

A capacious bowl or cup

Thomas Hardwicke names the first animal from Singapore

“... the S[p]onge plant, obtained on the coast of the newly acquired island of Singapore. Colonel Hardwicke ... has favoured the Society with a description of it. ... In its form it resembles that kind of drinking-cup called a goblet, with a well[-]defined base or root, a cylindrical stem, and a capacious bowl or cup ... and a more appropriate specific distinction may perhaps be given to this, in denominating it *Spongia patera*, the goblet sponge.” — **Thomas Hardwicke**

1819.1



1819.2



1819.3



Thomas Hardwicke (1756–1835) rises to the rank of major-general in the East India Company's army. This sponge that he names is the first known animal from Singapore described according to European scientific convention. The sponge is collected on the same trip with Raffles where a Dugong is caught and eaten 🌿1820. The sponge is soon highly sought after by museums and collectors and the population declines. It is presumed extinct until its rediscovery almost two centuries later 🌿2011. Now known as *Cliona patera*, Hardwicke first describes this species as *Spongia patera* at a meeting of the Asiatic Society that takes place on the evening of 13 November 1819.

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1819.4



1819.1

This is the first known depiction of the Neptune's Cup. It accompanies Thomas Hardwicke's paper in the 'Asiatick Researches'. Unlike Farquhar's 🌿1909, Hardwicke's paper appears in 1822, within three years of the November 1819 meeting. Furthermore, as the minutes of the meeting are published in two other monthly publications, the description and the scientific name are already known by 1820. The whereabouts of the actual specimen that is depicted here are not known

1819.2

This name plate accompanies a Neptune's Cup specimen at the old Raffles Museum at Stamford Road (now the National Museum 🌿1960). The specimen does not appear to be extant

1819.3

Thomas Hardwicke (1756–1835), a major-general in the East India Company's army. In addition to the Neptune's Cup, Hardwicke also obtains a specimen of a Shore Pit Viper and other animals from Singapore 🌿1832

1819.4

A specimen of a Neptune's Cup mounted on a wooden plinth. The geographical origin of this specimen is no longer known

1820

Most excellent beef

Thomas Stamford Raffles catches (and eats) a Dugong

“The dugong which we examined measured eight feet and a half in length, and afforded no less interest under the knife than satisfaction on the table, as the flesh proved to be most excellent beef. Our entertainment was truly marine; for we had on the same day discovered those Neptunian sponges which General Hardwicke has since described, and which served us as goblets.”

— Thomas Stamford Bingley Raffles

1820.1

Dugongs are found in Singapore waters and are known scientifically as *Dugong dugon* (Müller, 1776). This sample of tissue is from an animal found dead in Singapore in 2006 and too large to be transported back to the Museum

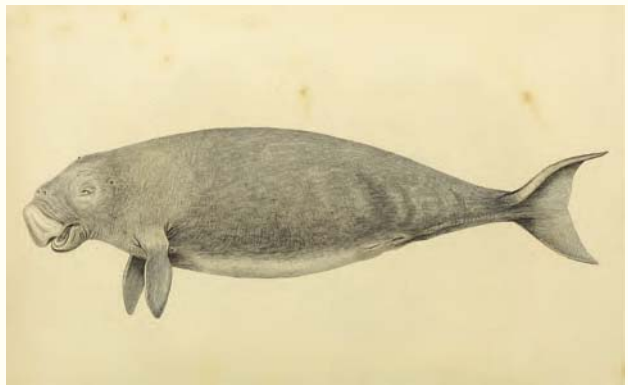
1820.2

Raffles procures at least three Dugongs, two of which are sent to British surgeon Everard Home (1756–1832) in London. Home studies them and presents his findings in the ‘Philosophical Transactions of the Royal Society of London’, which includes this drawing of one of the animals

1820.1



1820.2



Thomas Stamford Bingley Raffles (1781–1826) makes extensive natural history collections in and around Singapore while in the service of the East India Company. Other naturalists such as Diard 🌿1823, Duvaucel 🌿1824 and Horsfield 🌿1821 also collect for him. On a collecting trip in June 1819, Raffles catches and eats a Dugong. The account he publishes is amongst his earliest writings on natural history. They are also the first on a mammal from Singapore. The account is read before the Royal Society in London on 18 May 1820.

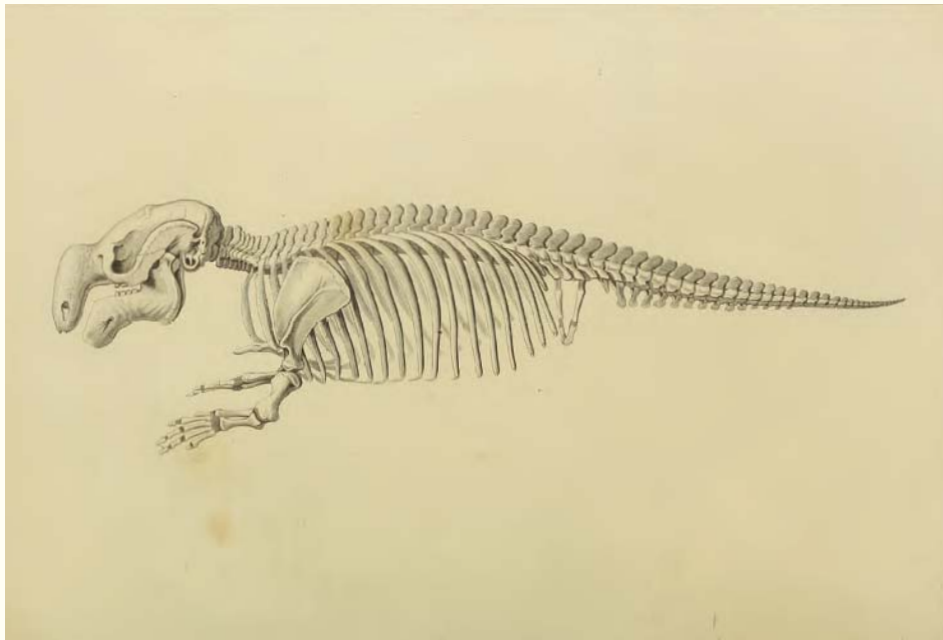
1820.3

This depiction of a skeleton of the Dugong accompanies the same paper by Everard Home that is based on specimens sent to him by Raffles

1820.4

Thomas Stamford Bingley Raffles (1781–1826), natural historian and East India Company employee. This depiction of his likeness is from his posthumous memoirs written by his wife Sophia Raffles (from whence Mount Sophia gets its name)

1820.4



🌿 1820

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1821 Greater numbers than I could employ

Thomas Horsfield collects in Java, Singapore and Sumatra

“The motions of the *Mydaus* are slow, and it is easily taken by the natives, who by no means fear it. ... I engaged them to procure me individuals for preparation; and as they received a desirable reward, they brought them to me daily in greater numbers than I could employ. Whenever the natives surprise them suddenly, they prepare them for food ... and is described as very delicious.”

— Thomas Horsfield

1821.1



1821.2



Thomas Horsfield (1773–1859) is an American physician and naturalist who also collects for Raffles 🍀**1820**. Horsfield is also the second director of the East India Company's Museum 🍀**1867**. He is best known for his 'Zoological Researches on Java' in which several animals from Singapore are described. These include the first bird from Singapore to be given a scientific name. This description of the Sunda Stink Badger being eaten is surprising given that the animal exudes a discharge that is possibly worse than a skunk's! The painting and description of the Sunda Stink Badger appear in the 'Zoological Researches' in November 1821.

🍀 **1821**

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1821.3



1821.4



1821.1

The Sunda Stink Badger is named *Mydaus javanensis* by Horsfield in his 'Zoological Researches on Java'. This painting accompanies this original description

1821.2

This skull is from a Sunda Stink Badger collected on Bunguran Island in 1928 in the North Natuna Islands, Indonesia

1821.3

The Green Broadbill is described from a specimen collected at Singapore. It is one of the species from Singapore that is first named in Horsfield's 'Zoological Researches on Java'. The scientific name *Calyptomena viridis* brings together Horsfield and Raffles. The genus name *Calyptomena* is attributed to Horsfield, while the species *viridis* is attributed to Raffles. This is the first bird from Singapore to be given a scientific name (in 1822)

1821.4

Thomas Horsfield (1773–1859), American doctor and natural historian. He is employed by the Dutch in Java. When the island is taken over by the East India Company, Raffles engages Horsfield as a collector. Horsfield later takes charge of the company's museum in London and will continue his natural history researches during the course of a long life.

200: Points in

Singapore's Natural History

Part 2:

In the Shadow of John Company

19

1822

Hung on the jawi-jawi tree

William Farquhar, his dog and the crocodile

“One morning Mr. Farquhar was walking in the direction of the Rochor River taking his dog with him, and when the dog went down to the river for water, suddenly it was seized by a crocodile. Immediately Mr. Farquhar was told that his dog had been eaten by a crocodile, and he called some men who were there and told them to make a dam across the river; when this had been done, the crocodile was enclosed, and was stabbed to death; it was 3 fathoms in lengths (18'). Then for the first time people knew that there were crocodiles at Singapore. Mr. Farquhar had the carcase of the crocodile taken and hung on the ‘jawi-jawi’ tree which is on the bank of the Beras Basah River.”

— Abdullah bin Abdul Kadir (Munshi Abdullah)

1822.1



William Farquhar (1774–1839) is Singapore’s first British Resident and like Raffles ♣️1820 he has a keen interest in natural history. This is another source of enmity between both men. The loss of Farquhar’s dog is one of the earliest published accounts of crocodiles in Singapore but there will be other known encounters between humans and crocodiles ♣️1886. Farquhar later treats a man who stabs him in 1823 in the same way as the crocodile. The ‘jawi-jawi’ tree is possibly a species of *Ficus* tree. The approximate date of this incident is 1822.

♣️ 1822

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1822.2



1822.3



1822.1

This depiction of a crocodile being caught with a gorge or ‘alir’ is from 1885

1822.2

This dog skull is collected in 2010 at Kranji in Singapore. The dog paw is also from Singapore. The Museum holds material from many animals, including domesticated ones ♣️1836 as they can be useful for comparative study

1822.3

William Farquhar (1774–1839), Singapore’s first British resident and commandant is in constant conflict with Raffles. Their passion for natural history is another source tension tension (see Part 1)

1823

You will be pleased to acquaint them Pierre-Médard Diard and collecting for Raffles

“Should Messrs. Diard and Duvaucel hesitate to give their full assent to this arrangement, you will be pleased to acquaint them that it will become my duty to act upon the literal construction of the terms of the engagement.”

— Thomas Stamford Bingley Raffles

1823.1



Pierre-Médard Diard (1794–1863) meets both fellow Frenchman Duvaucel 🍀1824 and Raffles 🍀1820 in India. Raffles employs both men to collect for him. This arrangement breaks down in the years to come as this extract from a letter by Raffles makes clear. Diard continues to collect natural history material and lives in Java until his death in 1863. The French naturalist Georges Cuvier (1769–1832) names the Sunda Clouded Leopard *Neofelis diardi* after his student. In 2006, this species is raised to the status of a full species. It is previously considered to be a subspecies of the clouded leopard that is found in Sumatra. This species is named by Cuvier in 1823.

🍀 1823

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1823.2



1823.1

The Sunda Clouded Leopard is first named *Felis diardi* by Cuvier after his student Diard. It is now known as *Neofelis diardi*. Information from Diard allows Cuvier to publish an account of the Malayan Tapir before Raffles or Farquhar (see Part 1)

1823.2

This skull is from a Sunda Clouded Leopard collected in 1926 in Sumatra, Indonesia



1824

Singularly enriched the Museum

Alfred Duvaucel and collecting
for Raffles

“Science suffered a significant loss at the end of August 1824, in the person of Alfred Duvaucel, a French naturalist who had travelled in India ... and who singularly enriched the Museum of Natural History of Paris.”

— Anonymous

1824.1



1824.1

The Scarlet-Rumped Trogon is named *Trogon duvaucelii* by Dutch zoologist Coenraad Jacob Temminck (1788–1858). It is now known as *Harpactes duvaucelii* (Temminck, 1824). This painting accompanies Temminck's first description of the species

1824.2

This Scarlet-Rumped Trogon specimen is collected in the 1920s from Mount Dulit in Sarawak, Malaysia

Alfred Duvaucel (1793–1824) is a French naturalist and collaborator of Diard
 🌿1823. Both men meet in India. Duvaucel is also the godson of French naturalist
 Cuvier who names the Sunda Clouded Leopard after Diard. Diard and Duvaucel
 travel and collect extensively for and with Raffles 🌿1820 but fall out with the
 Englishman in the coming years. Dutch zoologist Coenraad Jacob Temminck
 (1788–1858) names the Scarlet-rumped Trogon *Trogon* (now *Harpactes*) *duvaucelii*
 after Duvaucel in 1824. Duvaucel travels across Southeast Asia before returning to
 India where he dies in August 1824.

🌿 1824

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1824.2



Curious and extensive botanical collection

The naming of the Singapore Fern

“The island which we visited is called in the charts Alligator Island, and lies close to another which is known by the name of Barren Island. The first consists of a mass of sandstone of various colours and textures ... differing in no way, as far as we could discover, from that of Singapore. Dr. Wallich described the vegetable productions of all these islands as equally rich and novel, and was, in fact, carrying back with him a curious and extensive botanical collection.”

— John Crawford

1827.1



1827.1

This plate accompanies the first description of the Singapore Fern by Hooker in his 'Icones filicum' that is published between 1827 and 1828. This species is possibly the first plant to be named from Singapore. Hooker first names it *Aspidium singaporianum*, but is currently known as *Tectaria singaporiensis* (Wall. ex Hook. & Grev.) Ching

1827.2

This specimen of the Singapore Fern is from the Museum's herbarium (SINU). It is also known as the Monitor Lizard Fern

1827.3

William Jackson Hooker (1785–1865), British botanist and director of the Royal Botanic Gardens at Kew

Nathaniel Wallich 🌿**1829** joins John Crawford 🌿**1828** aboard the 'John Adam' to return to Calcutta on 23 November 1822. They land on Alligator Island (today Pulau Pawai) and make extensive botanical collections. Wallich sends these and other materials back to Calcutta where they make their way to the Royal Botanic Gardens at Kew in Britain. Amongst this material are specimens that William Jackson Hooker (1785–1865) describes and names *Aspidium singaporianum* (now *Tectaria singaporiana*) or the Singapore Fern in 1827.

1820

🌿 **1827**

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1827.2



1827.3



1846

A beautiful Van Dyke Brown Theodore Cantor in the Straits Settlements

“The pupil is vertically contracted by the influence of light; the iris is of a beautiful Van Dyke brown.” — Theodore Cantor

1846.1



1846.2



1846.1

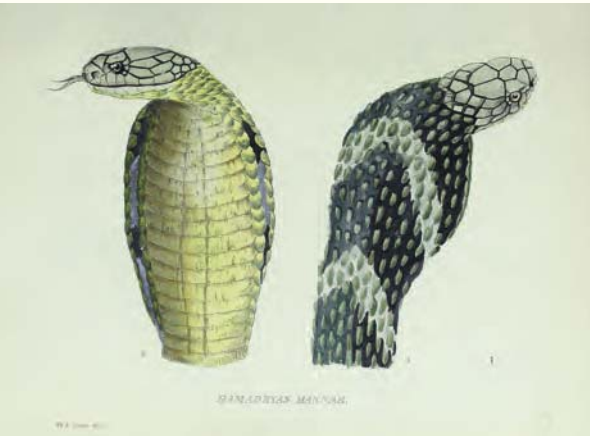
Cantor encounters the Binturong while working for the East India Company in the Strait Settlements

1846.2

The Binturong is first described by Raffles and is currently known as *Arctictis binturong* (Raffles, 1822). The specimen from which this skull originates is collected in 1921 in Ulu Klang in Selangor, Malaysia

Theodore Edward Cantor (1809–1860) is a Danish doctor who serves in the East India Company. An interest in natural history and tropical Asia is inspired by his uncle, Nathaniel Wallich 🌿1829. Cantor is best known for describing the King Cobra (*Ophiophagus hannah*) in 1836. Cantor transfers to the Straits Settlements 🌿1826 between 1842 and 1845 and collects in Singapore. These collections are the basis for many papers on natural history written by Cantor. The description of the eye of the Binturong is from his paper on the mammals of the Malay Peninsula and Singapore that is published in 1846.

1846.3



1846.3

This illustration accompanies the first description of the King Cobra by Cantor, who gives it the name *Hamadryas hannah*. Today this species is known as *Ophiophagus hannah* (Cantor, 1836). The King Cobra is also called the Hamadryas or Hamadryad 🌿1950

1846.4

Charles Frédéric Girard (1822–1895), names a genus of snakes *Cantoria* after Cantor in 1858. This plate accompanies Girard's description of the genus. It is the snake that is depicted at the centre of the plate. The specimen is collected from Singapore during the United States Exploring Expedition 🌿1842

1846.4



1820

🌿 1846

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1847

Suspended by a glistening thread

William Traill and the malacofauna of Singapore

“... the other species which I have more particularly observed in Singapore ... The habits of the animal are mixed and peculiar; sometimes it may be seen in a half torpid state, the operculum firmly closed suspended by a glistening thread, from the branch of a tree; when in motion it leaves behind it, a shining track like that of a snail ...” — **William Traill**

1847.1



William Traill (1818–1886) serves as a surgeon in the East India Company. He begins collecting shells when he is posted to China. He also spends several years in Singapore where he collects material and makes observations. His paper on the malacofauna of Singapore and its surroundings is the first such paper dedicated to the subject. It is published in the 'Journal of the Indian Archipelago and Eastern Asia' 🌿1850 in December 1847.

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🌿 1847

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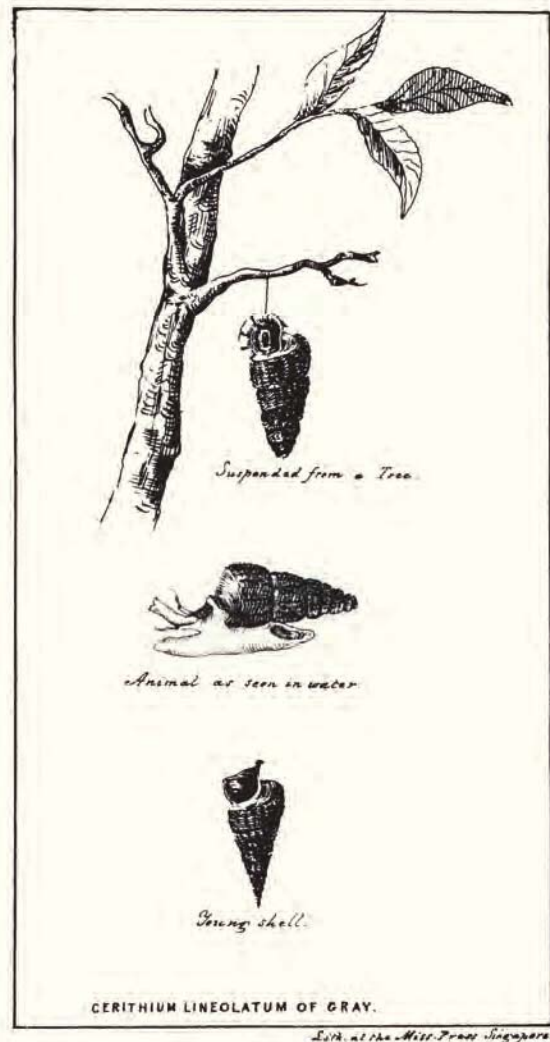
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1847.2



1847.1

A living specimen of Quoy's Horn Shell or *Cerithidea quoyii* (Hombron & Jacquinot, 1848) that is photographed in 2016 at Punggol in Singapore

1847.2

This plate accompanies Traill's paper on the malacology of Singapore and its surroundings. The species that is depicted is currently known as *Cerithidea quoyii* (Hombron & Jacquinot, 1848) and is first described based on specimens from Singapore that are collected by the French ships 'L'Astrolabe' and 'La Zélée' 🌿1839

Part 3

Part 3 The First Green Economy

Plants, Economic Growth and Environmental Change

Singapore is not devoid of human agricultural activity when the British first arrive. Historian James Charles Jackson discusses that “[t]he early European settlers knew little of Singapore away from the immediate environs of their new settlement but it is clear that the island was not completely uninhabited and uncultivated in 1819. There was already a small population of Malays and Chinese, some of whom were engaged in agricultural activities, and by 1819 Chinese gambier plantations had been established on the hills on the northern, western and south-western periphery of the new town”.

What changes in the coming decades is the growth of that agricultural activity. Gambier 🌿1865 and pepper become part of a co-cultivation system that historian Victor Purcell considers to be “in the long run an evil for Singapore”. James Collins 🌿1878 laments that gambier and pepper plantations cause many “a fair spot” in Singapore to look “like a charnel house”.

Attempts to plant other cash crops begin at a very early date. William Montgomerie 🌿1825 plants nutmeg and clove trees that “commenced to bear in 1825”. There is even a Singapore nutmeg bubble with planters and speculators wanting to get in on the action. Their nutmeg dreams die at the mandibles of a beetle 🌿1860. John Crawford 🌿1828 brings the best cardamoms from Indochina and attempts to plant them in Singapore.

Nathaniel Wallich 🌿1829 urges Raffles to set up a Botanic Gardens for agricultural experiments. The first two attempts at this endeavour fail and it is the third attempt 🌿1859 that fulfils the original aims of Wallich. Henry Ridley 🌿1897 conducts his famous experiments on *Hevea* rubber trees there and encourages Tan Chay Yan to start the first rubber plantation in what is now Malaysia. Tan Chay Yan in turn gets Tan Kah Kee to start Singapore’s first plantation 🌿1907.

Ridley’s research also helps to save coconut plantations in Singapore after he determines the species of beetles that are causing the damage and the poor practices that allow the insects to breed 🌿1889.

Rubber’s other half in Singapore’s second co-cultivation system is the pineapple. This system is pioneered by Lim Nee Soon. Tinned pineapples are a major export industry for Singapore, and the product becomes well-known beyond its shores. The importance of this is reflected in the convening of two Pineapple Conferences and the setting up of the Pineapple Experiment Station in Singapore 🌿1931.

Geopolitics is also at work in all of this. The loss of the East India Company's monopoly on trade leads to the rise of plantation agriculture in Singapore 🌿1834. When samples of a polymer are sent to Britain by Montgomerie in 1842, they find a variety of applications. One of these applications becomes of strategic importance—as the insulation for submarine telegraph cables. The insatiable demand for gutta percha, as this polymer is known, results in untold ecological upheaval in Singapore and Southeast Asia 🌿1851.

The role and the impact of this 'green' revolution should not be underestimated. Historians Kwa Chong Guan, Derek Heng and Tan Tai Yong write: "Singapore's first industrial revolution was as a processing centre for the primary commodities that were being shipped out through its port". The impact of the changes to the landscape wrought by this planting and harvesting is immense. The only trees that remain from the time before agriculture are those in Bukit Timah, the Central Catchment Nature Reserve and a very small patch at the Botanic Gardens. And as a nexus of trade for *Hevea* rubber and gutta percha, Singapore plays a role in the ecological transformation of the surrounding region as well.



3.1
The masthead from the 1 March 1909 issue of 'India Rubber World'. The illustration shows two botanical commodities that lay the later foundations of Singapore's economic growth. The cultivation of one and the harvesting of the other cause immeasurable changes to the natural landscape of Singapore and surrounding areas. Caoutchouc is a historical name for *Hevea* rubber 🌿1897, while *Dichopsis gutta* is a name that is also used for *Palaquium gutta* 🌿1851

1825

Nutmeg and clove plants thrive

William Montgomerie attempts to cultivate Singapore

“Dr. Montgomerie states, that so long back as 1821 some young nutmeg and clove plants were carried by Sir Stamford Raffles from Bencoolen to Singapore ... Both nutmeg and clove plants thrive very well, and commenced to bear in 1825.” — **Anonymous**

1825.1



1825.1

Cloves and nutmegs are the spices that give the Maluku Islands in Indonesia their historical name of the Spice Islands

1825.2

Cloves are the dried flower buds of *Syzygium aromaticum* (L.) Merrill & Perry

1825.3

These nutmegs were purchased in Penang in Malaysia where they are still grown commercially. A photograph of a nutmeg plantation in Penang from the late nineteenth century is reproduced in this book 🌿**1860**

1825.2



William Montgomerie (1797–1856) is the first official surgeon in Singapore and an enthusiastic promoter of agricultural cultivation in Singapore. He sends samples of gutta percha 🍀1851 to Britain in 1842 which begins the commercial exploitation of this product. He also succeeds Wallich 🍀1829 as the head of the first (unsuccessful) Botanic Gardens. Nutmegs grown by Montgomerie in Singapore are judged to be the best in the British colonies in 1842, although as he recounts, other planted Nutmeg trees are already bearing fruit in 1825.

🍀 1825

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1825.3



1825.4



1825.5



1825.4

This painting of a nutmeg is likely to be the work of a Chinese artist who is employed by Raffles 🍀1820. A painting of a durian from the same collection is also reproduced in this book 🍀1916

1825.5

The Nutmeg is known scientifically as *Myristica fragrans* Houtt. The spice mace is derived from the red aril that surrounds the seed. Nutmeg powder comes from grinding the brown seed. The flesh (pericarp) that surrounds the aril and seed is also consumed in a variety of ways

1828

The capsules of the best description

John Crawford and his cardamoms

“Although making repeated inquiries, we had no opportunity of examining the plants either in Siam or Kamboja, and several trials which I afterwards made in Singapore to propagate them from the seed entirely failed; so that we had no opportunity of determining whether they be new species of *Amomum*, or only a variety of the ordinary *Amomum Cardamomum*. The capsules of the best description were white, about three times the size of the finest Malabar cardamums, and the seeds highly aromatic.” — John Crawford

1828.1



1828.1

Cardamoms are the dried seed pods of *Elestaria cardamomum* (L.) Maton

1828.2

A botanical illustration showing the parts of the Cardamom plant

John Crawford (1763–1868) is a Scottish doctor, administrator and second British resident of Singapore. He publishes extensively on the history and languages of the region. He also describes his role as a diplomat in his 'Journal of an Embassy ... to the Courts of Siam and Cochin-China'. Crawford also recounts his Cardamom-growing experiences at Singapore in his 'Journal'. This account is documentary proof that plants and animals 🌿1836 are being transported with the intention of establishing local populations from a very early time. This account of the Cardamom is published by Crawford in his 'Journal' in 1828.

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🌿 1828

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1828.2



1829

A suitable piece of ground

Nathaniel Wallich and first Botanic Gardens

“... I beg leave to recommend that a suitable piece of ground may be appropriated in the neighbourhood of the European town for the purposes of a botanic garden and for the experimental cultivation of the indigenous plants of Singapore and adjacent Islands, as well as of such others of foreign growth, as it might be desirable to submit to a skilful trial, previous to encouraging their general introduction.” — **Nathaniel Wallich**

1829.1



1829.1

Nathaniel Wallich (1786–1854), Danish surgeon, botanist and superintendent of the Calcutta Botanic Gardens. He and Raffles write to each other extensively and in one of these correspondences, Wallich proposes the idea of a Botanic Gardens to Raffles. Wallich is also the uncle of Theodore Cantor 🌿1846

1829.2

These are some of the earliest detailed maps of Singapore island (top) and Singapore town (bottom). The first Botanic Gardens are marked “Botanical and Experimental Garden” in the “Plan of the Town of Singapore” which is sometimes known as the Jackson Plan

Nathaniel Wallich (1786–1854) is Superintendent of the Calcutta Botanic Gardens when he arrives in Singapore and makes extensive botanical collections 🍀**1827**. Wallich urges Raffles to acquire land for a Botanic Gardens, to be used amongst other things, for agricultural experiments 🍀**1859**. The first Botanic Gardens is created no later than 21 January 1823 but Wallich is no longer in Singapore and Montgomerie 🍀**1825** is put in charge. Possibly due to financial mismanagement, the first gardens close on 30 June 1829.

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🍀 **1829**

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1829.2



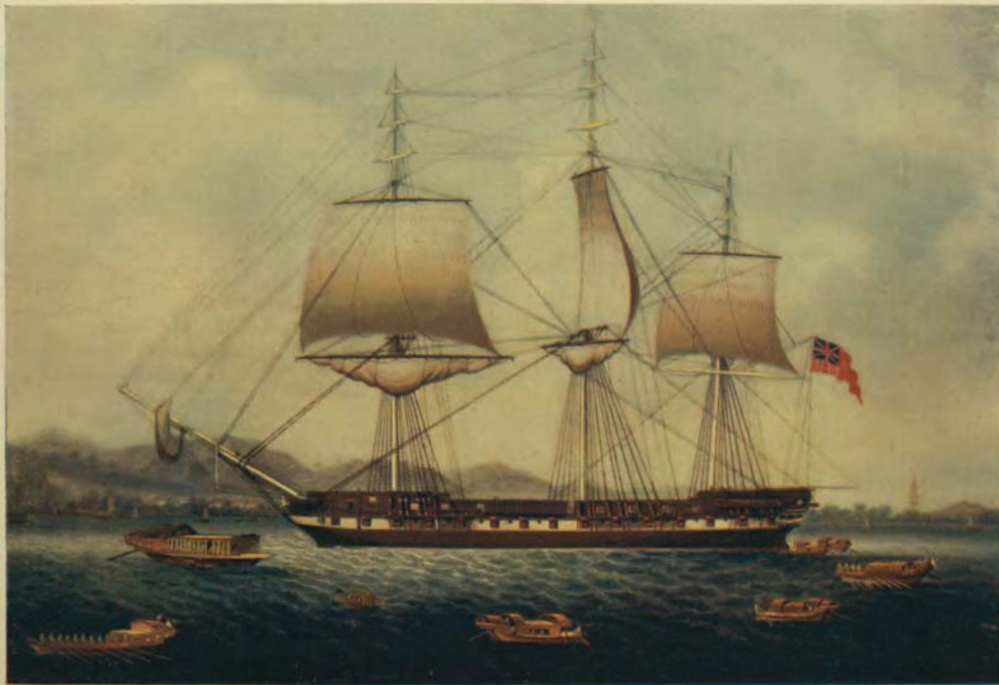
1834

To cultivate export crops

The rise of plantation agriculture

“After 1834, the withdrawal of the East India Company’s trade monopoly in the Straits region also led some of the Company’s employees to cultivate export crops as a subsidiary activity. This resulted in many people taking up plantation agriculture as a means of making money.” — **Cynthia Chou**

1834.1



THE EAST INDIAMAN “THOMAS COUTTS,” AS SHE APPEARED IN THE YEAR 1826.

(By courtesy of Messrs. T. H. Parker Brothers)

The East India Company becomes an administrative enterprise and loses its monopoly on trade under the Charter Act of 1833. The Straits Settlements 🌿 **1826** are now administered by the company from Singapore as Penang begins to decline. Plantation agriculture for profit increases exponentially as the company loses its domination over trade. The end of the East India company as a business enterprise is symbolised by the loss of its China (and lucrative tea) trade monopoly on 22 April 1834.

1820

🌿 **1834**

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1834.2



1834.1

The 'Thomas Coutts' is an example of an East Indiaman, or a ship plying the business of the East India Company. Such ships are a vital part of John Company's trading network

1834.2

This depiction of tea-growing in China is from the frontispiece 'An Account of the Cultivation and Manufacture of Tea in China'. The trade is a very lucrative and is of immense historical significance. The East India Company loses its monopoly on China trade (including that of tea) on 22 April 1834

Relegated to the museum of antiquities

Gutta percha and the submarine telegraph

“There is no doubt that the day will come, may be when you and I are forgotten, when copper wires, gutta-percha coverings and iron sheathings will be relegated to the museum of antiquities.” — William Edward Ayrton

1851.1



1851.2



1851.1

Gutta percha is a natural plastic that is derived from the latex of *Palaquium gutta* (Hook.) Baill. This species is only named scientifically in 1847, five years after William Montgomerie 🍀1825 sends the first samples to Britain

1851.2

This plate illustrates the products made from gutta percha in Borneo and two implements that are used in the collecting of the latex. Like *Hevea* rubber in South America, there is already a tradition of gutta percha being utilised by indigenous peoples before it is discovered and commoditised by Western naturalists, traders and administrators

Gutta percha is a natural plastic derived from *Palauquium* trees. The first samples are sent to Britain by William Montgomerie in 1842 🌿1825. Demand for gutta percha rises exponentially as it is used to insulate submarine telegraph cables. Unlike *Hevea* rubber 🌿1897, Gutta Percha trees cannot be tapped. Instead they are felled to collect the latex. Historian Helen Godfrey summarises the statistics. A typical 20-year-old tree yields between 250 and 400 grammes of gutta percha. The heaviest cables require over 98 kilogrammes of gutta percha for every kilometre of cable. This leads to the distinct possibility that some 27 million trees are cut down in Southeast Asia just for the submarine telegraph cable network. As early as 1857, and a year before the first successful Atlantic cable is completed, the tree is thought to be extinct in Singapore. This does not prevent the island continuing to be the nexus of the gutta percha trade. It will take the advent of synthetic plastics in the 1900s to obviate the slaughter of the trees. Today gutta percha is a forgotten necessity (although it is painfully present during root canal treatment). The global submarine telegraph revolution begins with the first successful service crossing the English Channel on 13 November 1851.

1851.3



1851.3

This photograph shows four Kayan men collecting gutta percha latex from a fallen tree. The image is taken in about 1896 by Charles Hose (1863–1929), a British colonial administrator, ethnologist and zoologist

1820

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🌿 1851

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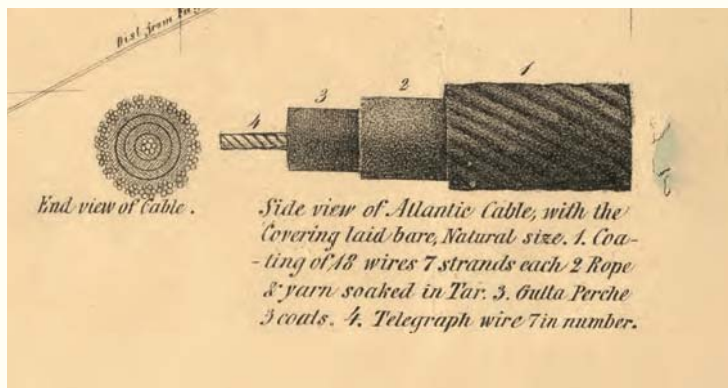
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1851.4



1851.4

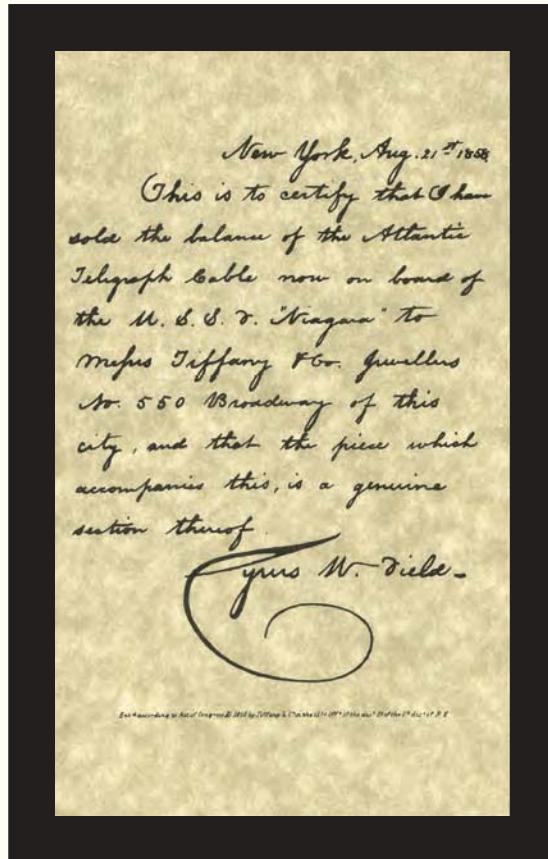
The first successful transatlantic cable is laid in 1858 by the Atlantic Telegraph Company and is funded by Cyrus West Field (1819–1892). The excess stock of cable is purchased by the jeweler Tiffany & Co. After being cut, commemorative sleeves are affixed and they are sold as souvenirs. The text on the sleeve reads: “ATLANTIC TELEGRAPH CABLE / GUARANTEED BY / TIFFANY & CO. / BROADWAY, NEW YORK.” The ends of each length are also sleeved to prevent fraying when cutting. The cutaway drawing of the cable that shows its construction is from the commemorative map that is reproduced on the next page. The outer protective cables, brown rope, yarn and dark brown gutta percha that surround the seven telegraph wires in the centre can be seen

1851.5

Each Tiffany’s souvenir cable is accompanied by a facsimile of a note written by Cyrus W. Field

1851.6

On 28 August 1850, gutta percha is used for the first time to insulate a commercial submarine telegraph cable. This cable is laid across the English Channel by the ‘Goliath’ (pictured) but is severed by the anchor of a fishing boat three days later. The second attempt that is completed on 13 November 1851 is successful, largely due to the cable being encased in a protective metal sheathing that increases its durability. This protective sheathing is also employed in the 1858 transatlantic cable

1851.5**1851.6**

1851.7

USS 'Niagara' and HMS 'Agamemnon' are tasked with laying the first transatlantic cable. This painting depicts HMS 'Agamemnon' encountering a whale which swims in the wake of the ship. Fortunately, both cable and whale are unharmed

1851.8

This chart is issued in 1858 following the laying of the first successful transatlantic cable. It shows the path of USS 'Niagara' sailing eastwards and HMS 'Agamemnon' sailing westwards. Cyrus West Field (1819–1892) is the chief financier of the project

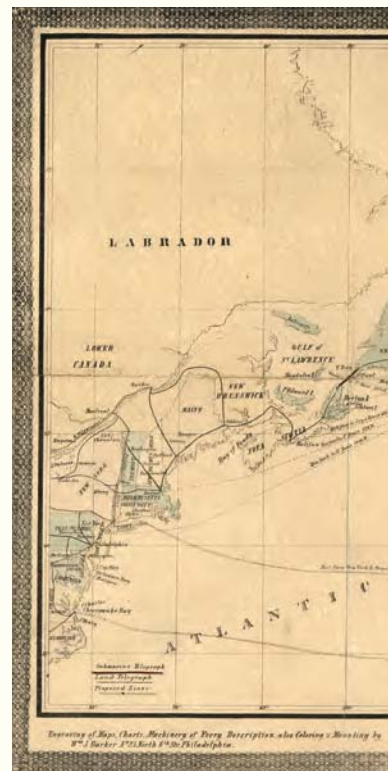
1851.9

The 'All-Red Line' is the name given to a telegraph network that links virtually all of the British Empire without passing through areas not under British colonial authority. The name derives from the practice of colouring British territory on maps in red

1851.7

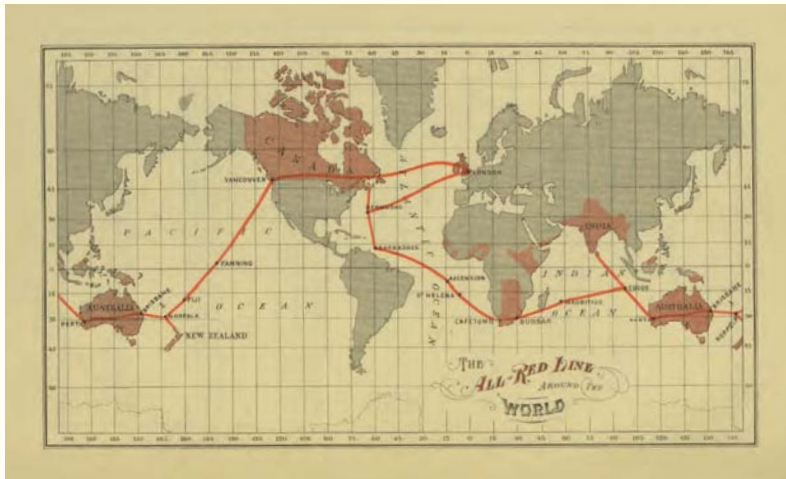


1851.8



1820

1851.9



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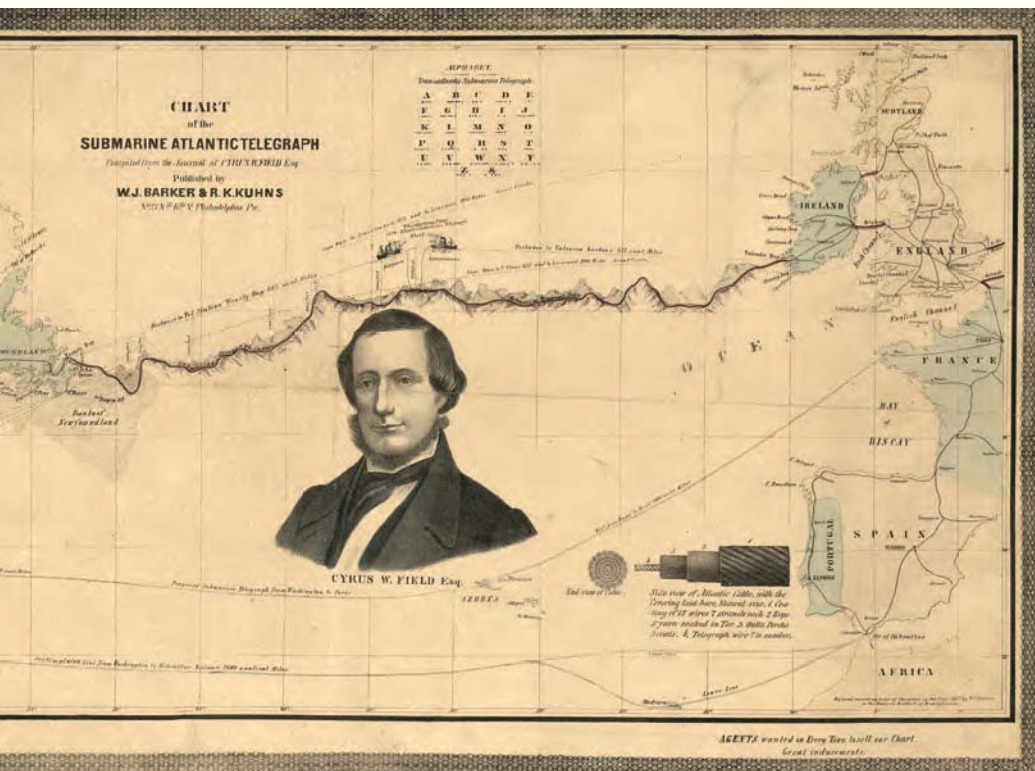
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200: Points in
Singapore's Natural History

Part 3:
The First Green Economy

49

1859

Gone horribly wrong

A Singapore Botanic Gardens at long last

“The Singapore Botanic Gardens was created amidst attempts to harness the potential of plants on the island that had gone horribly wrong.”

— Timothy P. Barnard

1859.1



1859.1

Two postcard views of the lake at the Botanic Gardens from the 1900s

1859.2

A map showing the Botanic Gardens. The original 1859 nucleus of the gardens is marked “A” and “K”



The Agricultural and Horticultural Society is founded in 1836 to promote agriculture in Singapore. It conceives a 'new' Botanic Gardens for crop experiments. Using land from the first failed attempt ♣️1829, this second attempt also fails in turn. The society is, however, successful in opening huge tracts of land and causing massive deforestation. It is on the third attempt by the newly-founded Agri-Horticultural Society that the current UNESCO-listed Singapore Botanic Gardens is created. The Botanic Gardens fulfils many of the original goals set out for the first two unsuccessful attempts. In particular the long and eventful career of Henry Ridley ♣️1897 results in many agricultural developments. Although mainly botanical, the gardens also makes contributions to the zoological with its aviaries and menagerie ♣️1873, 1876, 1890, 1905. The Botanic Gardens also becomes a centre for conservation efforts in Singapore with the creation of the National Parks Board ♣️1996. The Agri-Horticultural Society announces that land at Tanglin is secured for the gardens on 24 December 1859.

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♣️ 1859

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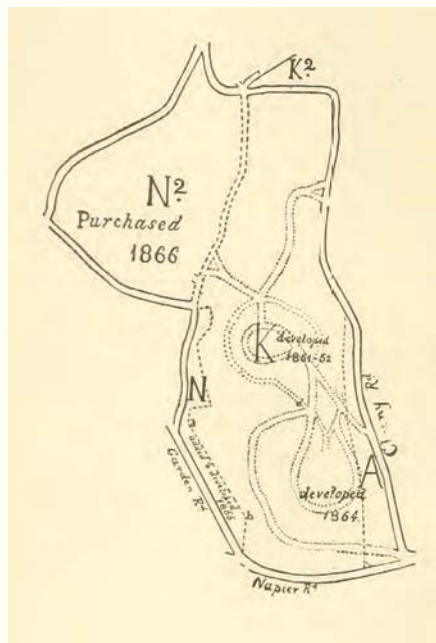
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1859.2



1860

Inexperienced amateurs

A beetle bursts Singapore's nutmeg bubble

“Ultimately, nutmeg cultivation failed because it was in the hands of inexperienced amateurs.” — James Charles Jackson

1860.1

PROPRIETORS.	NO. OF TREES.	SITUATION.
A. Guthrie . . .	2,250	Everton, near Spottiswoode Park
Dr. Montgomerie . .	1,800	Duxton, do.
Joaq. d'Almeida . .	700	Raeburn, do.
Dr. Oxley . . .	4,050	Oxley Estate
C. R. Prinsep . . .	6,700	Prinsep's Estate where Government House and Mount Sophia are now.
T. Hewetson . . .	1,515	Mount Elizabeth
C. Carnie . . .	4,370	Cairn Hill, Orchard Road
José d'Almeida . .	1,023	Mount Victoria, Stephen's Road
Dr. M. J. Martin . .	1,530	Institution Hill, River Valley Road
W. W. Willans . . .	1,600	Grange Road near Tanglin Barracks
Dr. Montgomerie . .	510	Serangoon Road, third mile Kallang Dale
Sir J. d'Almeida . .	4,000	Bandulia, five miles, Serangoon Road
T. Dunman . . .	1,000	Near Bandulia
G. G. Nicoll . . .	8,000	Sri Menanti, Grange Road, where he built Chatsworth
J. I. Woodford . . .	600	Bukit Timah Road, six miles
W. Cuppage . . .	1,250	Orchard Road, right hand side, Emerald Hill, Railway Bridge now
W. Scott . . .	5,200	Scott's Road, Claymore Estate

Nutmeg becomes one of Singapore's most valuable crops since it is first introduced ♣**1825**. Plantations exchange hands for huge sums. Then in the 1840s a deadly "nutmeg canker" appears and ravages the plantations. Inexperienced speculative growers exacerbate the problem by not caring for trees when oversupply causes prices to fall, allowing the infestation to spread. Henry Ridley ♣**1897** determines the culprit to be a species of bark beetle, *Hyleidius cribratus* (Blandford, 1896). Virtually all nutmeg plantations in Singapore are abandoned by 1860.

1820

1840

♣ **1860**

1860.2



1880

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2000

1860.1

This list of nutmeg plantations and their owners from 1848 is published in 'An Anecdotal History of Old Times in Singapore'. Many of these plantations are concentrated around the Orchard Road area

1860.2

This photograph from 1893 shows a nutmeg plantation in Penang, Malaysia

1865 Any other eastern import

Gambier in Singapore

“Another commodity which still continues to be produced in considerable quantities in the jungle districts of Singapore, and of the growth of which probably less is known at home than of any other eastern import, is gambier, or terra japonica.” — John Cameron

1865.1



1865.2



1865.1

This dried specimen of a Gambier plant is collected in 2001 from Neo Tiew Lane, Singapore

1865.2

The Gambier plant is known scientifically as *Uncaria gambir* (Hunter) Roxb.

1865.3

A ‘tepak sirih’. Gambier is also sometimes added to betel nuts and leaves for chewing. The ‘tepak sirih’ is a box that contains the ingredients and implements that are used in betel chewing. These include betel leaves (*Piper betle* L.), betel nut (*Areca catechu* L.), gambier, lime and other spices. The nutcracker-like device is used for slicing the betel nut. This ‘tepak sirih’ is on display at the Muzium Negara in Kuala Lumpur 🌿1945

1865.4

The growing and manufacture of gambier (from left to right, top to bottom): a plantation; the leaves being brought to processing shed; washing and cooking the leaves; scooping the paste into kegs; cutting and arranging the blocks on a bamboo screen; blocks drying in the sun

1865.3



Gambier (or gambir) is a climbing shrub grown for its leaves which produce a dye and a substance for tanning leather. Gambier is also chewed with betel leaves and nuts as a masticatory. Immense plantations occur in Singapore and the 'Straits Times' of 2 January 1855 reports 148 plantations with 4,717,500 plants. Gambier is also grown with pepper 🌿1878 but by century's end both crops are supplanted by rubber 🌿1897, 1907. The quotation on gambier is taken from 'Our Tropical Possessions' by John Cameron which is published in 1865.

1820

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🌿 1865

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1865.4



1878

Like a charnel house

Gambier and pepper cause
ecological devastation

“When in Singapore my heart has often ached when I have fallen across clearings for pepper, gambier, and the like, to see with what recklessness mighty monarchs of the forest are cut, or as a rule, burnt down in all directions, the unused rotting on the ground. Thus a fair spot costing nature centuries to fill with her handiwork looks like a charnel house.” — **James Collins**

1878.1



Pepper and gambier 🌿**1865** co-cultivation makes economic sense as pepper is a lucrative but seasonal crop while gambier sells for less but grows year-round; gambier processing waste also makes a good fertiliser for pepper plants. However, new land has to be found every 15 to 20 years due to the depletion of soil nutrients. An 1843 article in the 'Singapore Free Press' estimates the area under (or soon to be under) pepper-gambier cultivation at over 200 square kilometres (between a third and a quarter of Singapore's total land area). James Collins 🌿**1874** laments the cost of pepper and gambier in his report of 1878.

1878.2



1878.3



1878.1

These two photographs show the cultivation of pepper in Borneo in the 1900s

1878.2

Peppercorns are the dried fruits of the Pepper plant. Both black and white pepper come from the same plant, the only difference is when they are harvested and how they are processed

1878.3

The Pepper plant is known scientifically as *Piper nigrum* L.

1820

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🌿 1878

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1889

The ravages of two species

The ‘Coco-nut Tree Preservation Ordinance’

“The damage caused by the ravages of two species of beetles in Singapore to the coco-nut trees has now become so serious, that it is imperative that some steps should be taken to ameliorate the plague without delay.”

— Henry Nicholas Ridley

1889.2



1889.1



1889.1

These photographs show two coconut plantations in Singapore in the 1900s

1889.2

Entitled “Coco-nut Estate attacked by Beetles”, this illustration accompanies Ridley’s 1889 report on his investigations into the pests that are plaguing Singapore’s coconut plantations

Henry Ridley 🌿**1897** solves two agricultural riddles. Unlike the “nutmeg canker” 🌿**1860** that is only solved in retrospect, Ridley identifies the threat to Singapore’s coconut (*Cocos nucifera* L.) plantations early enough to make a difference. He identifies two beetles that are the culprits but emphasises the role of accumulated plantation refuse as breeding sites for these insects. The ‘Coco-nut Tree Preservation Ordinance’ of 1890 encourages growers to clean up their act. A year later the spread is halted. Ridley’s report with his recommendations to ameliorate the plague appears in 1889.

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🌿 **1889**

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1889.3

This postcard is entitled “Cattle grazing amid piles of coconut shells, Singapore”. Like the ‘nutmeg canker’ 🌿**1860**, bad plantation practices allow pests to proliferate

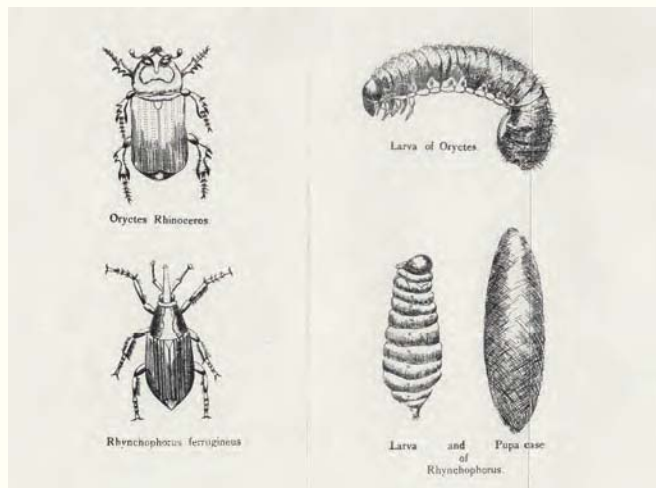
1889.4

This plate also accompanies Ridley’s 1889 report on his investigations into the pests that are plaguing Singapore’s coconut plantations. These are the two species of beetles that he identifies as plaguing coconut plantations on the island

1889.3



1889.4



1897

To bleed it to death if necessary

Talented Mr Ridley's rubber experiments

“In July an average sized tree measuring 60 feet in height, with a circumference at the ground of 5' 5" and a clean stem up to 10' 3" from the ground, approximate age 12 years, was selected for tapping with the view of seeing what could be got out of it irrespective of any conditions, in other words to bleed it to death if necessary.” — Charles Curtis

1897.1



1897.2



1897.3



1897.1

The Rubber tree is known scientifically as *Hevea brasiliensis* (Willd. ex A. Juss.) Müll. Arg.

1897.2

This photograph from the book 'Rubber' by Philip Schidrowitz is captioned: "The oldest (planted) trees in the Malay Peninsula (Botanic Gardens, Singapore)"

1897.3

Henry Nicholas Ridley (1855–1956), English botanist and natural historian. He is also known as "Rubber Ridley" and "Mad Ridley" because of his passion for the tree which is not always shared by those he meets

1897.4

A photograph accompanying the article 'A history of the rubber industry in Malaya' by William Dunman (1857–1933). The original caption states: "Rubber-trees in the Economic Gardens, Singapore. The three trees on the right were raised from seed collected in Brazil by Sir Henry Wickham; those on the left are trees of the first generation produced from the original seeds". Henry Wickham (1846–1928) is a British explorer who takes (although the term "smuggles" is also sometimes used) rubber seeds out of Brazil from whence they spread around the world. The Botanic Gardens plays an important role in the spread thanks to Henry Ridley

The first rubber trees are planted at the Singapore Botanic Gardens in 1876. Taking charge of the Botanic Gardens in 1888, English botanist Henry Nicholas Ridley (1855–1956) proceeds to determine the best methods for growing and tapping the trees. His experiments and firm belief in the potential of rubber lead to the nicknames “Rubber Ridley” and “Mad Ridley”. He is pivotal in the beginnings of the first rubber plantation in Singapore 🌿1907. Ridley first publishes his recommendations on how best to tap (literally) the potential of rubber in June 1897.

1820

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🌿 1897

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1897.5

The spiral method of tapping rubber trees is another method for extracting latex from the tree. As Ridley popularises the herring-bone method, the spiral method falls from use

1897.6

This photograph shows Ridley and one of his successful experiments at the Botanic Gardens, Singapore

1897.4



1897.6



1897.5



1907

An inspissated exudation

Tan Kah Kee and the first rubber estate in Singapore

“What is this stuff called Rubber? I shall not be rude if I described it as an inspissated exudation of certain plants. This is an expressive botanical term for a thickened plant juice.” — **Humphrey Morrison Burkill**

1907.1



1907.2



Henry N. Ridley 🌿**1897** convinces Tan Chay Yan (1871–1916) to plant rubber commercially and the first estate in Malaya (now Malaysia) starts life in 1895 in Bukit Lintang, Melaka. Tan Kah Kee (1874–1961) receives encouragement and 180,000 seeds from Tan Chay Yan to start what becomes the first rubber plantation in Singapore. Tan Kah Kee plants these seeds at his pineapple plantation in Sembawang. Before long, rubber is grown extensively in Singapore and huge tracts of land are cleared for this purpose, forever changing the ecological landscape of Singapore. The first rubber estate in Singapore is planted in 1907.

1820

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1900

🌿 **1907**

1920

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1907.3



1907.1

This postcard is captioned “T. C. Yan. Bukit Lintang Estate, Malacca”. The caption is probably made by a person who is unfamiliar with convention for Chinese names, mistaking Yan for Tan Chay Yan’s surname. The postcard is dated 13 March 1917 and shows trees that are now over two decades old—the latex of Ridley’s persistence

1907.2

This soil sample and these two latex collection cups originate from Bukit Lintang in Melaka where Tan Chay Yan starts the first commercial rubber estate in Malaya (now Malaysia)

1907.3

These photographs show the scale and the destruction that clearing land for rubber entails



1907.4



1907.4

This postcard shows a rubber plantation in about 1915 in Singapore

1907.5

This photograph is entitled "Directors of the United Singapore Rubber Estates, Ltd." and is taken at Yio Chu Kang in Singapore. Tan Chay Yan is seated in the middle

1907.6

Rubber seeds and seed capsules from Sembawang in Singapore. They may very well be descended from trees that are first grown in Singapore's earliest rubber estates

1907.5



From left to right, Front row : Yow Ngau Pan, Tan Jiak Kim, D. Machado (Manager), Dr. Lim Boon Keng, Tan Chay Yan (Chairman), Lee Choon Guan, Choa Giang Thye, Seah Eng Kiat, and Chan Kang Swi.

DIRECTORS OF THE UNITED SINGAPORE RUBBER ESTATES, LTD. (PLANTATION IN YEO CHU KANG ROAD.)

294]

1907.6



1931

Pineapple Experiment Station

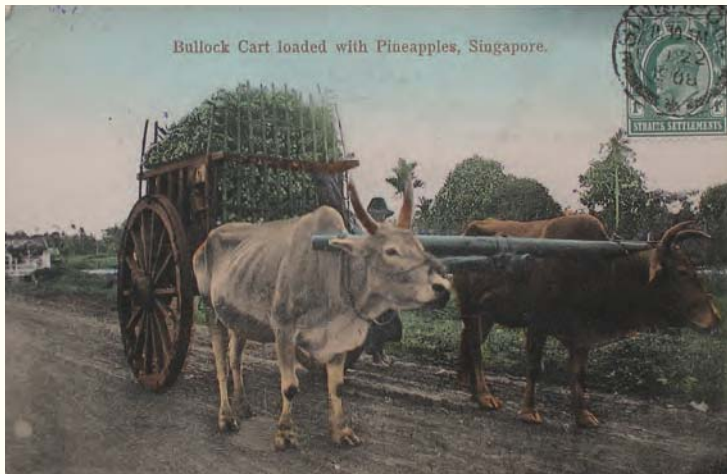
Singapore and tinned pineapples

“An area of some 33 acres was opened in 1931, at Lim Chu Kang in Singapore, for the investigation of major problems in connexion with the growing of pineapples as a sole crop. From this area, which is known as the Pineapple Experiment Station, Singapore, some results of considerable value have already been obtained and the information therefrom has been disseminated amongst growers.” — George Donald Phillips Olds

1931.1



1931.2



1931.1

The image is captioned “Pineapples (*Ananas sativus*), Interplanted with Young Rubber” and is taken in Malaysia in the 1920s. The scientific name *Ananas sativus* Schult. & Schult.f., is sometimes used for the Pineapple. The current accepted scientific name is *Ananas comosus* (L.) Merr. The pineapples generate income while the rubber trees mature

1931.2

This postcard shows pineapples being transported by bullock-cart and is dated 2 June 1908

1931.3

Tinned pineapples are an important export for Singapore. This photograph showing the canning of pineapples in Singapore is taken in 1952

1931.4

This photograph shows Singapore’s “Pineapple King” Lim Nee Soon (with the cane) posing in front of his lorry. The pineapples being conveyed in a rubber lorry reflect the rubber-pineapple co-planting system that Lim pioneers

In 1850, doctor Julius Berncastle (1819–1870) remarks that “you can only taste pine-apple in perfection at Singapore”. By the 1880s, tinned pineapples from Singapore are popular in Europe. As rubber plantations 🌿1907 grow, the technique of interplanting fast-growing pineapple plants between the slow-growing rubber trees is popularised by Singapore’s “Pineapple King” Lim Nee Soon. Tinned pineapples are also an important export industry. The continued importance of pineapples is reflected by the setting up of the Pineapple Experiment Station and the publication of the ‘Report of the Pineapple Conference’ on 31 August 1931.

1931.3



1931.4



1931.5



1931.5

A label from a can of tinned pineapples sold under the ‘Hothouse’ brand from Singapore. The age of this label is uncertain but in the ‘Singapore Free Press and Mercantile Advertiser’ of 27 June 1906, the following appears: “... I think the place must live mainly on pineapples. In the windows of the shops are piles of tins from Singapore. I never saw such quantities in any place. They are mostly labelled ‘delicious chunks’ and are of all brands. Here are a few of the names;—Quaker, Hothouse, Vine, Mikado, Toucan, Loo Choo. The only one I saw with the name of the native firm on it was Tan Wah Hee. These tins are sold at the rate of fourpence-half-penny and upwards. How it can be done at the price is a marvel, especially with the present prices of silver and tin. Thousands on thousands must be sold. A tax on each tin exported would truly be a fruitful source of revenue!”

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Part 4

Part 4 On Government Service

Ships, Administrators and Other State Actors

During the course of the nineteenth and early twentieth centuries, ships and people come to Singapore while in the service of their governments. Their reasons are various. At the onset of this period, naval powers such as Britain, France and the United States are sending forth ships on circumnavigational voyages. These aim to open diplomatic relations, suppress piracy, extend imperial reach, make scientific discoveries and conduct hydrographic surveys. Accurate charts for the laying of submarine telegraph cables (see Part 3) is one impetus for the hydrographic surveys.

Many of these ship-based expeditions include a surgeon-naturalist in the complement, a role popularised by Charles Darwin aboard HMS ‘Beagle’ or Stephen Maturin aboard HMS ‘Surprise’. These voyages will amass immense amounts of natural history material which make their way back to the countries from where these ships originate. This material includes animals and plants from Singapore.

Two of the earliest such voyages are French. First that of ‘La Bonite’ 🍀1837 and then those of ‘L’Astrolabe’ and ‘La Zélée’ 🍀1839. These are not the earliest French voyages calling at Singapore, but are the earliest of which something is known about the Singapore material that is collected.

The Royal Navy is also active during this period. Two ships in particular are well-known for their natural history contributions. HMS ‘Samarang’ 🍀1843 is sent to survey the coasts of Borneo and HMS ‘Fly’ 🍀1845 surveys the coasts of New Guinea, lending its name to the Fly River. Under the command of Henry Keppel, HMS ‘Maeander’ 🍀1848 cooperates with James Brooke in the suppression of piracy in Borneo. All three ships call at Singapore. Another surgeon naturalist is Cuthbert Collingwood who arrives in Singapore aboard HMS ‘Serpent’ 🍀1868.

Two expeditions from the United States also visit Singapore. The Wilkes or United States Exploring Expedition (‘Ex. Ex.’) 🍀1842 collects extensively at Singapore and along its entire circumnavigational journey. The material that is collected forms the core of the United States national collections, now the Smithsonian Institution. The Perry Expeditions are not circumnavigational. Instead their destination is Japan with the aim of establishing trading relations. The visits of these ‘Black Ships’ lead directly to the Meiji Restoration. When they call at Singapore, the crew from Perry’s ships observe shells for sale and make the first known drawing of the Jurong River 🍀1853.

Individual persons also come to Singapore on government service. James Brooke 🍀1855 is a British soldier who goes from serving one government (the British) to serving another (his own). James Brooke facilitates the natural history activities of Alfred Russel Wallace (see Part



4.1

On Government Service. The seal of the Colonial Secretary of the Straits Settlements is from a 1908 letter to the Singapore Botanic Gardens regarding the forthcoming International Rubber Exhibition that same year. The seal of the Office of the Lord High Admiral of the Royal Navy is from the 1913 edition of the 'King's Regulations and Admiralty Instructions'

5) and Hugh Low. Hugh Low ♣1911 is a colonial administrator and botanist who collects both plants and animals while serving in the British government.

The Dutch doctor Pieter Bleeker ♣1875 amasses a collection of fishes while serving the Dutch government. This material includes specimens from Singapore. Bleeker becomes a world-renowned ichthyologist in his own right and his beautifully-executed 'Atlas Ichthyologique' are a source of inspiration to Eric R. Alfred (see Part 12), the first Singaporean curator and later director of the Museum.

Two other military men also contribute to Singapore's natural history before the close of the nineteenth century. Samuel Archer ♣1895 is an army doctor who is passionate about marine shells. He sends large numbers of these shells and other marine animals back to Britain. Stanley S. Flower ♣1896 is posted to India and the Straits Settlements. He publishes several papers on the reptiles and amphibians of Peninsular Malaysia and Singapore, including the first to report the presence of the Banded Bullfrog in Singapore. This species is currently recognised as an introduced species.

1837

Arrived on 17 February

‘La Bonite’ arrives in Singapore

“‘La Bonite’, arrived on 17 February at the sea-lanes of Sincapour, and stayed there until the 22nd. This short break is enough to make useful observations; it was used by naturalists to explore the country and make observations of the various branches of natural history ...” — *Amédée de La Salle*

1837.1



The French corvette 'La Bonite' circumnavigates the world and stops in Singapore. The expedition aims to renew diplomatic ties with Indochina, gather scientific data and collect natural history materials for the museum in Paris. 'La Bonite' is not the first such expedition to visit Singapore but is the earliest in which natural history material collected from Singapore is described. Henri Ernest Baillon (1827–1895) names a plant that is collected during the expedition *Anisophyllum trapezoidale*. It is now known as *Anisophyllea disticha* (Jack) Baill. These materials are collected when 'La Bonite' reaches Singapore on 17 February 1837.

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1837.1

The crew of 'La Bonite' collect specimens of the Leechwood, not unlike this dried specimen from the Museum's herbarium. Based on this material, Henri Ernest Baillon (1827–1895) describes and names the species *Anisophyllum trapezoidale*. Botanists now consider Baillon's name to be a synonym (a different name for the same species) of *Anisophyllea disticha* (Jack) Baill. which is named earlier and is therefore the name that is in current use

1839

How rapid the progress has been

‘L’Astrolabe’ and ‘La Zélée’ in Singapore

“I had previously come to Singapore in 1824: at the time the city was only beginning to grow, but it was possible to perceive the activities engaged in by the Chinese and Hindus who had begun to migrate there; how rapid the progress has been especially with the system of liberty that has presided since its foundation ...” — Joseph Fidèle Dubouzet

1839.1



1839.2



1839.1

This drawing is entitled: “Les corvettes prêtes a tomber sur les rochers de Sanguir”. It shows ‘L’Astrolabe’ and ‘La Zélée’ coming close to disaster at rocks near the Sangihe Islands (“Sanguir”) which lie to the north of Sulawesi, Indonesia

1839.2

Hombron and Jacquinot name this species *Helix isabella* based on specimens collected from Singapore. It is currently known as *Quantula striata* (J. E. Gray, 1835) ♣1854. A photograph of a live animal is reproduced elsewhere in this book ♣1843

1839.3

This live specimen of *Cerithidea quoyii* is photographed at Pulau Ubin in Singapore. Hombron and Jacquinot first name it in 1848 based on material from Singapore

Ships, Administrators and
Other State Actors

Lee Kong Chian
Natural History Museum

Joseph Fidele Eugene Dubouzet (1805–1867) is an officer aboard the French ship ‘La Zélée’. Circumnavigating the world with with another French ship, ‘L’Astrolabe’, the vessels call at Singapore two years after ‘La Bonite’ 🌿1837. Aboard the ships are surgeon naturalists Jacques Bernard Hombron (1798–1852) and Honoré Jacquinot (1814–1887). They make some of the earliest collections and descriptions of molluscs from Singapore. ‘L’Astrolabe’ and ‘La Zélée’ arrive in Singapore in 27 June 1839.

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1839.3



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1839.4



1839.4

These two plates illustrate the molluscs that are collected during the voyage of 'L'Astrolabe' and 'La Zélée'. The plate on the left is published in November 1847, the one on the right in November 1848. Several new species from Singapore are named and illustrated on these plates by Hombron and Jacquinot. *Helix isabella* (left plate, four specimens that make up the second row) is described as a new species but is now considered to be a later name for *Quantula striata* (J. E. Gray, 1835) 🌿**1854, 1943**. *Cerithium quoyii* (right plate, first row, second and third from left) is also described as new. Today it is known *Cerithidea quoyii*. This and several related species are eaten in Singapore and are commonly referred to as 'chut chut', 'balitong' or 'siput sedut'



1842

Like a fairy forest

James Dwight Dana, the ‘Ex. Ex.’ and the corals of Singapore

“One of my chief amusements at Singapore was ‘paddling my own canoe’ amongst the lovely islands and looking down into the coral covered depths below, which on a calm day seemed like a fairy forest, the coral having a most tree-like appearance and of every variety of tint from deep red to the most delicate green. Fish of all sizes and colors were swimming about in every direction far down in these charming water woods.” — **Douglas Hamilton**

1842.1



1842.1

Commonly known as the Mud Lobster, this species is named *Thalassina gracilis* in 1852 by James Dana. His specimen is collected during the ‘Ex. Ex.’ at “Telegraph Island, near Singapore”.

The exact identity of this locality is not known. Dana’s original representative specimen (called the holotype) is lost and another specimen from Singapore (called a neotype) is selected to stand in place of the lost holotype. The neotype specimen looks similar to this one that is collected in the 1990s from South Ranong in Thailand

The United States Exploring Expedition (also known as the ‘Ex. Ex.’) circumnavigates the earth and collects natural history materials. The voyage is also known as the Wilkes Expedition, after its commanding officer Charles Wilkes (1798–1877). James Dwight Dana (1813–1895) is part of the expedition, in the role of geologist and mineralogist. Dana studies the corals and crabs of the ‘Ex. Ex.’, publishing the earliest descriptions of corals from Singapore. Dana also names the mud lobster *Thalassina gracilis* from a specimen found near Singapore. As the quotation of Douglas Hamilton 🍀1870 from the 1840s makes clear, Singapore waters at this time are pristine. The ‘Ex. Ex.’ arrives in Singapore on 19 January 1842.

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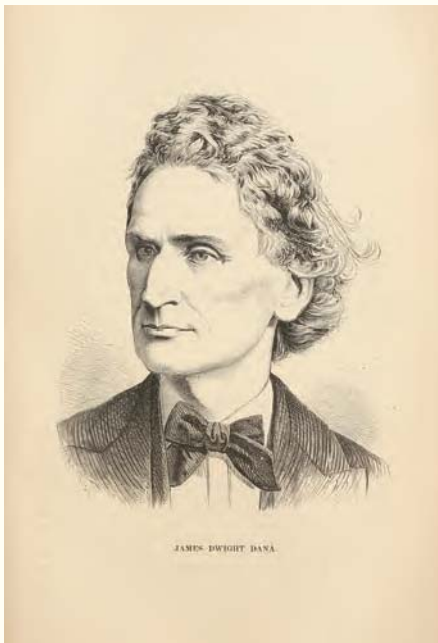
1940

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1842.2



1842.2

James Dwight Dana (1813–1895), American zoologist, geologist and mineralogist who visits Singapore during the ‘Ex. Ex.’

1842.3

Charles Wilkes (1798–1877), commander of the United States Exploring Expedition

1842.3

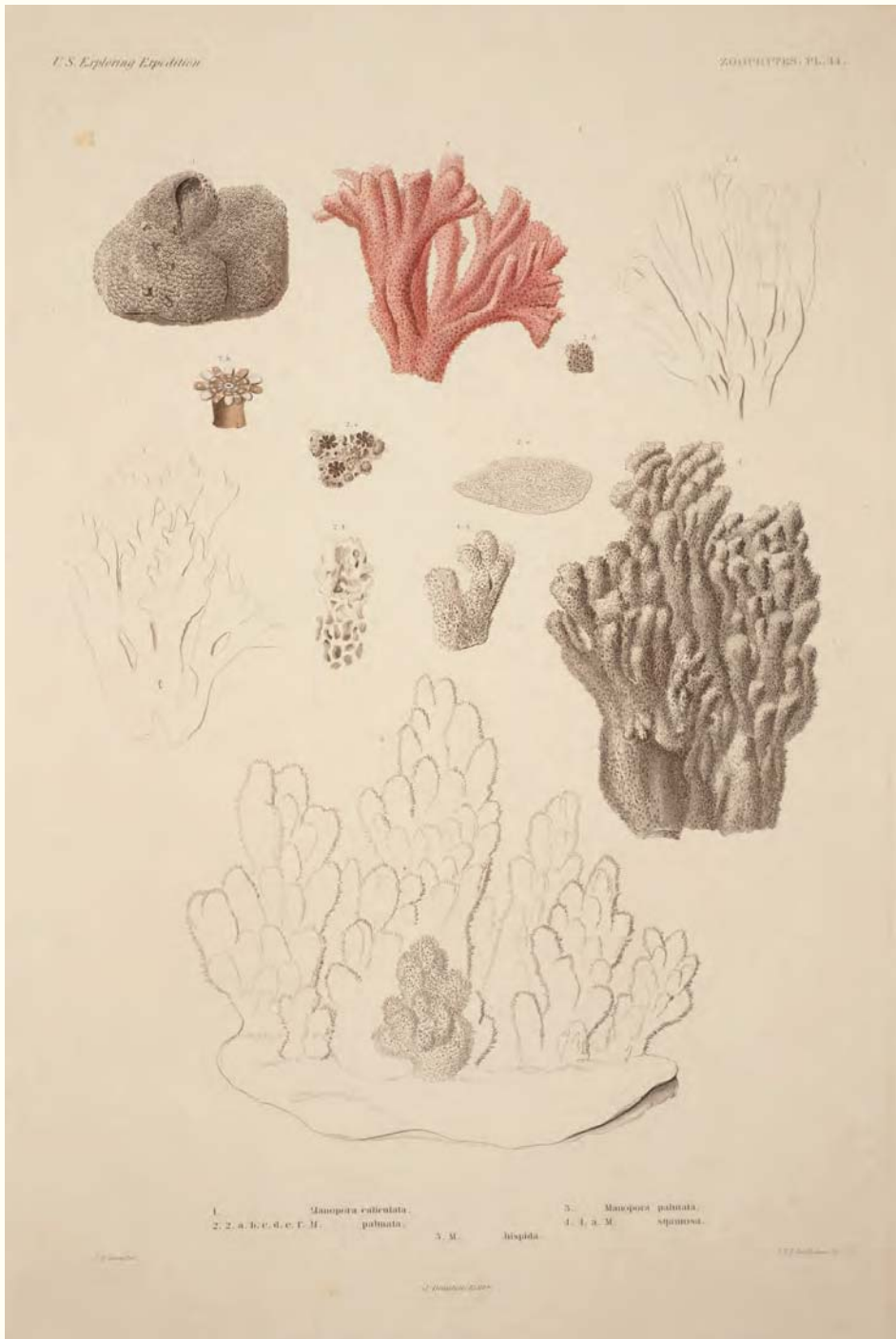


1842.4

These two plates are from Dana's monograph that is entitled the 'Zoophytes' (cnidarians, or animals such as corals and sea anemones), that is based on the collections of the 'Ex. Ex.'. Dana illustrates and names several new species from Singapore. Dana names *Pavonia* (now *Pavona*) *decussata* (left plate, largest drawing at centre) and *Manopora* (now *Montipora*) *hispida* (right plate, largest drawing at the bottom) from Singapore. Both species are first described by Dana in the text portion of the 'Zoophytes' monograph that is published in 1846

1842.4





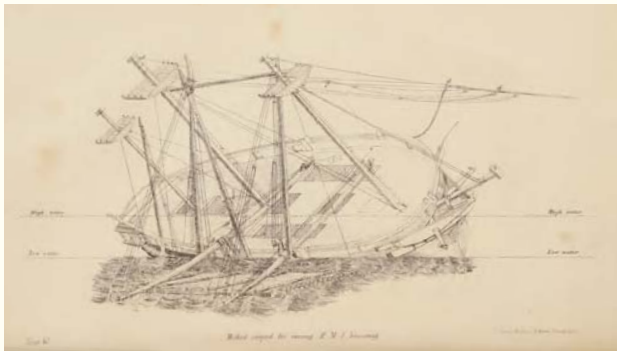
1843

Living jellies of the deep

Arthur Adams, Adam White and
HMS ‘Samarang’

“They have been termed the ‘living jellies of the deep’, and are endowed, in many cases, with an acrid secretion, which, irritating the skin, has also caused them to be called ‘Sea-nettles.’ There is one large species common in the Straits of Singapore, dreaded by the Malays, on account of the violence of this power. Dr. Oxley informed me that he was obliged to amputate the thumb on account of the violent inflammation, induced by this poison, in the person of a Malay fisherman.” — **Arthur Adams**

1843.1



1843.1

These two views show HMS ‘Samarang’ being careened in the Sarawak River. This process exposes the parts of the hull below the waterline for repairs and maintenance. The sketch shows in detail how a raft is used to raise the ship at the end of the process

1843.2

The “Sea-nettles” that naturalist Arthur Adams refers to are possibly species of jellyfish in the same genus as this *Chrysaora chinensis* Vanhöffen, 1888 that is collected in 2010 from Beting Bronok, Singapore. This species is commonly known as the Ribbon Jellyfish but members of the same genus are commonly referred to as sea-nettles

1843.3

This plate depicts *Chrysaora hysoscella* (Linnaeus, 1767). Species of the genus *Chrysaora* Péron & Lesueur, 1810 are commonly known as sea-nettles. This particular species is only found in the Atlantic. The plate is produced by the talented polymath Ernst Heinrich Philipp August Haeckel (1834–1919)



Ships, Administrators and
Other State Actors

Lee Kong Chian
Natural History Museum

HMS 'Samarang' surveys the coasts of the East Indies and makes natural history collections between 1843 and 1846. Arthur Adams (1820–1878) is surgeon naturalist aboard the 'Samarang'. The amputation of the thumb is carried out by Thomas Oxley, who also writes an account of Singapore's natural history of his own 🌿**1849**. Adams publishes some of the earliest natural history observations of Singapore and the region in his 'Notes from a Journal of Research into the Natural History of the Countries Visited During the Voyage of H.M.S. 'Samarang' Under the Command of Captain Sir. E. Belcher', to give the account its full title. Adams describes the crustaceans from the 'Samarang' together with Adam White (1817–1879). The 'Samarang' arrives in Singapore for the first time on 19 June 1843.

1843.2



1843.3



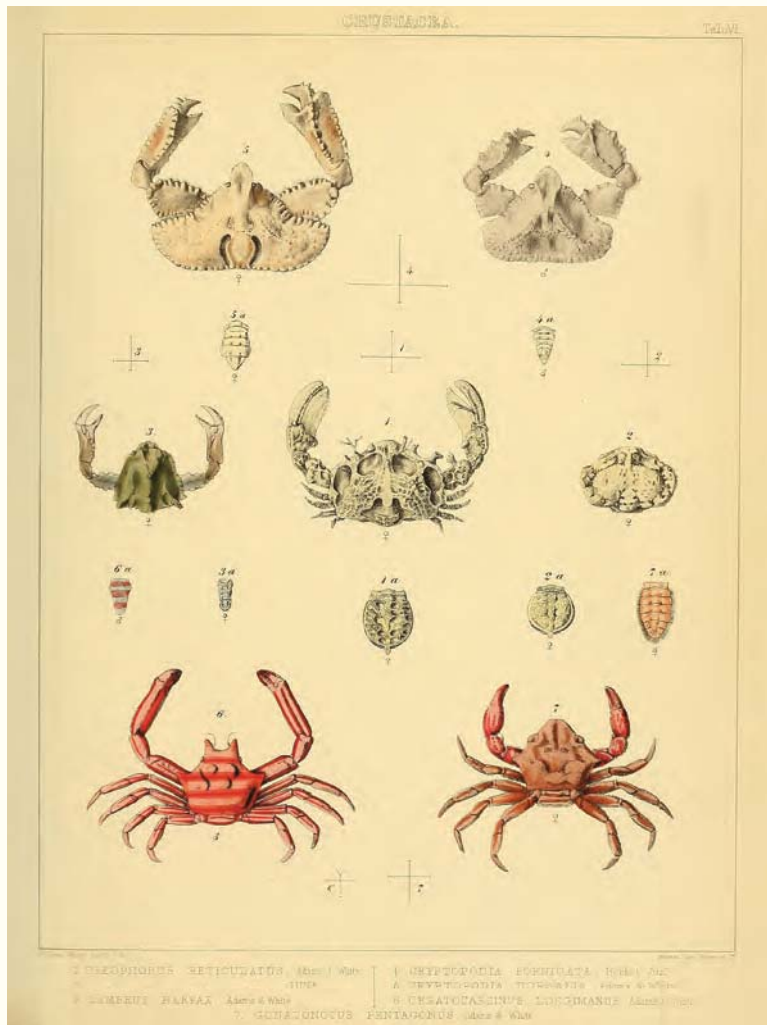
1843.4



1843.4

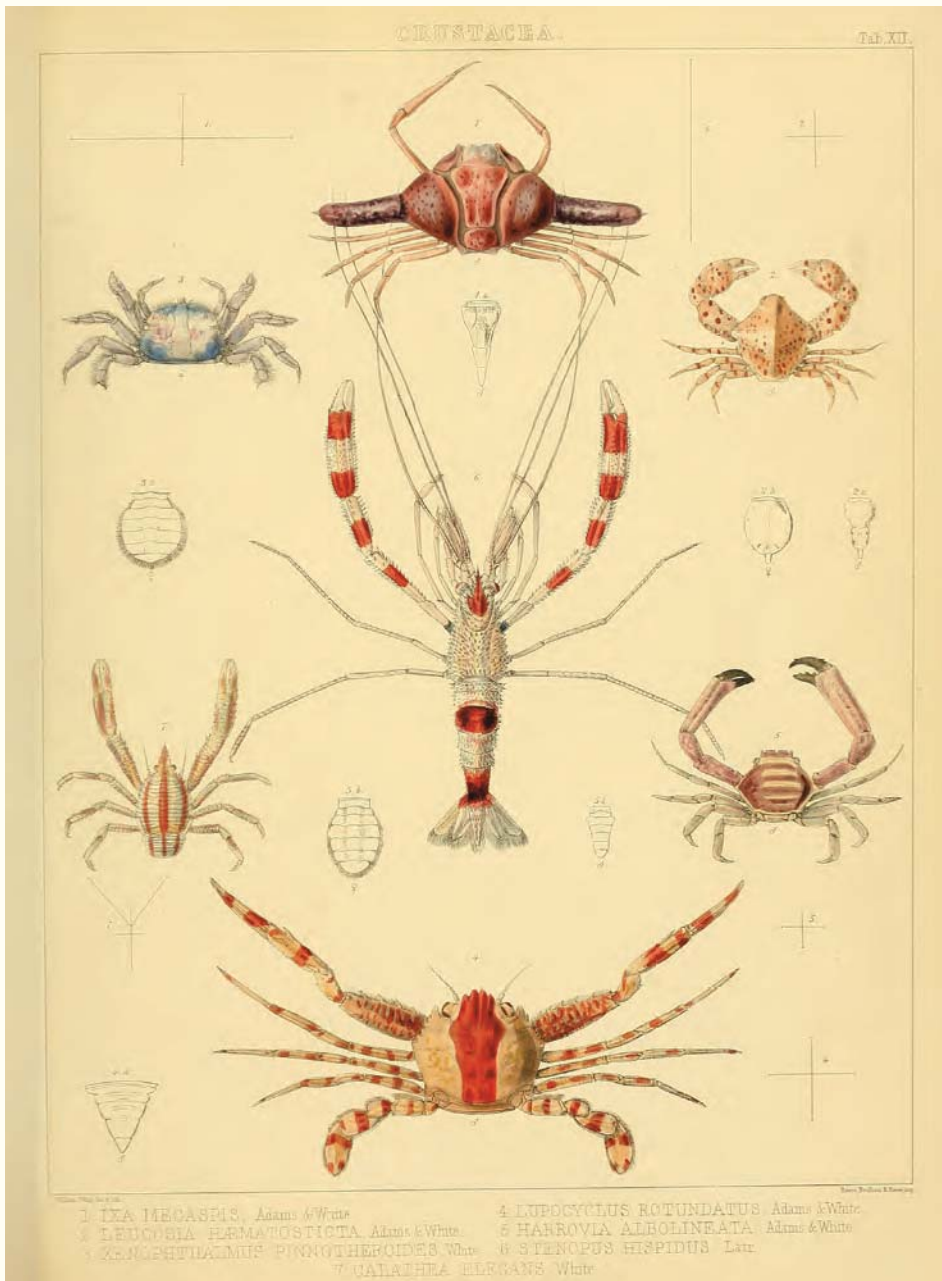
Adam White (1817–1879), zoologist at the British Museum who is hired by John Edward Gray 🌿**1832**. White studies the crustaceans collected by HMS 'Samarang' together with Arthur Adams. Their research is published in the 'Zoology of the ... 'Samarang''. The first crab to be named from Singapore is also the work of White 🌿**1845**

1843.5



1843.5

These two plates are from the section on crustaceans that is published in the 'Zoology of the ... 'Samaran'' by Arthur Adams and Adam White. Many new species from Southeast Asian waters are described in this work



1845 Dropped by some accident into the tropics

HMS 'Fly', Joseph Beete Jukes and Singapore's first named crab

“Altogether I was far more pleased with the aspect of Malacca than that of Singapore. Singapore looks like one of our spick and span new colonial towns dropped by some accident into the tropics, where it is totally out of place. ... on my asking a native boatman one day, which he liked best, he said he had been at Singapore, but did not like it at all; adding in his own language, ‘everybody was running here, running there, and doing something all the day long, and there was too much noise.’” — Joseph Beete Jukes

1845.1



1845.1

This painting shows HMS 'Fly' in around the year 1842, off Sydney, Australia

1845.2

The Broad-fronted Mangrove Crab is the first crab from Singapore to be named scientifically. It is currently known as *Metopograpsus latifrons* (White, 1847). This specimen is collected in 2003 from Bohol, the Philippines

1845.3

Joseph Beete Jukes (1811–1869), British geologist and explorer

1845.4

This drawing of the Singapore River is from the 'Narrative of the Surveying Voyage of H.M.S. Fly' by Joseph Jukes that is published in 1847

1845.5

This plate accompanies the first description of *Grapsus* (now *Metopograpsus*) *latifrons* by Adam White 🌿**1843**. It is the crab that is depicted at in the middle and the specimen is collected from Singapore by Hugh Cumming 🌿**1840**

Joseph Beete Jukes (1811–1869) is a geologist and explorer who sails to Singapore aboard HMS ‘Fly’. His observations on the natural history of the areas surrounding Melaka (“Malacca”) and Singapore are published in the ‘Narrative of the Surveying aboard HMS ‘Fly’ in 1847. Adam White ♣1843 gives the first scientific name to a crab from Singapore in an appendix to Juke’s ‘Narrative’, although the specimen is not collected by Jukes but by Hugh Cuming ♣1840. Jukes arrives in Singapore on 5 July 1845.

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1845.2



1845.3



1845.5



1845.4



1848

Particular antipathy to a European

Henry Keppel and the Water Buffalo

“The water-buffalo is an animal much in use at Sincapore for purposes of draught. It is a dull, heavy-looking animal—slow at work, and I think disgusting in appearance; but remarkable for sagacity and attachment to its native keepers. It has, however, a particular antipathy to a European, and will immediately detect him in a crowd.” — **Henry Keppel**

1848.1



1848.1

This drawing shows HMS 'Maeander' at the Spithead, off Hampshire, England

1848.2

HMS 'Maeander' at "New Harbour, Singapore". In command is Henry Keppel who visits Singapore on multiple occasions. Keppel Harbour in Singapore is named after him

1848.3

Henry Keppel (1809–1904), British admiral and observer of water buffaloes. His very long naval career is attested to by the title of his memoirs: 'A Sailor's Life under Four Sovereigns'

1848.4

Entitled "View of a country road in Penang", this painting from 1865 shows a Water Buffalo pulling a bull-ock-cart

1848.5

Water Buffalo, *Bubalus bubalis* (Linnaeus, 1758). This skull is a recent addition to the Museum

1848.6

"It is a dull, heavy-looking animal—slow at work, and I think disgusting in appearance; but remarkable for sagacity ..."

1848.2



Ships, Administrators and
Other State Actors

Lee Kong Chian
Natural History Museum

Henry Keppel (1809–1904) visits Singapore on several voyages. Keppel Harbour is named after him. His observations on natural history of Singapore and its surroundings are published in several narratives on these voyages. This account of the Water Buffalo is from his voyage aboard HMS ‘Maeander’, which arrives in Singapore on 20 May 1848.

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1848.4



1848.3



1848.5



1848.6



1853 Shells collected upon the adjacent coasts

Trade and specious locality information

“Shells collected upon the adjacent coasts and along the Straits of Malacca are brought in large quantities to Singapore for sale, and some excellent specimens were obtained.” — **Francis Lister Hawks**

1853.1



1853.1

This species is commonly known as the Toffee Apple Shell and scientifically as *Tudicula inermis* (Angas, 1878). It is first described and named *Tudicula inermis* in 1878 by the British naturalist and explorer George French Angas (1822–1886). In his original description of the species, Angas writes that it is a “remarkable shell ... two specimens of which were obtained from a dealer at Singapore; but the exact locality of their habitat could not be satisfactorily determined”. To this end, Angas settles on “Singapore?” when he describes this species. A decade later, British zoologist Edgar Albert Smith (1847–1916) revisits the issue of the true geographical origins of this species, concluding that it is restricted to Australian waters. Smith writes: “The presence of this shell at Singapore is easily accounted for, as large numbers of shells are taken there from North-west Australia by the Trepang traders and those engaged in the pearl-fisheries on the coast”. Francis L. Hawks makes the same observation several decades earlier when he visits Singapore

1853.2

This photograph is originally captioned: “Natives of Warrior Island, Torres Strait, preparing bêche-de-mer for the Chinese market”. Bêche-de-mer is the French name for sea cucumbers, which are the “Trepang” that Edgar A. Smith mentions. The photograph is taken by William Saville-Kent 🍀1871

1853.3

Matthew Calbraith Perry (1794–1858), American naval commander who leads the Perry Expedition. This Japanese woodcut is from about 1854

1853.2



Ships, Administrators and
Other State Actors

Lee Kong Chian
Natural History Museum

On the way to Japan to establish diplomatic relations, Matthew Calbraith Perry (1794–1858) and his ‘Black Ships’ of the United States Navy call at Singapore. Also known as the Perry Expeditions, the arrival of these ships in Japan set into motion events that result in the Meiji Restoration. The narrative of the voyages appear in 1856 and is authored by Francis Lister Hawks (1798–1866). The narrative contains the earliest known view of the Jurong River and other vignettes of Singapore from this time. Of natural history interest is that shells from surrounding areas are being sold at Singapore. This is to be expected given its position in regional trade and will require later researchers to treat specimens from “Singapore” with caution. Perry and his ‘Black Ships’ arrive in Singapore on 25 March 1853.

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1853.3



1853.4



1853.4

This depiction of the Jurong River that accompanies Francis Hawk's 'Narrative' of the Perry Expedition is the oldest known. Modern researchers suggest that the halo in the background may be from fires that are used to clear land for agriculture 🌱1907

1853.5



1853.5

Entitled “Gasshukoku suishi teitoku kōjōgaki” or “Oral statement by the American Navy Admiral”, this Japanese woodcut shows Perry (at the centre) reading a letter from the president of the United States, Millard Fillmore (1800–1874)

1855

The most elegant species known

Rajah Brooke and his butterfly

“My collection of butterflies was not large; but I obtained some rare and very handsome insects, the most remarkable being the *Ornithoptera Brookeana*, one of the most elegant species known. ... This species, which was then quite new and which I named after Sir James Brooke, was very rare.”

— Alfred Russel Wallace

1855.1



1855.2



1855.1

The Rajah Brooke's Birdwing is first described by Alfred Russel Wallace

♣1854 as *Ornithoptera brookiana*. Today this butterfly is known to be comprised of several subspecies. The one that Wallace names is currently known as *Trogonoptera brookiana brookiana* (Wallace, 1855). These two specimens are of the *Trogonoptera brookiana albescens* (Rothschild, 1895) subspecies. The specimen at the top is a male and the female is at the bottom

1855.2

James Brooke (1803–1868), British soldier and first Rajah of Sarawak

Ships, Administrators and
Other State Actors

Lee Kong Chian
Natural History Museum

James Brooke (1803–1868) is a British soldier who is made the Rajah of Sarawak by the Sultan of Brunei. The Brooke dynasty rules Sarawak until 1946. Brooke renders assistance to Wallace 🌿1854 during his travels around Sarawak. Other local rulers and colonial administrators play important roles in assisting naturalists and explorers 🌿1863. The butterfly, commonly known as the Rajah Brooke's Birdwing, is named by Wallace in the same year he meets Brooke. Wallace's description of the butterfly is read to the Entomological Society of London on 2 April 1855.

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1855.3

In some rare instances, the scientific name of an organism is so well known that it becomes the de facto common name. This is the case with the pitcher plant *Nepenthes rajah* Hook.f. that is named after James Brooke. The first specimens of this species are collected from Mount Kinabalu by Hugh Low 🌿1911 and like *Nepenthes lowii*, they are named by John Dalton Hooker (1817–1911), son of William Jackson Hooker 🌿1827. In naming *Nepenthes rajah*, the younger Hooker writes that “[t]his wonderful plant is certainly one of the most striking vegetable productions hitherto discovered, and in this respect is worthy of taking place side by side with the *Rafflesia Arnoldii*; it hence bears the title of my friend Rajah Brooke, of whose services in its native place it may be commemorative amongst botanists”. Sadly, this species shares a similar fate to that of the Neptune's Cup 🌿1819, 2011. The same qualities that captivate Hooker make this species highly sought after by collectors and it is now an endangered species

1855.4

From soldier to king, James Brooke goes from serving the British Crown to ruling a state of his own, as symbolised by coins minted with his likeness

1855.5

Hugh Low 🌿1911 collects a specimen of Pen-tailed Treeshrew “which he caught in the Rajah's house at Sarawak”. This painting from 1862 is entitled “View from near the Rajah's cottage” and may the same residence that Low refers to

1855.4



1855.5



1855.3



1868

A curious little crab

Cuthbert Collingwood and the Pill-making Crab

“A curious little Crab is common upon the sandy beaches everywhere on these coasts. I observed it abundantly at Labuan, and at Singapore and Johore, and other places, where, immediately after the tide has gone down, the smooth beach is covered with loose, powdery sand and holes of various sizes, from such as would admit a small pea ...” — **Cuthbert Collingwood**

1868.1



1868.1

Collingwood gives a lively description of the behaviour of the “Pill-making Crab” that he observes in Johor, Labuan and Singapore. It is commonly known today as the Sand Bubbler Crab (*Scopimera intermedia* Balss, 1934). This specimen is collected in 2000 from Lim Chu Kang in Singapore

1868.2

Sand Bubbler Crab ‘pills’ are clearly visible in the photograph that is taken in 2017 at Berlayer Creek in Singapore

1868.3

This plate accompanies Collingwood’s description of seaslugs that is published in ‘Rambles of a Naturalist’ in 1868

British naturalist Cuthbert Collingwood (1826–1908) comes to Southeast Asia as surgeon naturalist aboard HMS ‘Serpent’. Collingwood makes ethnographical and natural history observations and collections during this journey. He makes the earliest published observations of the symbiosis between sea anemones and anemone fishes. Collingwood also describes the pellet-making behaviour of the Sand Bubbler Crab which he names the “Pill-making Crab”. Near-identical observations are made in Singapore by Michael W. F. Tweedie 🍀1946 almost a century later. Collingwood’s observations appear in his book ‘Rambles of a Naturalist’ that is published in 1868.

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1868.2



1868.3



Group of Nudibranchs from the China Sea.
Localities (from left to right): 1. Ke-lung; 2. Haitan Straits; 3. Ma-kung; 4. Labuan; 5. Raleigh Rock; 6. Fiery Cross Reef.

1875

Too youthful appearance

Pieter Bleeker in Southeast Asia

“When Pieter Bleeker (10 July 1819–23 January 1878) arrived in Batavia (now Jakarta) on 10 March 1842 at the age of 22, nobody could have foreseen that this military surgeon third class, with a ‘too youthful appearance’, as he described himself, would have such an impact on science in Southeast Asia”

— Maurice Kottelat

1875.1



Pieter Bleeker (1819–1878) is a Dutch doctor who spends four decades in Southeast Asia, mostly in Indonesia. During this time he makes extensive collections, especially of fish. He also forms several scientific societies but runs afoul of Dutch colonial authorities due to his often-critical comments. He returns to the Netherlands in 1880 with over 200 boxes of specimens. His best-known work is the ‘Atlas Ichthyologique’, which establishes him as a great ichthyologist. Bleeker names and describes many species of fish from Singapore, amongst them is *Ctenogobius* (now *Amoya*) *gracilis* that he names in 1875.

1875.2



1875.1

The Singapore Snake Eel is first described by Pieter Bleeker in the ‘Atlas Ichthyologique’. In his account, Bleeker states that he collects the specimen from Singapore in October 1860. This plate accompanies Bleeker’s first description of the species. The Singapore Snake Eel is the third coloured drawing from the top. This species is currently known as *Ophichthus singapurensis* Bleeker, 1864

1875.2

Pieter Bleeker (1819–1878), Dutch doctor and ichthyologist

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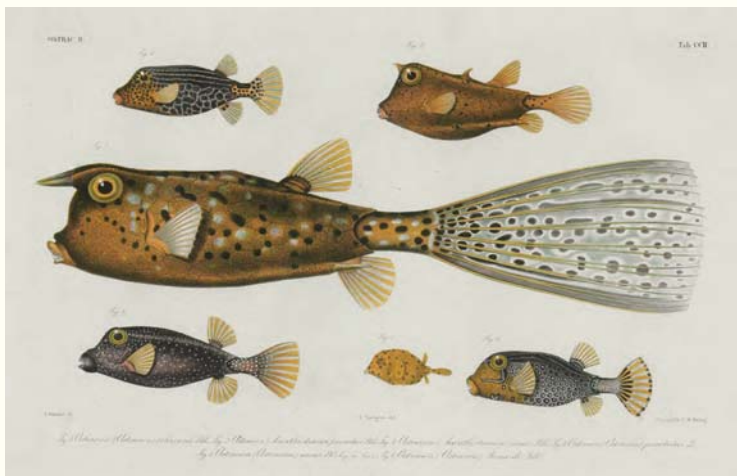
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2000

1875.3

These four plates from Bleeker's 'Atlas Ichthyologique' show the great variety of both the fishes illustrated in this work, as well as of his collections from around the region. It is these very plates that make Eric R. Alfred decide to want to work in the Raffles Museum 🍀1966

1875.3



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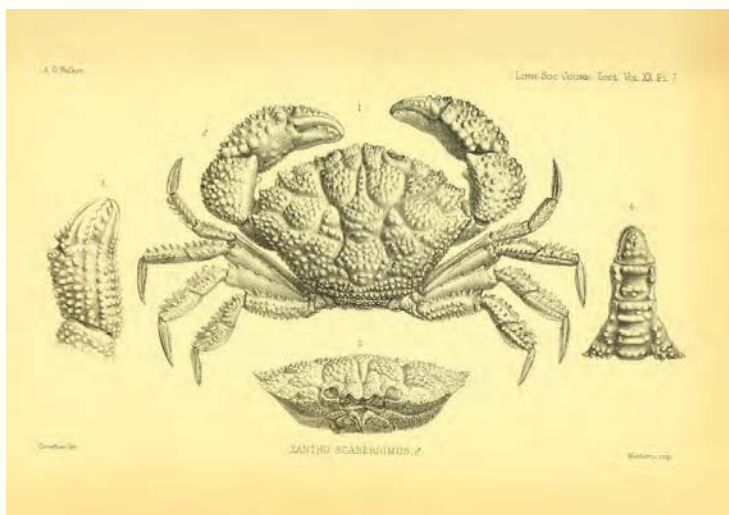
1895

Most favourite dredging-ground

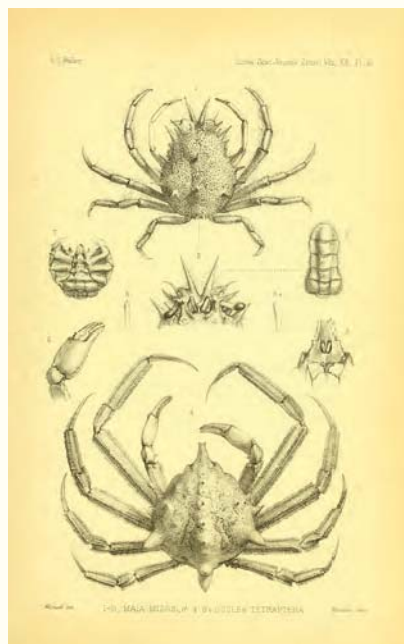
The Archer brothers of Liverpool

“The new harbour, a narrow strait between the islands of Blahan Moti and Ayan Brani on the one side and Singapore Island itself on the other, was the most favourite dredging-ground, as it was conveniently situated and the bottom abounded in animal life.” — **Samuel Archer**

1895.1



1895.2



Samuel Archer (1836–1902) is an army doctor who makes extensive collections while posted overseas and sends them to his brother Francis (1839–1892), a lawyer. Here Samuel Archer is quoted describing his favourite collecting spot between Sentosa Island (formerly Pulau Blakang Mati, “Blahan Moti”) and Pulau Brani (also known as Pulau Ayer Brani, “Ayan Brani”). Originating from Liverpool, the Archer brothers are interested mainly in marine shells but they also accumulate other marine invertebrates. For example, the brothers send a collection of crustaceans from Singapore to Alfred Oston Walker (1832–1925), who names several new species. The Singapore shells pass to John Read le Brockton Tomlin (1864–1954) who in turn sends some of them to fellow malacologist Henry Augustus Pilsbry (1862–1957). Two of these are determined to be new species and are named *Tornatina* (now *Acteocina*) *capitata* and *Tornatina* (now *Acteocina*) *singaporensis* by Pilsbry. He describes them in an article that is published on 2 February 1895.

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1895.1

These are two of the plates that accompany Alfred O. Walker's paper on crustaceans from Singapore in which several new species are described. These new species include *Xantho* (now *Demania*) *scaberrima* that is figured on the left plate, and *Maia* (now *Holthuijsa*) *miersi* that is figured on the upper part of the right plate

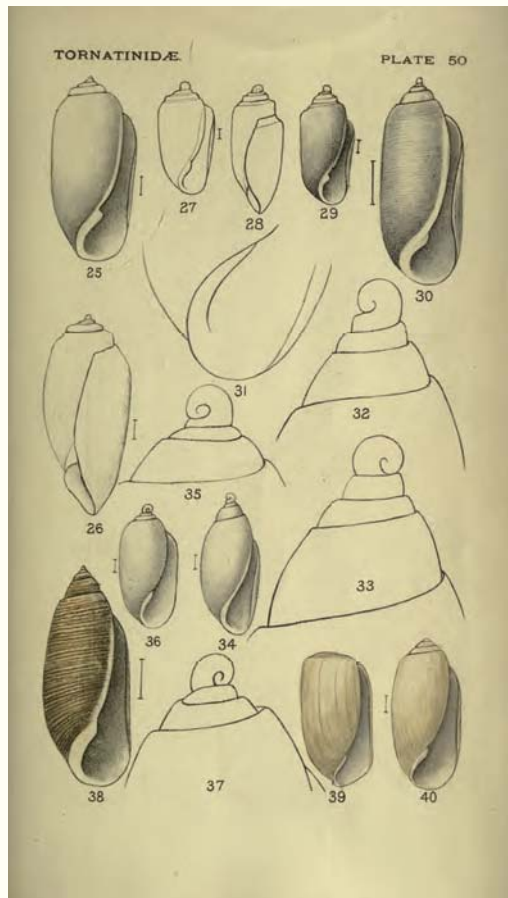
1895.2

Francis Archer (1839–1892), a British lawyer. Francis receives large collections of marine shells from Singapore from his brother Samuel

1895.3

This plate accompanies Henry A. Pilsbry's first descriptions of *Tornatina* (now *Acteocina*) *capitata* (Figs. 35–37) and *Tornatina* (now *Acteocina*) *singaporensis* (Figs. 31–34). The specimens that are figured here are collected by Samuel Archer from Singapore

1895.3



**1895.4**

The two photographs at the top show *Holthuijsia miersi* (Walker, 1887). The one on the left is the specimen that is collected in Singapore by Samuel Archer and examined by Walker. The one on the right is from Pulau Semakau in Singapore. The photograph at the bottom shows *Demania scaberrima* (Walker, 1887) from Pattani in Thailand

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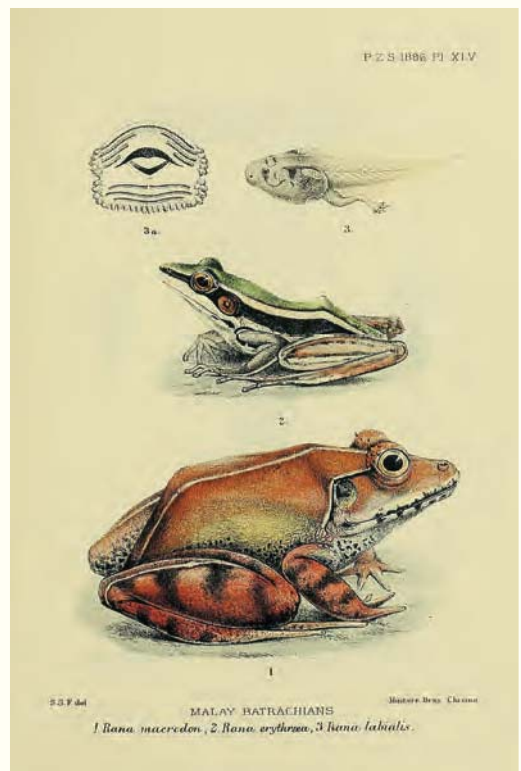
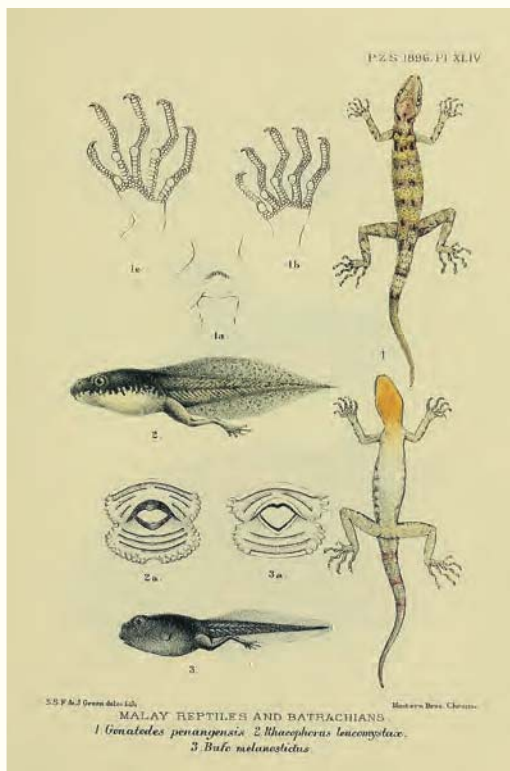
1896

The noise it makes at night

Stanley S. Flower and the Banded Bullfrog

“I have been told by both English and natives that this Frog was unknown in Singapore until some nine or ten years ago, when it was introduced by a half-caste, why it is not known, and that it rapidly spread about the island. It is now well-known as the ‘Bull-frog’ by the English in Singapore, and detested for the noise it makes at night. These rotund animals were common about Tanglin, and could be heard croaking in March and April (probably in other months also) every night after a raining day. Their voice is very loud and can be heard from some distance; the croak is a deep guttural ‘wau-auhhhhk,’ very strident and prolonged.” — Stanley Smyth Flower

1896.1



Stanley Smyth Flower (1871–1946) meets many eminent naturalists (including Charles Darwin) 🍀1903 from a very early age due to his father's appointment at the Royal College of Surgeons. Flower joins the army and is posted to India and the Straits Settlements. During this time, he makes many observations on the vertebrates of the Malay Peninsula. After retiring in 1924, Flower continues to make and publish observations on animals in various zoos in England. Flower is the first person to record the presence of the Banded Bullfrog in Singapore when he makes the observations quoted here in April 1896.



1896.2



1896.1

These plates accompany Flower's article on reptiles and amphibians from the Malay Peninsula. Amphibians are sometimes called "batrachians" in the older literature. Flower reports the presence of the Banded Bullfrog in Singapore for the first time in this same article

1896.2

This specimen of Banded Bullfrog (*Kaloula pulchra* Gray, 1831) is collected in 1904 from Singapore

1911

After my friend Mr. Hugh Low

Hugh Low and the Pen-tailed Treeshrew

“Mr. Low brought with him from Borneo some mammalia and reptiles in spirits; amongst them, he informed me, was a ‘rat-like animal with a pennated tail, which he caught in Rajah’s house at Sarawak.’ On examining the collection, I was much pleased at discovering in the animal so characteristically described, a new genus of Insectivora ... *Ptilocercus Lowii* ... I have named this species after my friend Mr. Hugh Low, who has much enriched our knowledge of the natural productions of Borneo.” — John Edward Gray

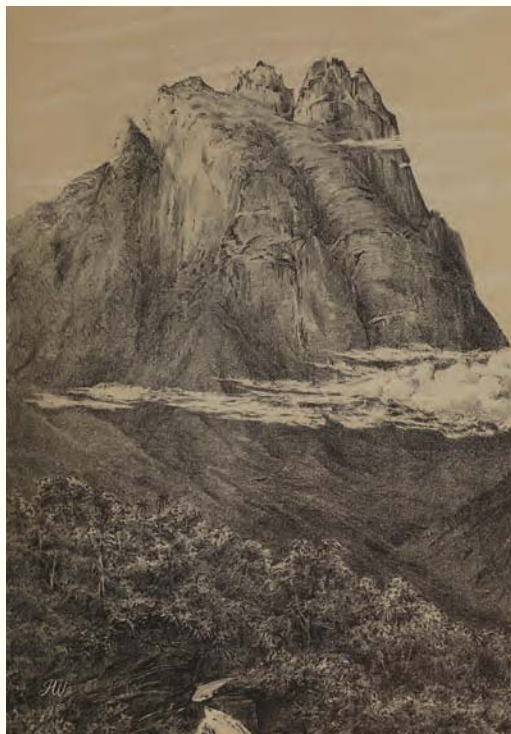
1911.1



1911.2



1911.3



1911.4



1911.1

This painting accompanies the first description of the Pen-tailed Treeshrew by John Edward Gray

♣1832. Gray names this species *Ptilocercus lowii* after its collector

1911.2

This specimen of a female Pen-tailed Treeshrew is collected in 1938 from the island of Labuan in Malaysia

♣1974. The Pen-tailed Treeshrew is remarkable for being able to imbibe copious amounts of alcohol in the fermenting nectar of the Bertam Palm (*Eugeissona tristis* Griff.) without adverse effects. Scientists equate the amount of alcohol consumed to an adult human female drinking nine glasses of wine in twelve hours

1911.3

Mount Kinabalu is depicted in this engraving that is published in 1893. The highest point on the mountain is named after Hugh Low, who is the first person known to ascend the mountain

1911.4

This engraving (also from 1893) is entitled "View from Kina-Balu. (8,000 ft) S.E.". Hugh Low is the first person to lay eyes upon this view—and write about it

1820

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♣ 1911

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1980

2000

British botanist and colonial administrator Hugh Low (1824–1905) catches the first known specimen of the Pen-tailed Treeshrew in the residence of James Brooke

♣**1855**. Low is also the first recorded person to summit Mount Kinabalu in Borneo in 1851. This leads to the mountain's highest peak (and the tallest point in western Southeast Asia) being given the seemingly ironic name of Low's Peak. Despite John E. Gray ♣**1832** formally naming the Pen-tailed Treeshrew in 1848, procuring specimens for the Raffles Museum proves difficult. Richard Hanitsch ♣**1919** reports that a specimen is sent to him for identification but the owner is unwilling to part with it. This specimen is sent to the Museum in 1911.

1911.5



1911.6



1911.7

**1911.5**

A commemorative plaque indicates this as one of the oldest Rubber trees in Malaysia ♣**1907**. According to historian John H. Drabble, the first trees are brought from Singapore to Kuala Kangsar (Perak) in 1877. There they are planted at the British Residency. As British resident at the time, Low plays a role in supervising them

1911.6

Low's Pitcher Plant. Low collects specimens of several species of these large pitcher plants on Mount Kinabalu and sends them to John Dalton Hooker (1817–1911), son of William Jackson Hooker ♣**1827**. The junior Hooker names *Nepenthes lowii* after its collector and writes that it is “[a] noble species with remarkable pitchers, quite unlike those of any other species”. Low also collects the first known specimens of *Nepenthes rajah* ♣**1855**

1911.7

A photograph that is taken in the 1900s in Singapore. Hugh Low is seated third from right. Seated on Low's left is Sultan Idris Murshidul Azzam Shah of Perak 🍀1894. This is the same Sultan whose replica regalia are stolen from the Raffles Museum. Seated on Low's right is Frederick A. Weld 🍀1884, 1887

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Part 5

Part 5 Coming to the East

Collectors, Travellers and Other Visitors

In addition to the many people who come to Singapore while on government service (see Part 4), there are many who come or stay, as it were, on their own volition.

Ida Pfeiffer ♣1852 and Isabella Bird ♣1879 are two such women. Pfeiffer is one of the earliest female explorers and travel writers. Plagued by poor health, Isabella Bird travels on the advice of her doctor. Bird is most well-known for her book, ‘The Golden Chersonese’. Natural history observations are found in the accounts written by both women.

Pfeiffer is also a collector of specimens, often selling some of them to museums. Alfred Russel Wallace ♣1854 is similar in this respect, funding his research and travels by selling some of his collections. A young Malay named Ali ♣1856 is a close associate of Wallace. Ali becomes Wallace’s most trusted assistant and it is now thought that many of the famous Wallace bird specimens are actually collected by Ali. The “Prince of Shell Collectors”, a title given to Hugh Cuming ♣1840 provides a good idea of his motivations for journeying east.

Naturalists and zoologists also visit Singapore. This is not surprising considering the country’s biodiversity and location along major shipping routes. These include George Bennett ♣1830, Fedor Jagor ♣1857, François de Laporte de Castelnau ♣1861, Odoardo Beccari ♣1866 and Georg Duncker ♣1904. Francis Perch Bedford and William Forster Lanchester are two Cambridge zoologists who spend several months at Singapore and Melaka and make two interesting discoveries ♣1898.

5.1



The life of the naturalist Robert W. C. Shelford ♣1872 is the reverse of the others discussed here. Born in Singapore, Shelford is educated in England but comes east to the Sarawak Museum and then goes back again to Oxford.

The French customs officer Jules Itier ♣1844 goes to China as part of the Lagrené Mission but after his visit to Singapore makes his way home on commercial ships. He makes the earliest daguerreotypes of Singapore that still exist. Similarly, Eduard von Martens ♣1862 sails east as part of the official Prussian Expedition to East Asia. At Singapore, however, he falls out with the expedition's leader and commences to travel on his own.

A section on exploration, travel, voyages and ships is not complete without a story of a 'sea-serpent'. This is exactly what Edward H. Pringle sees during his voyage on SS 'Rangoon' to Singapore ♣1869. What he discovers is somewhat anti-climactic. But the advice he gives to all who follow remains as vital today as it does when he first lays eyes on the creature.



5.1

These graphics accompany advertisements for the British India Lines and Royal Mail Steam Packet Company. Ships run by companies like these are vital conveyors of people, mail and natural history material

1830

There was much regret when he died George Bennett and the Siamang

“During a visit to Singapore, in 1830, I procured, through the kindness of E. Boustead, Esq., a male specimen of the Ungka ape, (*Hylobates syndactyla*.) ... He would drink tea, coffee, or chocolate, but neither wine nor spirits. ... and no child with the ‘sweetest tooth’ ever evinced more delight after ‘bons bons’ than did this little creature. ... there was much regret when he died ... His skin, properly stuffed and preserved in its natural erect attitude, was kept to be consigned, on our arrival in England, to one of the glass-cases in the British Museum, where he was eventually deposited.” — **George Bennett**

1830.1



George Bennett (1804–1893) is a British physician and zoologist who makes two voyages to Australia. He settles there permanently in 1836 and helps to establish the Australian Museum and makes important contributions to the study of the Duck-billed Platypus, *Ornithorhynchus anatinus* (Shaw, 1799). Bennett acquires a Siamang (which he calls an “Ungka”) on one of his return journeys and makes extensive observations of its habits and behaviour. He departs from Singapore with the Siamang on 18 November 1830.

1830.2



1830.3



1830.1

These drawings accompany George Bennett's account of the Siamang that he acquires at Singapore. “Ungka”, the name that Bennett uses for the Siamang actually refers to another species of gibbon. Due to taxonomic changes, the scientific name “*Hyllobates syndactyla*” is no longer in use for this species. The widely-accepted scientific name for the Siamang is *Symphalangus syndactylus* (Raffles, 1821). The species is first described by Raffles in 1821

1830.2

This Siamang skull is from a specimen that is collected in 1914 in Korinchi, Sumatra, Indonesia

1830.3

George Bennett (1804–1893), British physician and zoologist

1820

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1840

The prince of shell-merchants

Hugh Cuming in Singapore

“The prince of shell-merchants, of course ... is Mr. Cuming, of 80, Gower Street, who can supply whole collections, and many costly varieties which no-one else could obtain.” — Samuel Pickworth Woodward

1840.1

The Singapore Keyhole Limpet is first named *Fissurella singaporensis* by Lovell Reeve 🌿1853 using material that is collected in Singapore by Hugh Cuming. The species is currently known as *Diodora singaporensis* (Reeve, 1850). These are two specimens from Singapore: the one on the left is collected in 2009 from Pulau Semakau and the one on the right is collected in 1986 from Pulau Salu

1840.2

Hugh Cuming (1791–1865), the “Prince of Shell Collectors”

1840.1



Hugh Cuming (1791–1865) is amongst the most prolific of all collectors of natural history material. Stanley Peter Dance, a historian of malacology, calls Cuming the “Prince of Shell Collectors”. His shell collection of 82,992 specimens is now at the Natural History Museum in London. His botanical collection consists of 130,000 plant specimens. The true number of specimens of other animals collected by him is likely never be known. Cuming collects specimens of the first species of crab from Singapore to be described and named 🍀1845. Cuming departs Singapore and arrives home in London on 5 June 1840.

1820

🍀 1840

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2000

1840.2



1844

Exchanging their natural products

Jules Itier, photography and trade in early Singapore

“... [Europeans] come, as happens in Singapore exchanging their natural products, especially for the commerce of China, consisting of swallows’ nests, sea cucumbers, sharks’ fins, pearls, mother-of-pearl, dyes, sandalwood, for the manufactures of Europe, sago, cinnamon, waxes, tortoiseshell, etc.”

— Alphonse-Eugène-Jules Itier

1844.1



Alphonse-Eugène-Jules Itier (1802–1877) is a French customs officer and an early maker of daguerreotypes. This early photographic process is named after Louis-Jacques-Mandé Daguerre. The process gains worldwide recognition in 1839 and Itier makes the earliest surviving daguerreotypes of Singapore. One is taken by placing his camera (with permission) on the altar of a Chinese temple. Itier also makes observations of the commercial life of Singapore, including the trade in natural commodities. Itier comes to Singapore as part of the French Lagrené Mission. The Treaty of Whampoa with China is the main purpose of this mission. Although the first half of his journey east is in an official capacity, he returns home on commercial ships. Itier arrives in Singapore for the first time on 3 July 1844.

1844.2



1844.1

Made by Jules Itier in 1844, this is one of the earliest surviving daguerreotypes of Singapore. It shows Boat Quay and the Singapore River from Government Hill (today known as Fort Canning). It is made using technology that is invented (and named after) Louis-Jacques-Mandé Daguerre just five years earlier

1844.2

These are some of the goods that Itier observes being traded in Singapore. They include sea-cucumbers, pearls, mother-of-pearl, sago, cinnamon and tortoiseshell. The trade in sea-cucumbers has implications for natural history 🌿1853

1820

🌿 1844

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1852

Forthwith to eat it

Ida Pfeiffer and eating snake in the tropics

“On the first day the sailors caught a boa ... The sailors pulled its skin off, and were then going to throw it into the sea; but I advised them not to do that, but to eat it. They laughed at me, of course, and recommended me, if I liked it, to eat it myself ... I immediately had a slice cut off and broiled, and began forthwith to eat it ... When they saw that, the boldest among them stepped forward and asked me to let him taste it. I gave him a little bit, which he so much approved of that the others soon followed ...” — **Ida Laura Pfeiffer**

1852.1



1852.1

Stowaway pythons appear to be a relatively common experience on ships sailing east

1852.2

Alfred Russel Wallace also has a python experience of his own, as is depicted in this engraving from the ‘Malay Archipelago’. It is captioned: “Ejecting an intruder” 🌿 **1854**

1852.3

This specimen of a partially-dissected Reticulated Python, *Broghammerus reticulatus* (Schneider, 1801), is from Singapore

1852.4

These are two of the species that are named after Ida Pfeiffer. Both of these specimens are collected in Indonesia. The specimen of Ida’s River Prawn, *Macrobrachium idae* (Heller, 1862), is collected in 1982 from West Sumatra. This specimen of Pfeiffer’s Sand Loach, *Nemacheilus pfeifferae* (Bleeker, 1853), is collected in 1996 in Sumatra

1852.5

Ida Laura Pfeiffer (1797–1858), Austrian explorer and travel writer

1852.2



Austrian Ida Laura Pfeiffer, née Reyer (1797–1858) is one of the earliest female explorers and travel writers. She makes two around-the-world journeys, visiting and writing about Singapore on both sojourns. She makes natural history collections throughout her travels, and like Wallace 🍀1854 she sells some of these to museums. Numerous species are named after her, including the loach, *Nemacheilus pfeifferae* (Bleeker, 1853), and a freshwater prawn, *Macrobrachium idae* (Heller, 1862). On both her trips, she eats what she calls the “boa” (most probably the Reticulated Python), the second instance she recounts here takes place on 1 May 1852.

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🍀 1852

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1852.3



1852.4



1852.5



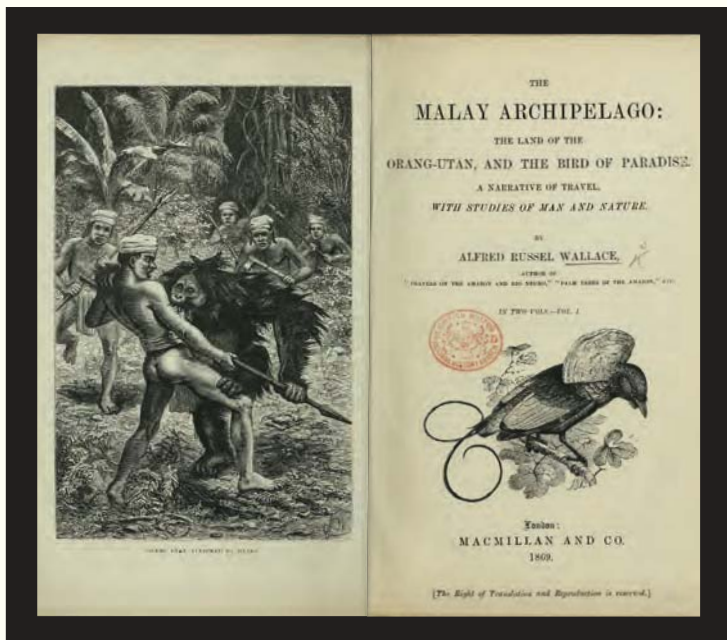
1854

He decided on Singapore

The arrival of Alfred Russel Wallace

“It was due to his close study of the Insect and Bird Departments of the British Museum that he decided on Singapore as a new starting-point for his natural history collections.” — **James Marchant**

1854.1



1854.1

The frontispiece and title-page from 'The Malay Archipelago' by Alfred Russel Wallace. These pages are from Charles Darwin's 🌿1903 copy of the book that is now at the Natural History Museum in London. The digital version of this book is part of the Biodiversity Heritage Library, an online repository of natural history works. Such collections are invaluable research tools. The Museum works with the Biodiversity Library of Southeast Asia 🌿2017 to digitise natural history works relating to the region

1854.2



Alfred Russel Wallace (1823–1913) is famous for co-discovering the theory of evolution by natural selection and writing ‘The Malay Archipelago’. He collects a staggering 125,660 specimens while in Southeast Asia. In Singapore, he collects 520 species of beetles in only a month. Better known for collecting insects 🍀1855, Wallace is also interested in land snails and even publishes a paper on them. Many land snails collected by Wallace are sold to Hugh Cuming 🍀1840. Wallace first arrives in Singapore on 18 April 1854.

1854.2

This map shows Wallace’s journeys throughout the portion of Southeast Asia that is often called the Malay Archipelago

1854.3

This plate of shells accompanies Wallace’s only paper on molluscs. This paper lists three species that are collected from Singapore

1854.3



1854.4



1854.4

These are the three species of land snails that are collected by Wallace when he visits Singapore. These specimens are collected in Singapore between 1999 and 2017. From top to bottom: Lampstand Land Snail, *Geotrochus lychnia* (Benson, 1852); Humphrey's Land Snail, *Hemiplecta humphreysiana* (I. Lea, 1840); Striated Quantula, *Quantula striata* (J. E. Gray, 1834). The last of these species appears elsewhere in this book 🌿1839, 1943

1854.5

Alfred Russel Wallace (1823–1913), explorer, naturalist and co-discoverer of the theory of evolution by natural selection. This photograph is taken in 1862 in Singapore

1854.6

This autograph of Wallace is donated by the British zoologist Frank Fortescue Laidlaw (1876–1963) to the Museum in 1950. The Museum's 'Annual Report' for 1950 features the text of this type-script and a facsimile of the autograph. The original is now held by the National Museum of Singapore 🌿1960

1854.5



ALFRED RUSSEL WALLACE

1823 - 1913

Wallace was one of the greatest of the early English naturalist-explorers. His interest in botany and entomology began at an early age and in 1848 he first visited the tropics, accompanying H.W. Bates to the Amazon. His account of this expedition "Travels on the Amazon and Rio Negro", was published in 1853 but unhappily the greater part of his collections were lost by fire at sea.

In 1854 to 1862 he made his famous tour in the Malay Archipelago visiting Malaya, the islands on the Sunda Shelf, Celebes, Timor, the Moluccas and the Papuan group, including New Guinea. His sojourn in Malaya was regrettably brief and comprised only visits to Singapore and Malacca and an ascent of Mount Ophir. In spite of frequent ill health the sum of his collections and observations made on this expedition were enormous, and his account of them in "The Malay Archipelago" which appeared in 1869 is one of the classics of natural history. His name is perpetuated in the designation "Wallace's Line", applied to the boundary at which the Oriental and Australasian faunas meet and which runs at its point of greatest emphasis, between the islands of Bali and Lombok.

It was during an attack of fever while at Ternate in 1858 that he arrived at a philosophical conception of the origin of species by natural selection. He drafted his ideas on the subject and posted the essay to Charles Darwin in England, into whose hands it came shortly before the completion of "The Origin of Species". It was clear that both had arrived independently at the same hypothesis, and a joint paper combining Wallace's essay and an abstract of Darwin's views was read to the Linnean Society on July 1 of that year.

The autograph of Wallace which is exhibited was presented to the Museum by Dr. F.P. Laidlaw in 1950.



1856

Were it not for the assistance of Ali Ali comes to Singapore

“Wallace’s results during his expedition and his scientific writings that resulted would have been very much poorer were it not for the assistance of Ali. Ali was not always a collecting assistant, but first a cook and general servant whose abilities gradually saw him change into a hunter and collecting assistant and, finally, to Wallace’s trusted head man. ... A significant percentage of Wallace’s impressive tally of 125,660 natural history specimens must have been collected by Ali, perhaps even the majority of the birds. ... Wallace could not have achieved what he did without his ‘faithful companion’, Ali.”

— John van Whye and Gerrell M. Drawhorn



Ali meets Alfred Russel Wallace 🍀 **1854** sometime in 1855 in Sarawak. Ali goes from cooking and cleaning to being Wallace's most trusted assistant. Ali and Wallace will collect together around Indonesia, Papua New Guinea and Singapore. Historians believe that Ali may be responsible for collecting the majority of Wallace's bird specimens. Though he never publishes a book or paper, Ali makes profound contributions to natural history by helping to collect and prepare the thousands of specimens now in the world's great museums. Ali arrives in Singapore with Wallace on 17 February 1856.

1820

1840

🍀 **1856**

1856.1

The King Bird-of-Paradise, *Cicinnurus regius* (Linnaeus, 1758), is one of the species of birds-of-paradise that Ali and Wallace collect. The specimen with its wings closed is from New Guinea. The other does not have any collecting information associated with it

1856.2

A close-up view of the green disk feathers that adorn the two 'wires' on the tail of the King Bird-of-Paradise

1856.3

This painting of the King Bird-of-Paradise is from 'Monograph of the Paradiseidae' by Richard Bowdler Sharpe (1847-1909)

1856.4

Ali (no dates), natural history collector and assistant to Wallace. When he leaves Southeast Asia, Wallace gives his guns and other supplies to Ali. This photograph of Ali is taken while they are at Singapore in 1862

1856.3



1880

1900

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2000

1856.4



1857

Comparable to a waterspout Fedor Jagor in Southeast Asia

“More than the tigers one fears the termites (‘raja’ or ‘ani-ani’, or ‘semut puti’ meaning white ants) although at most they are but a bother to people when the winged males and females erupt from the ground in dense swarms during the mating season, comparable to a waterspout, fly into the rooms, lose their wings after a brief flight, and fall to the ground.” — **Andreas Fedor Jagor**

1857.1



1857.1

This is the species of termite that Fedor Jagor refers to in his account. They are known scientifically as *Macrotermes gilvus* (Hagen, 1858)

1857.2

The damage to this piece of wood is the result of *Macrotermes gilvus* termites feeding on it

1857.3

Jagor collects a specimen of this skink during his visit to Singapore. Jagor's specimen is described by Wilhelm Peters as *Euprepes punctatosriatus* in 1871. Unbeknownst to Peters, this species is already named *Eumeces* (now *Lygosoma*) *bowringii* seven years earlier by Albert C. L. G. Günther 🍀1864. The specimen in the photograph is collected in 1999 at Kent Ridge in Singapore

1857.2



Andreas Fedor Jagor (1816–1900) is a German explorer and ethnographer who makes three expeditions to Southeast Asia. Most of his zoological collections are made on his first expedition. In Singapore, he collects a specimen of skink that is named *Euprepes punctatostriatus* by Wilhelm Peters in 1871. However, the same species is already named *Lygosoma bowringii* in 1864. Jagor also publishes an account of his first expedition which features an early scene of the Rochor River. Jagor arrives for the first time in Singapore in 1857.

1820

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1857.4

This sketch of the Rochor River accompanies Jagor's account of his first trip to Southeast Asia

1857.5

This print of the Rochor River near Kampung Bugis ("Campong Buggis") is made in the 1870s or 1880s and is similar to the sketch made by Jagor

1857.6

Andreas Fedor Jagor (1816–1900), German explorer and ethnographer

1857.4



1857.5



1857.6



1857.3



1861

Fallen from heaven

François de Laporte de Castelnau and 'fish rain' in Singapore

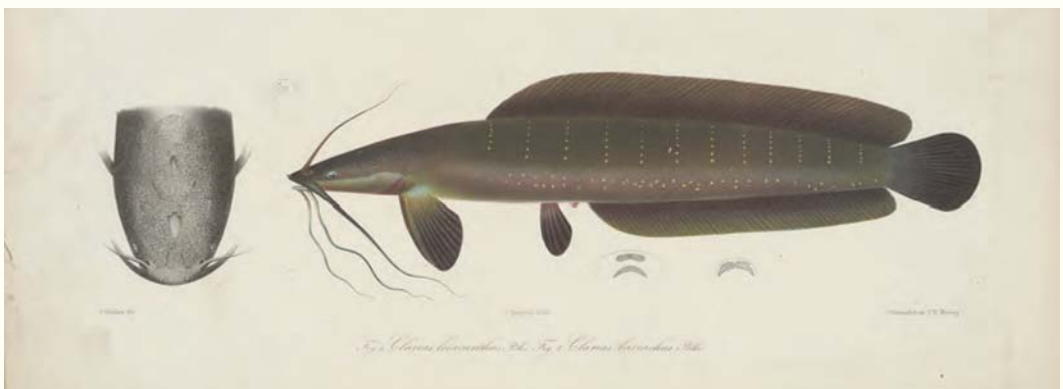
“We experienced a shock of earthquake here on the 16th of February last. It was followed by rain in torrents on the 20th, 21st and 22nd. When the sun came out again I saw a number of Malays and Chinese filling their baskets with the fish contained in the pools formed by the rain. They told me the fish had ‘fallen from heaven,’ ... Is it admissible to suppose that a waterspout, in passing over some large river of Sumatra, had drawn up the fish and carried them over?”

— François de Laporte de Castelnau

1861.1



1861.2



1861.1

Castelnau is not the first person to report a 'fish rain'. This engraving from the 1500s shows a 'fish rain' in Northern Europe

1861.2

The fish that fall in the 1861 'fish rain' in Singapore are identified by Castelnau as the Walking Catfish or *Clarias batrachus* (Linnaeus, 1758). The common name of this species comes from its ability to 'walk' out of the water and slither over wet ground. This plate is from Pieter Bleeker's 'Atlas Ichthyologique' 🌿1875

The French naturalist François Louis Nompar de Caumont La Force, comte de Castelnau (1810–1880) makes ichthyological collections in the region. One of the fishes he names is the Brick Soldierfish, *Myripristis amaena* (Castelnau, 1873), which is first recorded in Singapore waters in 2013. Castelnau is well-known for his observation of a case of ‘fish rain’ in Singapore. This alleged ‘fish rain’ takes place after tremors from an 1861 earthquake in Indonesia that are also felt in Singapore 🌿**1833**. He identifies the fish as the Walking Catfish, *Clarias batrachus* (Linnaeus, 1758). It is more likely that the fish slither from nearby streams after the rain as they are known to do. The alleged ‘fish rain’ takes place on 22 February 1861.

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🌿 **1861**

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1861.3

This is a drawing of the “*Ompax spatuloides*” that accompanies Castelnau’s first description of it. Castelnau receives this drawing and a letter from Carl Theodore Staiger, the director of the Brisbane Museum. Staiger explains that when he is served this already-cooked fish, he realises it is a unique species and makes a drawing of it before eating it. Castelnau describes “*Ompax spatuloides*” as a new species in 1879 based on this drawing and information. Decades later, it is revealed that Staiger and Castelnau are victims of a hoax. The fish Staiger eats is comprised of different parts from different species, some perhaps not even fish!

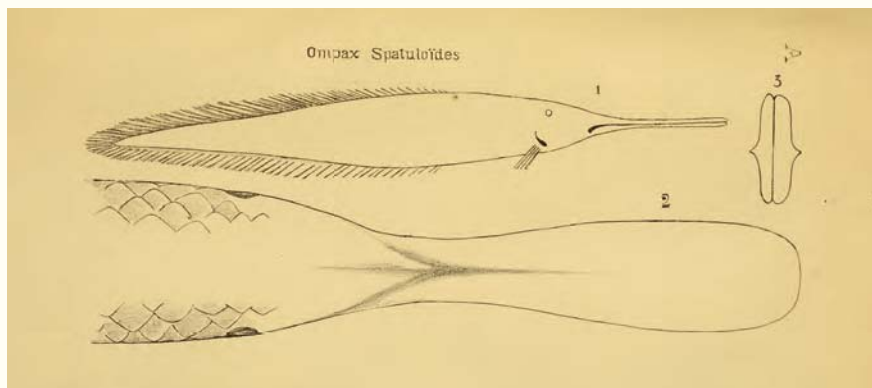
1861.4

François Louis Nompar de Caumont La Force, comte de Castelnau (1810–1880), French naturalist and ichthyologist

1861.4



1861.3



1862

Near the new church

Eduard von Martens in Singapore

“*Assiminea miniata* ... Singapore, on the muddy bank of the streamlet, close to its mouth, near the new church, east of the town.”

— Eduard Karl von Martens

1862.2



1862.1



1862.1

This print of St Andrew's Cathedral in Singapore is made in the 1870s. This building is completed in 1856, replacing an earlier one on the same site.

This is probably the church close to where von Martens collects specimens of a snail he names *Assiminea miniata*

1862.2

This snail and the species that von Martens names *Assiminea miniata* are both from the family Assimineidae

German zoologist and explorer Eduard Karl von Martens (1831–1904) visits Southeast Asia as a member of the Prussian Expedition to East Asia aboard SMS ‘Thetis’. Von Martens makes natural history observations and collections in Singapore. *Assiminea miniata* is one of the new species he describes, and is almost certainly collected near St Andrew’s Cathedral which has just been built. After falling out with the expedition’s leader, von Martens will travel around the region on his own and only return home in 1864. He leaves the ‘Thetis’ in Singapore on 16 March 1862.

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1862.3



1862.3

Specimens of Red Berry Snail collected in 2009 from Pulau Semakau, Singapore. Von Martens names the specimens he collects from Singapore *Assiminea miniata* in 1866. This species is already named *Assiminea brevicula* by Ludwig Karl Georg (or Louis) Pfeiffer in 1855. It is currently known as *Optedicerus breviculum* (L. Pfeiffer, 1855)

1862.4

Eduard Karl von Martens (1831–1904), German zoologist and explorer

1862.4



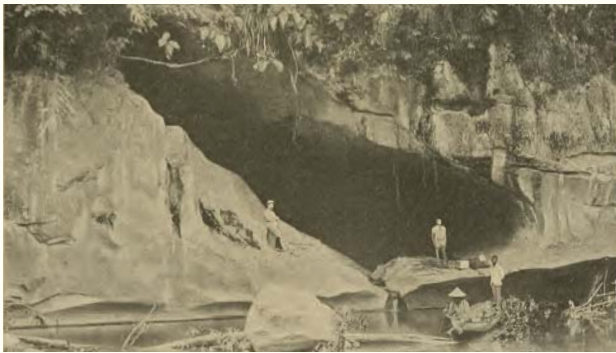
1866

A delicious bathing place

Odoardo Beccari in Singapore

“Of our stay at Singapore I shall merely recall a week passed at ‘Woodlands,’ in a small wooden bungalow which our Consul, Mr. Leveson, had built on the Johore Straits, and which he kindly lent to us. ... It was surrounded by the then untouched primeval forest. On the sea, always as smooth as glass, a delicious bathing place had been constructed, shut off by a palisade, a necessary precaution against sharks and crocodiles.” — **Odoardo Beccari**

1866.1



1866.2



1866.1

Two photographs from Beccari's travels in Borneo: “Lobang Angin, Upper Sarawak” and “A bamboo bridge on the Upper Sarawak”. “Lobang Angin” means ‘Wind Tunnel’ or ‘Wind Cave’ in Malay

1866.2

The Titan Arum is one of the largest flowers in the world. This species is named by Beccari in 1878. It is currently known as *Amorphophallus titanum* (Becc.) Becc. The abbreviation “Becc.” is used by botanists when referring to Beccari

Italian naturalist and explorer Odoardo Beccari (1843–1920) travels and collects extensively throughout the region. Primarily interested in botany, he describes many new species of plants, including new species of durians from Borneo 🍀1916. His account of Woodlands in Singapore and the natural history of the immediate area is one of the earliest. These observations are made by Beccari when he arrives on his second visit to Singapore in March 1866.

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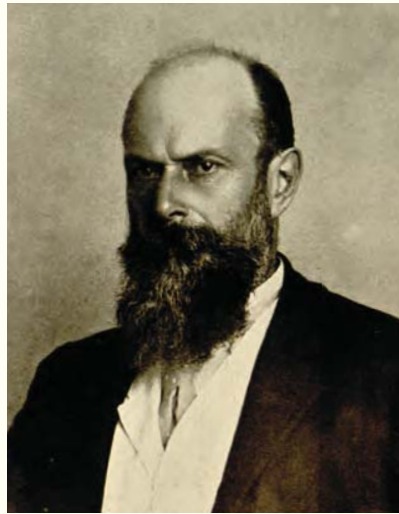
1980

2000

1866.3



1866.4



1866.3

This photograph that is taken in Sumatra shows a group of spectators around a Titan Arum. The name “Becc.” can be seen on the plate at the base of the flower

1866.4

Odoardo Beccari (1843–1920), Italian naturalist, botanist and explorer

1869

The sea-serpent!

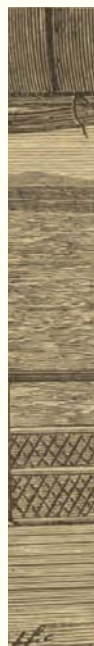
Natural history and scientific knowledge

“One morning in October, 1869, I was standing amid a small group of passengers on the deck of the ill-fated P. and O. SS. ‘Rangoon’, then steaming up the straits of Malacca to Singapore. We were just within sight, so far as I remember, of Sumatra. One of the party suddenly pointed out an object on the port bow, perhaps half a mile off, and drew from us the simultaneous exclamation of ‘The sea-serpent!’ And there it was, to the naked eye, a genuine serpent, speeding through the sea, with its head raised on a slender curved neck, now almost buried in the water, and anon reared just above its surface. There was the mane, and there were the well-known undulating coils stretching yards behind. But for an opera-glass, probably all our party on board the ‘Rangoon’ would have been personal witnesses to the existence of a great sea-serpent, but, alas for romance! one glance through the lenses and the reptile was resolved into a bamboo, root upwards, anchored in some manner to the bottom—a ‘snag,’ in fact. Swayed up and down by the rapid current, a series of waves undulated beyond it, bearing on their crests dark-coloured weeds or grass that had been caught by the bamboo stem. Ignorance of the shallowness of the straits so far from land, and of the swiftness of the current, no doubt led us to our first hasty conclusion, but the story ... shows how prone the human mind is to accept the marvellous, and how careful we should be in forming judgments even on the evidence of our senses.”

— Edward Hamilton Pringle

1869.1

This engraving is entitled “Sea-Serpent seen from the S.S. ‘City of Baltimore,’ in the Gulf of Aden, Jan. 28, 1879”. No illustration of Pringle’s ‘sea-serpent’ is known



Edward Hamilton Pringle (1844–1882) is an engineer of public works in Madras aboard SS ‘Rangoon’ when he observes a ‘sea-serpent’ on his voyage to Singapore. SS ‘Rangoon’ is “ill-fated” as it sinks two years later on 2 November 1871. The Enlightenment brings with it the desire (and tools) to elucidate the causes of unusual phenomena that naturalists and explorers observe. Natural history seeks to push back the boundaries of collective ignorance. New localities are surveyed. New species are discovered and named. Even old misconceptions are laid to rest 🍀1901. The intervening century and a half that separate Pringle from us is one of great and accelerating change. Yet, Pringle’s entreaty to recognise “how prone the human mind is to accept the marvellous” bears constant repetition. And as William Crafts writes in ‘The Sea Serpent, or Gloucester Hoax’:

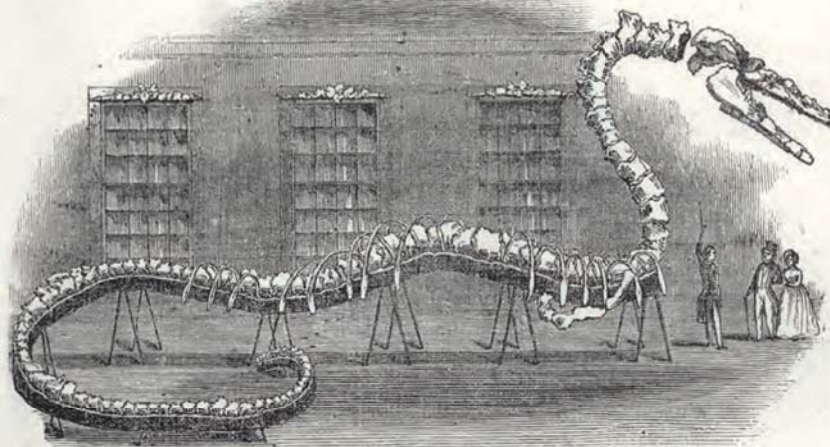
Deem nothing true that is not proved—nor then
Believe it all—but doubt and doubt again
Falsehood’s a floating superficial thing,
But truth is deeper than the deepest spring.

It is on his way to Singapore that Pringle spots the ‘sea-serpent’ aboard SS ‘Rangoon’ on October 1869.

1869.1



THE HYDRARCHOS OR LEVIATHAN!



R. F. RAN. C. 1869. 11/11/11

Of the Antediluvian World, as described in the Book of Job, Chapt. 41. THIS IMMENSE SKELETON OF A **Sea Monster!**

Exceeds 114 Feet in Length, and Weighs 7,500 Pounds.

This wonderful relic of former times, the sovereign master and greatest monument of all animal Creation was recently discovered by Dr. A. C. KOCH in Alabama.

The visitor will be lost in wonder and astonishment at the immensity of this great Monster of the antediluvian sea, where he can imagine him sporting his huge form on the mighty waves in all the vigor of exuberant life, gliding like lightning from shore to shore, sole monarch of the deep, driving the whale like chaff before him—and even chasing the Mammoth and the Missouriian from the borders of their great rivers.

Extract of a Letter from *Professor Silliman of New Haven*, to the Editors of the New-York Express dated

BROOKLYN, Sept. 24, 1868.

"Dr. Koch, the proprietor of the skeleton now in this city, made a journey of discovery a year since into Alabama and other Southern regions, with particular reference to this subject. He had the rare good fortune, as the result of his perseverance aided by the kind assistance of the inhabitants, to discover the stupendous skeleton which is now set up for exhibition here.

It has, evidently, been done at great expense and personal toil, and the public, while they owe a debt to Dr. K. will, when paying it, receive a high gratification in contemplating the remains of a race of animals whose length exceeded that of all other creatures hitherto discovered; the spinal column of the skeleton, as now arranged, measures 114 feet in length. The skeleton having been found entire, imbedded in limestone, evidently belonged to one individual, and there is the fullest ground for its genuineness. The animal was marine and carnivorous, and at his death was imbedded in that ancient sea where Alabama now is; having myself recently passed 400 miles down the Alabama river, and touched at many places, I have had full opportunity to observe, what many geologists have affirmed, the marine and oceanic character of the country. Most observers will probably be struck with the snake-like appearance of the skeleton. It differs, however, most essentially, from any existing or fossil serpent, although it may contravene the popular (and I believe well-founded) impression of the existence, in our modern sea, of huge animals, to which the name of sea-serpent has been attached."

As this extraordinary creature will shortly leave for Europe, the opportunity of seeing it is consequently
NOW OR NEVER.

Also accurate Paintings of the
MAMMOTH MISSOURIUM, found near St. Louis, and the Great MYLodon, or SLOTH
From near Buenos Ayres, with some Natural Curiosities from the Western Country.

1869.2

Leviathan on tour. Albert C. Koch (1804–1867) is a German immigrant who opens a museum in St. Louis, Missouri. The success of the museum causes Koch to take his fossil on tour across America and Europe. One of his most famous exhibits is the “Hydrarchos” or “Leviathan” that is thought to be the skeleton of the creature that is mentioned in the Book of Job. Although the exhibit is believed to be comprised of fossils from more than one species, it contains the first fossils of the whale-like *Basilosaurus* to be put on display

1869.3

Leviathan uncovered. This photograph shows a fossilised skeleton of *Basilosaurus isis* Andrews, 1904. The genus *Basilosaurus* is a group of extinct whale-like animals that are related to the whales found in our oceans today. The photograph is taken at Wadi Al-Hitan, a UNESCO World Heritage Site in Egypt that is well-known for its rich fossil beds. In particular, these whale-like fossils that are uncovered here contribute greatly to the understanding of the evolution of whales

1869.4

Tools for demystification. This advertisement for “opera glasses” is from the official catalogue to the Royal Naval Exhibition of 1891

1869.3



1869.4

BINOCULAR, FIELD, & OPERA GLASSES.
Very finest quality—Highest Power—Clearest Definition.

WATSON'S
"PREMIER"
FIELD GLASS.
The highest quality made.

PRICE LIST.

1501. "Premier" Binocular Glass, largest size, for extreme long distances. Yachting, &c. Finest of the highest quality, 2 1/2 in.		1502. "Premier" Field Glass, largest size, for extreme long distances. Yachting, &c. Finest of the highest quality, 2 1/2 in.	
Doz.	£5	Doz.	£5
Doz.	£5 10s	Doz.	£5 10s
Doz.	£6	Doz.	£6
Doz.	£6 10s	Doz.	£6 10s

WATSON'S TWO-GUINEA MARINE BINOCULAR.
Size of Object Glasses 1 1/2 in. Complete with Case. £2 2s.
This Glass is unequalled at the price.

WATSON'S OPERA GLASSES.
Finest Quality, covered in Russia Leather, with Patent Case.
Examiner of Object Glasses: 1 1/2 in. Price £1 10s.
Doz. £1 10s.
Doz. £2 2s.
Doz. £2 10s.
Doz. £3 10s.

An Illustrated Catalogue of Binocular Glasses, Telescopes, Barometers, Thermometers, &c., sent free in any address on application. Ask for Optical List.
Approved for Gold Medal Paris International Exhibition, 1889, and Twenty Gold and other Medals at London, Melbourne, Adelaide, &c., &c.

W. WATSON & SONS, 313, High Holborn, London, W.C.
ESTABLISHED 1837.

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1872

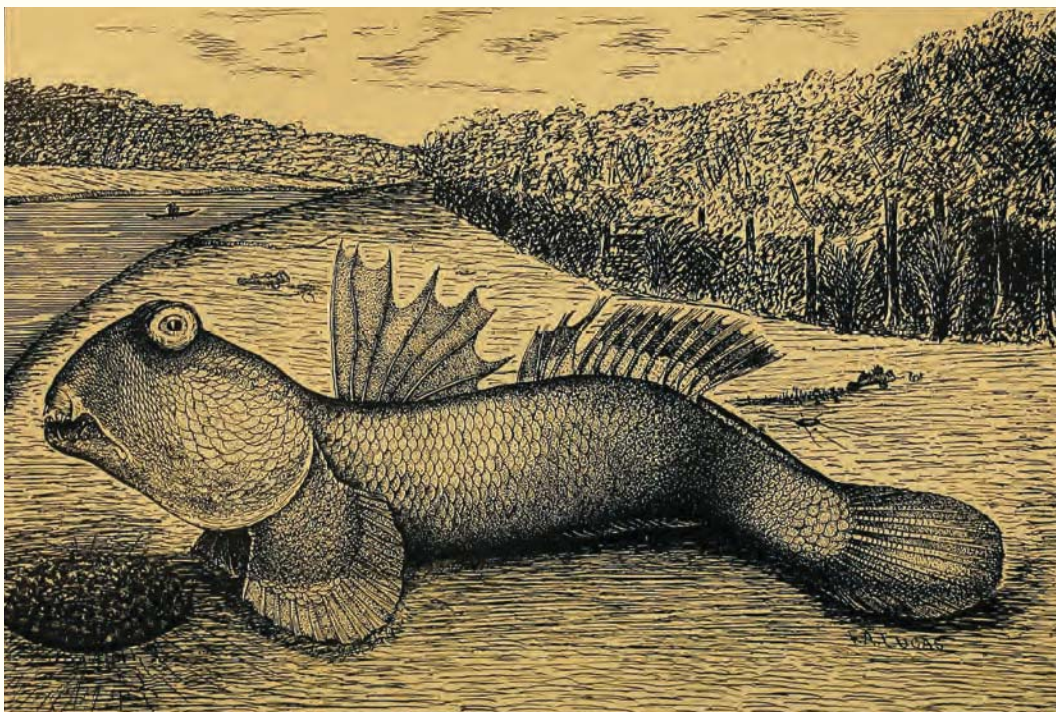
By a gun and small shot

Robert W. C. Shelford on how to
catch a mudskipper

“Probably the most interesting thing seen during the morning was the amphibious mud-fish ... of the genus *Periophthalmus* and are very common in Singapore and the neighbouring islands. ... The most practical way of collecting specimens is by a gun and small shot, a method advocated by Shelford.”

— Anonymous

1872.1



Robert Walter Campbell Shelford (1872–1912) is a British naturalist who becomes curator at the Sarawak Museum in 1897. In 1905, he accepts an assistant-curatorship at Oxford, and like Richard Hanitsch 🌿1919, is passionate about cockroaches. His book ‘A Naturalist in Borneo’ includes many observations on natural history from Singapore. It also includes his suggestions on how to capture specimens, as in the case of the “mud-fish” or mudskipper. Shelford is born in Singapore on 3 August 1872.

1872.2



1872.1

This drawing of a Giant Mudskipper is from ‘Two Years in the Jungle’ by William T. Hornaday 🌿1885. This species is one of the largest species of mudskippers and is possibly the species that the anonymous writer refers to as the “mud-fish”. Its scientific name is *Periophthalmus schlosseri* (Pallas, 1770)

1872.2

Robert Walter Campbell Shelford (1872–1912), British naturalist and cockroach specialist

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🌿 1872

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1879

The ways of a tribe of ants

Isabella Bird and the 'Golden Chersonese'

"I should have liked to be there some time to study the ways of a tribe of ants. ... six ants, with a red one (dare I say?) 'in command,' came out and seemed to hold a somewhat fussy consultation round the corpse which had fallen on the line of march to the stump. After a minute or two three of them got hold of it, and with the other four as spectators or mourners, they dragged it for about six feet and concealed it under a leaf, after which they returned home; all this was most fascinating." — **Isabella Lucy Bird**

1879.1



1879.1

One of these species is possibly the one that Isabella Bird refers to in her account of "a tribe of ants". On the left is the Asian Marauder Ant, *Carebara diversa* (Jerdon, 1851). On the right is the Trap-jaw Ant, *Odontomachus rixosus* Smith, 1857. Both specimens are collected in Singapore

Englishwoman Isabella Lucy Bird (1831–1904) is possibly the most well-known female explorer of the region. Even today, her book ‘The Golden Chersonese’ remains popular and in print. Her first sojourn is in 1854 on the advice of her doctor. Her second trip begins in 1872 and brings her to Asia. Bird’s writings are replete with observations of plant and animal life, but unlike Ida Pfeiffer 🌿1852, she does not collect natural history material. Her account of watching ants takes place in Sungai Ujong (in Peninsular Malaysia). Her account of Singapore is brief as her visit spans just over a day from when she arrives on 19 January 1879.

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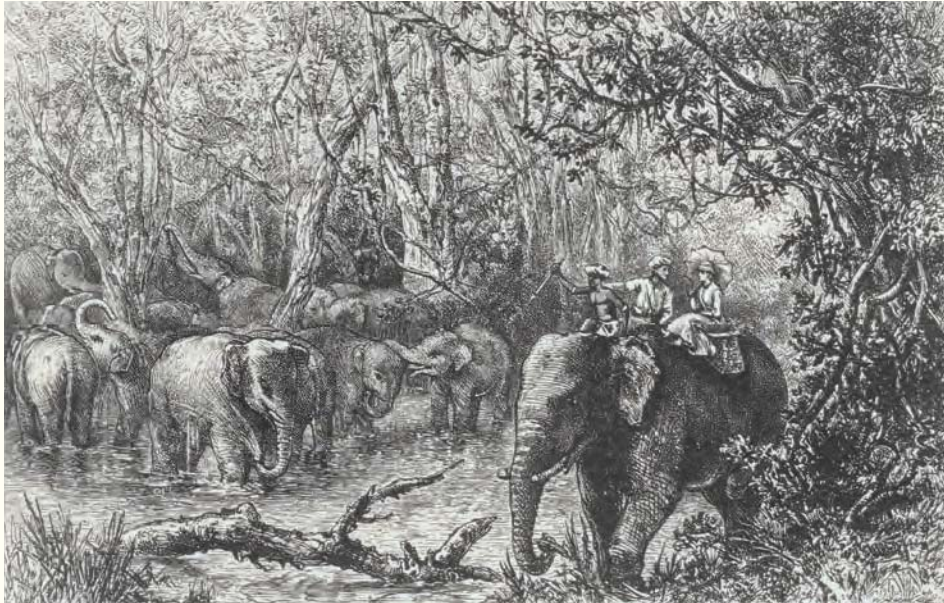
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1879.2



1879.3



1879.2

This plate from ‘The Golden Chersonese’ is captioned “The author’s first ride in Perak”

1879.3

Isabella Lucy Bird (1831–1904), British explorer and traveller. She takes the name Bishop when she marries John Bishop (1841–1886) in 1881

1898

Their prolonged stay in Singapore

Bedford and Lanchester and two Singapore firsts

“To Mr. Lanchester, and especially to Mr. Bedford, the Museum is indebted for various specimens and for help in identification during their prolonged stay in Singapore. Mr. Bedford kindly overhauled the entire collection of Echinodermata, checked the few specimens already named, and identified the remainder, as also a collection of dried Bêche-de-mer, purchased in various Chinese shops, Singapore being one of the largest markets for this product.”

— Karl Richard Hanitsch

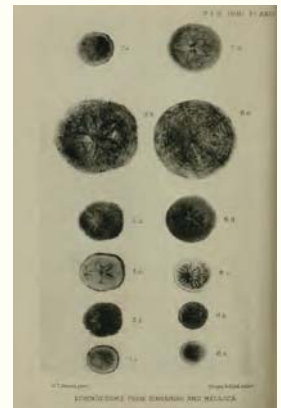
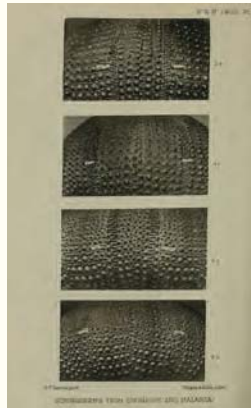
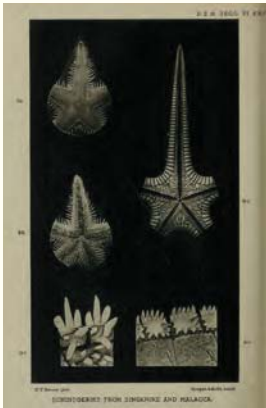
1898.1

These four plates accompany Bedford's paper on echinoderms (sea-urchins, sea-stars and sand dollars) from “Singapore and Malacca” that is published in 1900

1898.2

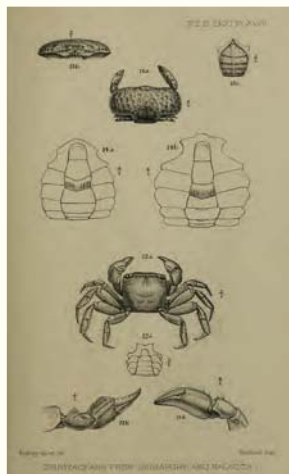
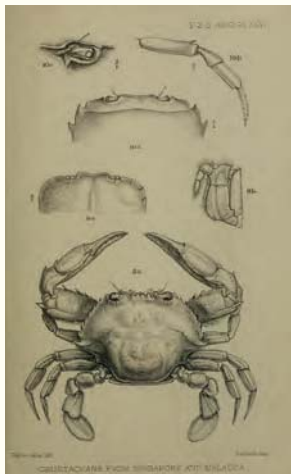
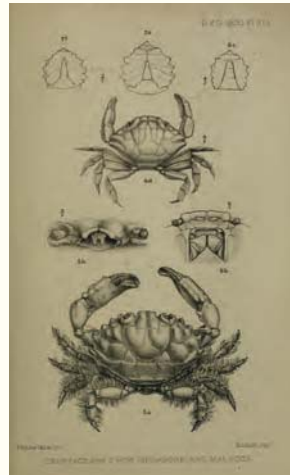
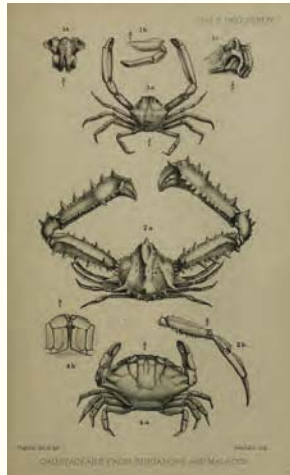
These four plates accompany Lanchester's paper on crustaceans from “Singapore and Malacca” that is published in 1900. The drawings of Lanchester's Rubble Crab can be seen at the top of the bottom right plate

1898.1



Cambridge zoologists Francis Perch Bedford (1875–1900) and William Forster Lanchester (1875–1953) spend several months in Singapore and Malacca where they collect specimens of marine animals. They make two interesting discoveries. Bedford reports the first record of Belcher's Lancelet from Singapore. Lanchester describes a very unique marine crab, *Favus granulatus*, which is not found outside of Singapore. After Bedford and Lanchester, both species are rarely encountered in Singapore but they are collected during the Comprehensive Marine Biodiversity Survey 🍀2010. Bedford and Lanchester arrive in Singapore in October 1898.

1898.2



Notes on the Occurrence of *Amphioxus* at Singapore.

THE following notes on the occurrence of *Branchiostoma belcheri*, Gray, at Singapore have been written at the suggestion of Dr. Arthur Willey, who has kindly examined and identified the specimens for me; they were collected by Mr. W. F. Lanchester and myself, and are, I believe, the first that have been obtained from the locality. The first indication we had of the presence of *Amphioxus* in the district occurred about the middle of November 1898, when a number of young examples were found amongst the material collected by tow-netting at the extreme surface of the water about one or two hours after sunset. At the time we were living on a small island about ten miles off Singapore, and we tow-netted every night just outside or over the edge of the reef surrounding the island. The tidal currents were generally very strong, and no doubt brought a considerable amount of the plankton from the deeper layers to the surface.

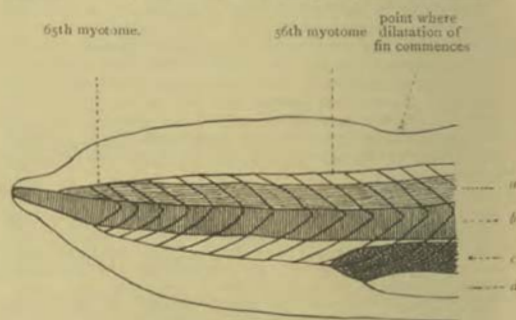


FIG. 1.—*Branchiostoma belcheri*, caudal extremity, before metamorphosis; length of whole larva about 5 mm.

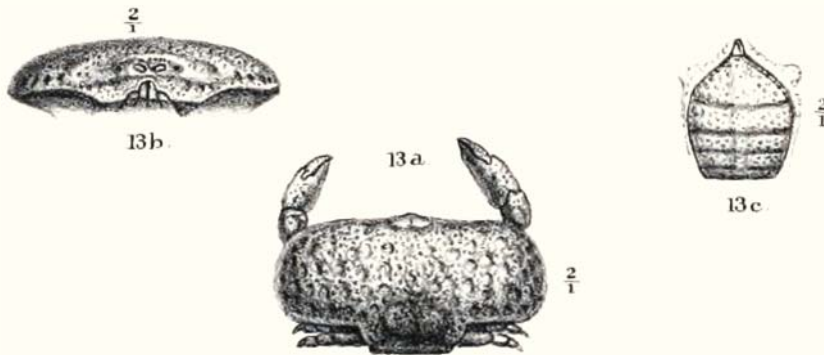
a, Nerve cord; b, notochord; c, rectum; d, ventral fin space.

Up till the end of November (when we left the island) young *Amphioxus* continued to be fairly plentiful; but they were never met with elsewhere, and in June last year I visited the island again and could find no trace of them.

All these specimens were in different later stages, some having completed their metamorphosis, the fin-rays and ventral fin-chambers being already formed, while in others the gill-slits were still unilateral and opened freely to the exterior.

After the capture of the above examples we repeatedly dredged in the hope of obtaining adult examples, but on only one occasion were we successful, and then only a single specimen was found. It occurred in about six fathoms of water on a bottom composed of somewhat coarse gravel-sand close to the west entrance to Singapore Harbour. I am inclined to attribute our failure in securing more adults to the nature of the ground in which they live. With an ordinary dredge they could easily wriggle through the meshes, and the only time I tried a canvas-bag dredge it filled so rapidly with sand as to be quite useless.

1898.4



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1898.5



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1898.3

First report of Belcher's Lancelet from Singapore. This text is from the first page of Bedford's report in the 8 March 1900 issue of the journal 'Nature'. After Bedford, this species is only reported from Singapore on two other occasions: the first time in 1953 and the second during the Comprehensive Marine Biodiversity Survey or CMBS 🍀2010. This species is first named *Amphioxus* (now *Branchiostoma*) *belcheri* in 1847 by John Edward Gray 🍀1832. Gray names this species after "Capt. Sir Edward Belcher" for "having most kindly sent to the British Museum the various species of reptiles, worms, &c. in spirit which had been collected during the voyage of H.M.S. 'Samarang' ..." 🍀1843

1898.4

These drawings of Lanchester's Rubble Crab are to illustrate Lanchester's first description of this species. The specimen, as with all others to date, is collected in Singapore. Its scientific name is *Favus granulatus* Lanchester, 1900

1898.5

A specimen of Lanchester's Rubble Crab that is collected in 1959. Since the first known specimen that is collected by Lanchester, only a small handful of specimens are ever collected. This species is currently only known from Singapore

1904

Important publication on Malayan ichthyology

Georg Duncker and the Harlequin Rasbora

“The year 1904 saw the important publication on Malayan ichthyology contributed by Duncker himself. He listed all previous records to date besides describing a number of new and additional records, and the new species *Rasbora heteromorpha* from Singapore.” — **Eric Ronald Alfred**

1904.1



1904.1

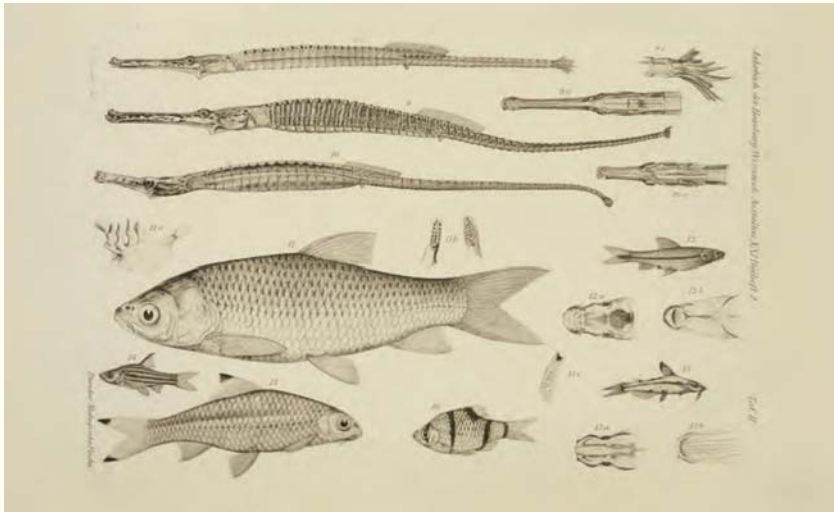
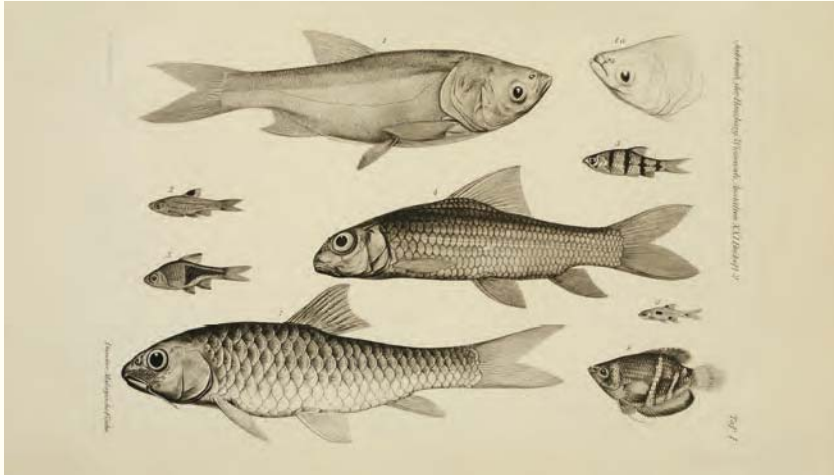
The Harlequin Rasbora is first described by Georg Duncker in 1904 as *Rasbora heteromorpha*. It is currently known as *Trigonostigma heteromorpha* (Duncker, 1904). This species becomes affectionately known as the ‘Stamp Fish’ in Minnan (Hokkien) following the issue of this Singapore ten-cent postage stamp in 1962

1904.2

These drawings accompany Duncker’s paper on ‘Die Fische der malayischen Halbinsel’ (‘The fishes of the Malay Peninsula’). In this paper, the Harlequin Rasbora is figured and described for the first time. It is labelled here as drawing “5” (the lower of the two small fish on the left of the top plate)

In 1901, German ichthyologist Paul Georg Egmont Duncker (1870–1953) is appointed curator at the Selangor Museum 🍀1945. During this time, he makes extensive collections of fishes throughout the Malay Peninsula and Singapore. One of the new fishes he describes is the Harlequin Rasbora from specimens from Malaysia and the Botanic Gardens in Singapore 🍀1859. This species is widely-known due to its popularity as an aquarium fish and as a result of the Singapore ten-cent stamp that features it. This species is described in Duncker's monograph 'Die Fische der malayischen Halbinsel' ('The Fishes of the Malay Peninsula') that appears in 1904.

1904.2



Part 6

Part 6 Museums and the Metropole

Natural History and the Geopolitics of Empire

The movement and study of natural history material from Singapore is tied closely to the politics of the East India Company, and later the British Empire.

The Straits Settlements 🌿1826 bring together Penang, Melaka and Singapore as an administrative unit under the East India Company. This causes natural history material from the Straits Settlements to be transported to India and to the company's museum in London. The link with the metropole is further cemented when Singapore becomes a Crown Colony 🌿1867, directly under the British government.

This period coincides with two trends. The first is the decline of the East India Company and eventually also that of its museum, which survives its parent by about a decade. The second is the ascendancy of the role of the British Museum in natural history research. The zoological collections at the British Museum building at Bloomsbury are transferred to the new British Museum (Natural History) building at South Kensington when it is completed in 1881. Today, this institution is known as the Natural History Museum in London.

This museum is connected to an innumerable number of naturalists, collectors, zoologists and botanists. It is also involved in the describing and naming of many animals from Singapore, with the representative type specimens still housed there. Amongst the many people working at the museum are: John E. Gray 🌿1832 who gives the first scientific names to reptiles and fishes from Singapore; Albert C. L. G. Günther 🌿1864 and William L. Distant 🌿1915 who both name new species from specimens that are sent to them from Singapore by Henry N. Ridley (see Part 3); William Saville-Kent 🌿1871 and Isabella Gordon 🌿1985 also describe marine animals from Singapore.

6.1

Two marks of the British Museum (Natural History) from 'A Guide to the Exhibited Series of Insects' that is published in 1908

There are two other individuals who are also connected with what is today known as the Natural History Museum in London. Lovell A. Reeve ♣1883 names dozens of species of molluscs from Singapore. William C. L. Martin ♣1838 is curator at the museum of the Zoological Society of London. In the course of his work, he examines a large number of primate specimens at the British Museum, including those that are collected by Raffles and Horsfield (see Part 2). Martin first recognises the Banded Leaf Monkey from Singapore as a distinct species and names it.

The ways in which the geopolitics of empire shape natural history are thus no different from other forms of knowledge creation and material accumulation. As it is said of all roads and Rome, Ralph Waldo Emerson says of this great metropole of the British Empire: “London is the epitome of our times, and the Rome of to-day”.

6.1



1826

A tolerably large room

Singapore and the Straits Settlements

“At the end of the corridor is a tolerably large room, containing a number of glass cases filled with specimens of Asiatic natural history. There are Indian, Siamese, and Javanese birds, Sumatran and Indian mammalia, besides butterflies, moths, beetles, and shells.” — **Joseph Curtis Platt**

1826.1

A cigar card showing the flag of the Straits Settlements and a 'local' scene from the early 1900s

1826.1



1826.2



The acquisition of Singapore by the East India Company means that natural history material from the island makes its way to the company's museum which exists until the 1870s ♣️1867. Thomas Horsfield is the second director of the museum ♣️1821. The quote from Platt describes the natural history section of the museum. The East India Company will further consolidate its rule by uniting Singapore, Malacca (now Melaka) and Penang into the Presidency of the Straits Settlements which it administers from Penang ♣️1834. The Straits Settlements are formed when Singapore and Melaka become dependencies of Penang in August 1826.

♣️ 1826

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1826.3



1826.2

East India House on Leadenhall Street in London in which the company's museum is housed

1826.3

A view of the East India Company's museum at East India House on Leadenhall Street in London that is published in 1843. The exhibit on the left is the infamous Tipu's Tiger



1832

The mischievous or worthless part of the creation

John Edward Gray and Singapore's first named snake

“Among the novel objects which the natural history of this island offers to the scientific observer, snakes are amongst the most curious and interesting. From forty to fifty distinct species have already been collected, among which many are believed to be entirely new. The Malays, who are particular to redundancy in small matters, have a name for every one of them. ... The mischievous or worthless part of the creation is not less numerous than various in Singapore, so that a naturalist is presented with daily opportunities of observing their habits and manners.” — **Anonymous**

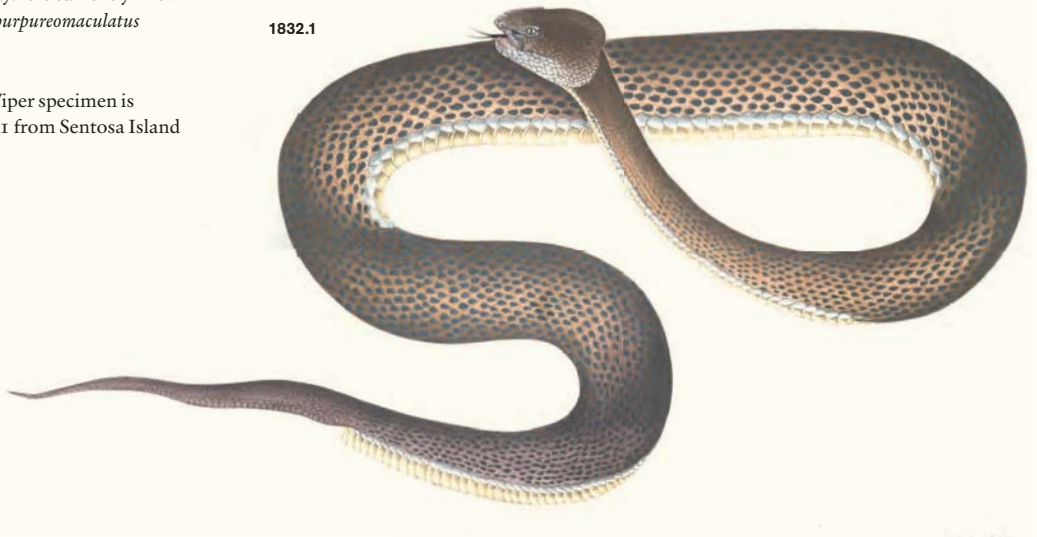
1832.1

This painting of the Shore Pit Viper and the Latin name “*Trionocephalus purpureo maculatus*” that accompanies it constitute the first description of this species. It is published in the ‘Illustrations of Indian Zoology’ by Gray. It is currently known as *Trimeresurus purpureomaculatus* (Gray, 1832)

1832.2

This Shore Pit Viper specimen is collected in 1991 from Sentosa Island in Singapore

1832.1



The British zoologist John Edward Gray (1800–1875) describes several new animals from Singapore collected by Hardwicke 🌿1819 in the two-volume ‘Illustrations of Indian Zoology’. Although Gray is the first zoologist to bestow a Latin name on a snake from Singapore, this quotation from 1826 shows that local knowledge of snakes is already well-developed, even if the attitudes towards them are not. In time, attitudes change for the better 🌿1953. Gray describes and illustrates the first snake from Singapore to be given a Latin name as *Trigonocephalus* (now *Trimeresurus*) *purpureomaculatus* on 14 April 1832.

1832.2



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🌿 1832

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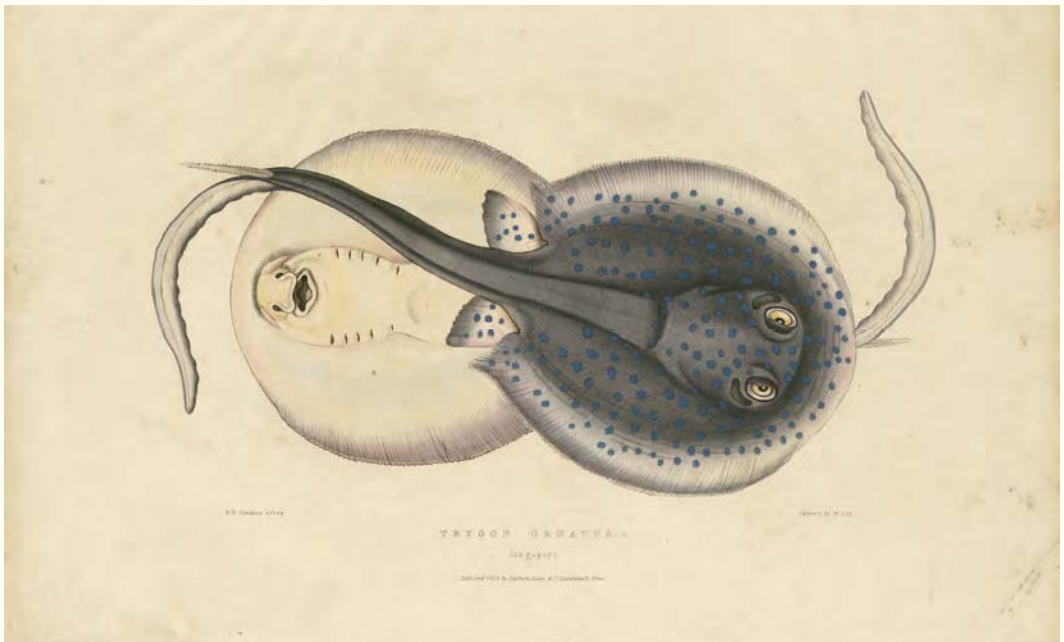
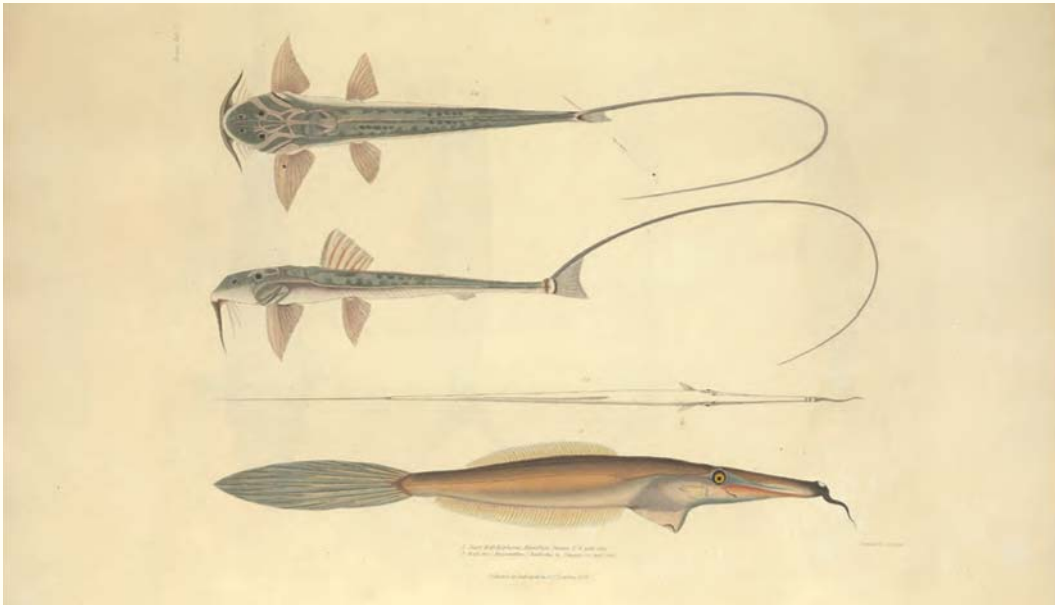
1920

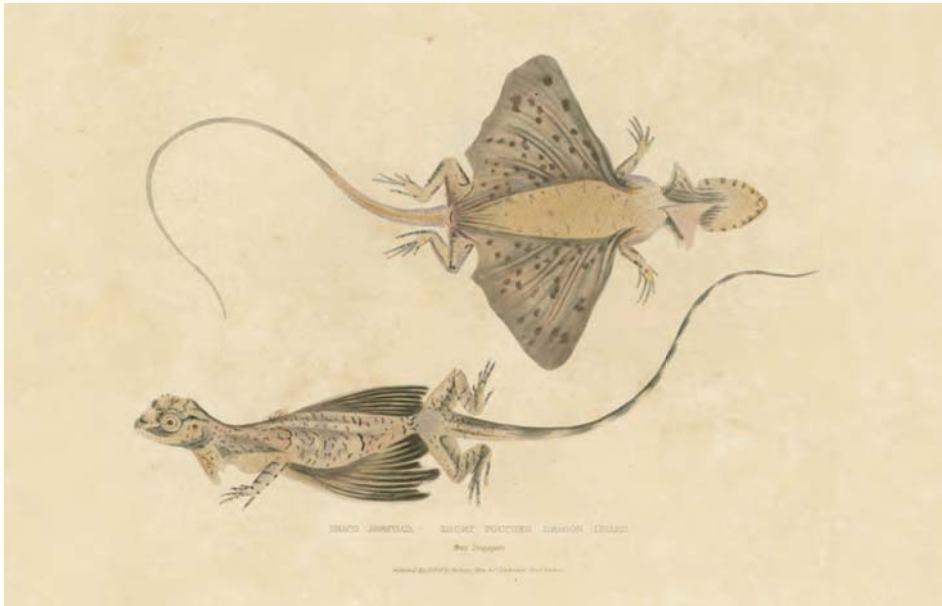
1940

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1832.3

Besides the Shore Pit Viper, Gray names several other species from Singapore in the 'Illustrations of Indian Zoology'. The paintings and the accompanying Latin names constitute the first descriptions of these species. The two fish paintings are published in 1830, and that of the lizard in 1834. The Bearded Leatherjacket (top left, fish at bottom) is first named *Balistes (Anacanthus) barbatus* by Gray in 1830. It is currently known as *Anacanthus barbatus* (Gray, 1830) and is the first species of fish to be named from Singapore. The Bluespotted Ribbontail Ray (bottom left) is named *Trigon ornatus* by Gray. This is now considered to be a later name for a species that is already described as *Taeniura lymma* (Forsskål, 1775). The Orange-bearded Gliding Lizard (above) is first named "*Draco abbreviata*" by Gray. It is currently known as *Draco abbreviatus* Gray, 1834 and is recognised as a distinct species

1832.4

John Edward Gray (1800–1875), British zoologist par excellence

1832.4



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1838

Lotong of the Malays

The Banded Leaf Monkey named

“Lotong of the Malays. Found at Singapore and Penang. This species is often eighteen or twenty inches long and twelve or thirteen in height when on all fours. ... It is not easily tamed.” — Thomas Stamford Bingley Raffles

1838.1



Raffles and Horsfield 🌿1820, 1821 observe a monkey they identify as *Semnopithecus maurus* (Schreiber, 1775). William Charles Linnaeus Martin (1798–1864) is the assistant curator at the Zoological Society of London who describes the mammals collected by Charles Darwin on the voyage of HMS ‘Beagle’ 🌿1903 and is also studying Asian primates. Martin names the Banded Leaf Monkey *Semnopithecus* (now *Presbytis*) *femoralis* based on the observations and specimens of Raffles and Horsfield. Both men have no part in its naming. Martin publishes his paper in the ‘Magazine of Natural History’ on 1 August 1838.

1838.1

This plate is entitled “*Semnopithecus maurus*” and is published in the ‘Zoological Researches on Java’ by Horsfield 🌿1821. Raffles and Horsfield confuse the Banded Leaf Monkey they find with several closely-related species found around Singapore, misidentifying them as *Semnopithecus maurus* (Schreiber, 1775). The Banded Leaf Monkey is restricted to Singapore and the southern part of Peninsular Malaysia and is considered to be a distinct sub-species, currently known as *Presbytis femoralis femoralis* (Martin, 1838)

1838.2

The Banded Leaf Monkey, *Presbytis femoralis femoralis* (Martin, 1838), in Singapore

1838.2



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🌿 1838

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1864

A gift from Mr. Ridley

The Cat-eyed Gecko described

“The lizard *Aeluroscalabotes felinus*, from the Botanic Gardens, is a gift from Mr. Ridley. The type specimen of this species, now in the British Museum, was from Singapore and was first described by Gunther in the year 1864 ... This species has since been recorded from Borneo as well, but not again from Singapore.” — **Karl Richard Hanitsch**

1864.1



The first known specimen of the Cat-eyed Gecko is sent by Henry N. Ridley 🌿1876 to the Albert Charles Lewis Gotthilf Günther (1830–1914) at the British Museum (Natural History). Another specimen is sent by Alfred Russel Wallace 🌿1854 from Borneo. This species has not been found in Singapore in recent times and it is possible the specimens from the Botanic Gardens are introduced with plants from other areas. If this is indeed the case, then it joins another introduced lizard, the Pygmy Spiny-tailed Skink 🌿1925. Günther describes the Cat-eyed Gecko in 1864.

1864.1

This drawing accompanies the first description of the Cat-eyed Gecko, *Pentadactylus* (now *Aeluroscalabotes*) *felinus* by Günther in 1864

1864.2

This Cat-eyed Gecko specimen is collected in 1904 at the Singapore Botanic Gardens. The common (“cat-eyed”) and specific (“*felinus*”) names for this species appear to originate from the appearance of its eyes

1864.2



🌿 1864

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1867

The company had no interest Singapore becomes a Crown Colony

“Sir Stamford Raffles and a series of East India Company servants laid the foundations of Singapore’s development, but which the company had no interest in. It was the successful lobbying by the merchant community for the transfer of the colony from a dependency of the government of India into a crown colony that opened a new era of Singapore’s development after 1867.”

— Kwa Chong Guan, Derek Heng and Tan Tai Yong

1867.2



1867.1

The British Museum at Bloomsbury
in London

1867.2

Three of the natural history galleries
at the British Museum at Bloomsbury:
(left) the Great Zoological Gallery on
Easter Monday in 1845; (middle) the
Coral Room in 1847; and (right) the
Botanical Gallery in 1858



The change from a dependency of India 🍀1826 to a Crown Colony under direct rule from London has consequences for natural history collections from Singapore. They now enter the British Museum. The East India Company's own collections are amalgamated with the British Museum's as the company disbands in 1858 and its own museum dissolves in the 1870s. The natural history collections move to what is today known as the Natural History Museum in London when it is completed in 1881. Singapore becomes a Crown Colony on 1 April 1867.

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🍀 1867

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1867.1



1871

The beauty and symmetry

William Saville-Kent and the imperial coral

“This species surpasses in size and in the beauty and symmetry of its internal structure any representative of the genus yet recorded.”

— William Saville-Kent

1871.1



1871.1

These drawings accompany the first description of the coral *Balanophyllia imperialis* by Saville-Kent. The specimen that is figured originates from Singapore

1871.2

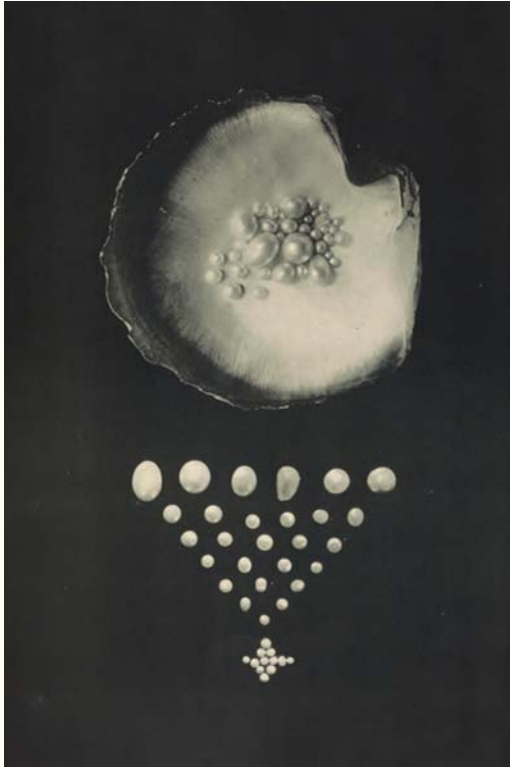
These photographs show Saville-Kent photographing corals and sea-cucumbers during his visits to the Great Barrier Reef, Australia. Saville-Kent's research and photographs are some of the earliest of this natural wonder

1871.2



William Saville-Kent (1845–1908) is a British marine biologist who makes important observations of the Great Barrier Reef and of the marine fisheries of Australia. His most enduring research contributions are to our knowledge of the Great Barrier Reef and in the development of artificial pearls. Saville-Kent describes and names the coral *Balanophyllia imperialis* from Singapore while working at the British Museum 🌿**1867**. The scientific name is likely in allusion to the great beauty, size and symmetry of this species. *Balanophyllia imperialis* is named in August 1871.

1871.3



1871.3

Saville-Kent makes important contributions to the artificial culture of pearls. This plate is from his book 'The Great Barrier Reef: Its Products and Potentialities'

1871.4

William Saville-Kent (1845–1908), British marine biologist. It is thought that Charles Dickens' 'Edwin Drood' is inspired by the tragic events of Saville-Kent's early years

1871.4



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1883

Ostrea edulis, fresh murdered Lovell Augustus Reeve and the Giant Clam from Singapore?

“Often, when indulging in a luncheon of *Ostrea edulis*, fresh murdered ... have I looked upon the giant clams, which fill the entire background of the oyster-vender’s window, and longed to get a waggon and horses to carry them off; but Mr. Rule, like a true naturalist, will not be tempted to part with them.”

— Lovell Augustus Reeve

1883.1



1883.1

Lovell Augustus Reeve (1814–1865),
British malacologist and natural
history publisher

1883.1

This engraving entitled “The great
oyster from Singapore. (*Tridacna
gigas*.)” is published in ‘Fisheries of
the World’ in 1884. The book com-
memorates the International Fisheries
Exhibition of the year before

Lovell Augustus Reeve (1814–1865) is a malacologist and publisher of natural history books. Rule's, the restaurant he dines at is established in 1798 and is today the oldest in London. The Giant Clam shells in Rule's are said to come from Singapore. They are exhibited at the International Fisheries Exhibition in 1883 and later appear in a book on the exhibition. This book is sometimes cited as proof that Giant Clams are found in Singapore. However, the shells may simply have been brought to and bought in Singapore, like so many others 🍀1853. The International Fisheries Exhibition opens on a plot of land beside what is today known as the Natural History Museum in London on 12 May 1883.

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1883.2



1915

Allied to *C. horrificus*

William L. Distant describes

Centrochares ridleyanus

“*Centrochares ridleyanus*, sp. n. ... Long. 4 mm. Hab. Malay Peninsula; Singapore (H. N. Ridley). Allied to *C. horrificus*, Westw., from which it differs by its smaller size, the narrower and more erect subapical lobe to the posterior pronotal process, &c.” — William Lucas Distant

1915.1



1915.2



On 5 August 1867, William Lucas Distant (1845–1922) arrives in the Malay Peninsula while accompanying his father on a whaling voyage. This visit begins his life-long vocation as a naturalist and entomologist. Distant's 'Rhopalocera Malayana' remains an important work on butterflies of the Malay Peninsula. Distant will amass a collection of some 50,000 specimens which are now in the Natural History Museum in London. Distant receives a specimen of a treehopper from Singapore from Henry N. Ridley 🍀1897. This species is described and named *Centrochares ridleyanus* by Distant in 1915.



1915.1

Distant describes Ridley's Tree-hopper from specimens that are sent to him from Singapore by Henry N. Ridley 🍀1897. This species is currently known as *Centrochares ridleyanus* Distant, 1915. This specimen is collected in 1978 in Singapore by Dennis H. Murphy 🍀1965

1915.2

These are two plates from Distant's 'Rhopalocera Malayana' which continues to be an important reference work on the butterflies of Peninsular Malaysia and Singapore

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🍀 1915

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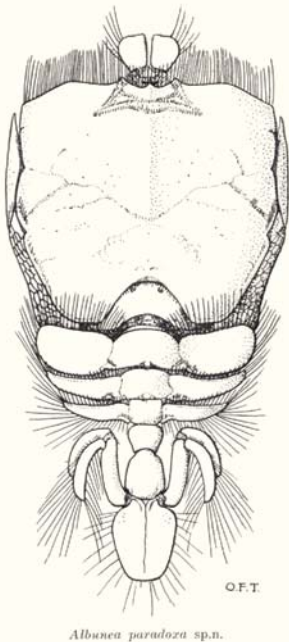
1985

A formidable amount of research

Isabella Gordon and crabs from Singapore

“As curator of one of the most important collections of Crustacea in the World she was frequently asked for information about type specimens and also other material. All such requests were conscientiously answered and often illustrated with free-hand sketches or camera lucida pencil outlines. These illustrations were usually so informative that scientists often included them in the papers resulting from their enquiries. So much of her time was devoted to these requests that it is surprising Gordon was able to produce a formidable amount of research herself and publish the results.” — **Lipke Bijdeley Holthuis and Raymond William Ingle**

1985.1



1985.2



1985.3



1985.1

This drawing accompanies the first description of the mole crab *Albunea paradoxa* by Gordon in 1938. This description is published in the 'Bulletin of the Raffles Museum' 1928. It is currently known as *Paralbunea paradoxa* (Gordon, 1938)

1985.2

This unidentified *Paralbunea* species from Taiwan is closely related to *Paralbunea paradoxa* (Gordon, 1938) from Singapore. Very few photographs of *Paralbunea* species are known to exist

Isabella Gordon (1901–1988) is eulogised as the “Grand Old Lady of Carcinology” by fellow carcinologists Lipke B. Holthuis and Raymond W. Ingle. During her many years working at the British Museum (Natural History), she describes many new species of crustaceans. Gordon is also very good-humoured as an exchange of limericks shows. In response to her paper ‘A thermophilous shrimp from Tunisia’, geneticist Angus John Bateman writes to Gordon:

A thermophilous shrimp from Tunisia
said: when it gets cold I get busier
I dig a hole
and fill it with coal;
then there’s nowhere as warm as it is ‘ere

To which Gordon replies:

The idea’s OK-but *Aplysia*
is the rhyme I should choose for Tunysia
A purist and Scot,
I simply could *not*
pronounce it to rhyme with ‘it is ‘ier-r-r!!

Gordon also describes two species of crustaceans from Singapore: the pea crab *Arcotheres spinidactylus* in 1936, and the mole crab *Paralbunea paradoxa* in 1938. Gordon’s long career spans six decades and she publishes her final paper in September 1985.

1985.4



1985.3

This female pea crab is one of the specimens that is examined by Gordon and forms the basis of her first description of *Pinnotheres spinidactylus* that is published in 1936. The specimens are collected from Siglap in Singapore. The species is currently known as *Arcotheres spinidactylus* (Gordon, 1936)

1985.4

Isabella Gordon (1901–1988), British carcinologist and the “Grand Old Lady of Carcinology”

1820

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🌱 1985

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Part 7

With the growth of the town of Singapore and the conversion of jungle for agriculture, it is only a matter of time before humans and animals come into conflict. Attacks on humans by tigers are the most well-known example. Just one hundred years separate the first reported fatal human-tiger encounter ♣1831 and the final fatal tiger-human encounter ♣1930. But before this century ends, hunters comment on the rarity of tigers. In the three years he spends in Singapore in the 1840s, Douglas Hamilton ♣1870 does not once encounter a tiger. George P. Owen ♣1900 attributes the poor hunting in Singapore to “all-conquering rubber”. Tigers are not the only animals to cause human fatalities. Crocodiles ♣1886 and sharks ♣1967 both cause human fatalities.

Another development during the nineteenth century is the rise of the live animal trade. As with shells being traded in Singapore (see Part 4), most of these animals are brought to Singapore for sale. The origins of the animal trade are said to begin with a mysterious character by the name of Haji Marip ♣1880, though it is likely to precede him. The collector and taxidermist William T. Hornaday ♣1885 witnesses this trade firsthand when he visits Singapore. He later becomes a staunch wildlife protection advocate. The same is also true of Paul and Fritz Sarasin ♣1902, two Swiss cousins who come east to hunt and collect. They are later instrumental in the origins of what is today the International Union for Conservation of Nature (IUCN). When they visit Singapore, the cousins meet a wildlife trader at Omar Road. Perhaps no one symbolises the live animal trade more than Frank Buck ♣1982. Certainly, no one does more to romanticise it than him. Buck visits Singapore on more than one occasion and Singapore is the setting for one of his films.

7.1

Many of the large animals that are killed by hunters are mounted for display and require substitute eyes. Before the advent of plastic, glass eyes provide unrivalled replacements. This advertisement is from an 1883 book on taxidermy

From the setting up of the first aviary 🍀1873 and first menagerie 🍀1876, the Botanic Gardens also plays a role in the transportation of live animals and their display. The animals are on display for the wealthier human residents but also have a political dimension. High mortality rates 🍀1890, often the result of deliberate poisonings, and the lack of government funding result in the closure of the menagerie for good 🍀1905.

The menagerie races 🍀1881 are not connected to the collections of animals at the Botanic Gardens. Instead, what appear to be animals from private collections are raced against one another. These races become something of a highlight of the social calendar. This is perhaps the most bizarre—and not to mention cruel—early human-wildlife interaction in Singapore.

7.1



1831

Tigers are beginning to infest the vicinity

Early records of human-wildlife conflict in Singapore

“We regret to learn that tigers are beginning to infest the vicinity of the town, to such a degree as to require serious attention on part of the local authorities, with regard to their destruction. Not many days ago, the friends of a Chinese woodcutter, who had been missing for some days, discovered the head, and part of one leg of their companion in the thicket ... We have heard that another native has been killed, since, by a tiger, in a different direction.” — **Anonymous**

1831.1



1831.1

This engraving is entitled: “My collector killed by a tiger” and is from Scottish explorer Henry Ogg Forbes’ book ‘A Naturalist’s Wanderings in the Eastern Archipelago’

1831.2

A skull from a Tiger, *Panthera tigris* (Linnaeus, 1758), that is collected in 1928 in Johor, Malaysia

Singapore begins to acquire a fearful reputation of tigers killing a person a day. The governor of the Straits Settlements has to answer enquiries on this matter in the British House of Commons in 1850. The spread of plantation agriculture 🌿1834 means that humans continue to encroach into tiger habitats. A campaign of extermination through a system of bounties is deadly and effective. The last wild tiger in Singapore is shot a century later 🌿1930. This first published record of a human fatality due to a tiger appears in the 'Singapore Chronicle' on 8 September 1831.

1831.2



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🌿 1831

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1870

Never once had a chance

Douglas Hamilton finds tigers elusive

“There was said to be a great number of tigers on the island and some hundreds of Chinamen were reported to be killed each year by them, but as the Chinamen belonged to secret societies who were in perpetual feud and always ready to kill each other, I am afraid many a murder has been falsely attributed to the ‘gentleman in stripes.’ ... I offered large rewards to get a shot at a tiger, but though I often sat up for one I never once had a chance.” — **Douglas Hamilton**

1870.1



Douglas Hamilton (1818–1892) is a captain in the army of the East India Company when he arrives in Singapore in 1846, where he spends three years. Hamilton recounts his unsuccessful attempts to shoot a tiger. Evidence exists that tigers are still present in Singapore 🍀1900 with the last known tiger only meeting its end decades later 🍀1930. However, naturalist Tony O'Dempsey has found a concomitant decline in both the number of humans that tigers destroy and of tigers that humans destroy. O'Dempsey considers these declines to be a result of habitat destruction due to agriculture, beginning around 1870.

1870.2



1870.1

Hamilton does not encounter a single tiger in his three years in Singapore. This encounter in India is from his book 'Records of Sport in Southern India'

1870.2

Douglas Hamilton (1818–1892), East India Company captain and hunter

🍀 1870

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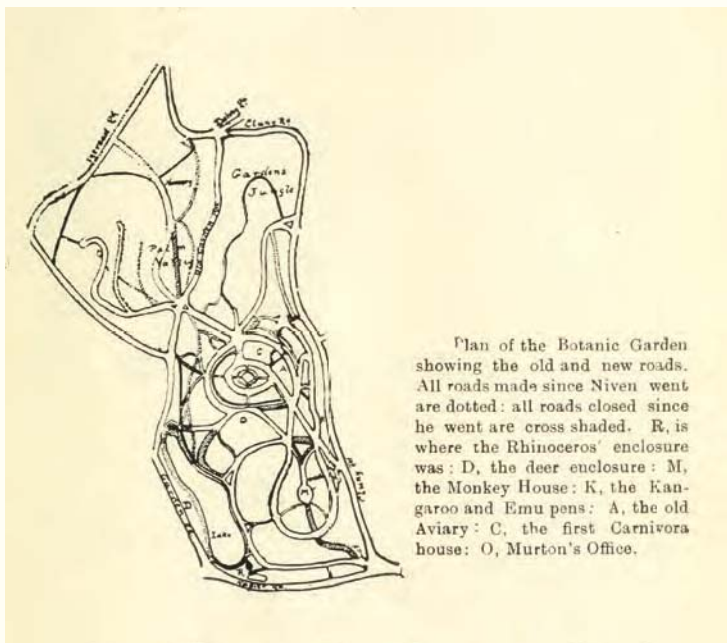
1873

Prior to his departure for Perak

The first aviary at the Botanic Gardens

“Another major contributor was J. W. W. Birch, the first British resident in Perak, whose death in November 1875 is a key point in both Malay and colonial histories of British expansion in the region. Prior to his departure for Perak, Birch oversaw the construction of the aviary that served as a foundation for the future menagerie. Once he arrived in Perak, Birch ‘procured many specimens’ for the zoological collection, including a sloth bear.” — **Timothy P. Barnard**

1873.1



1873.1

This “Plan of the Botanic Gardens showing the old and new roads” is published in 1918. The aviary is possibly the structure marked “A”

1873.2

These three species of birds are known to be kept in the aviary at the Botanic Gardens. These three specimens are from the Museum's collections and are collected in the 1930s: (top) Barred Eagle-Owl, *Bubo sumatranaus* (Raffles, 1822) from North East Sumatra, Indonesia; (middle) Luzon Bleeding-Heart, *Gallicolumba luzonica* (Scopoli, 1786) from Luzon, the Philippines; (bottom) Teal, *Anas crecca* Linnaeus, 1758 from the Mekong River, Thailand

According to academic Timothy P. Barnard, one of the earliest mentions of an artificial collection of animals at the Botanic Gardens is the aviary for housing birds given by high-ranking colonial officials. This aviary appears to be the nucleus for the menagerie 🍀1876. Barnard also recounts that before leaving Singapore in 1874 to become the first resident of Perak, James Wheeler Woodford Birch (1826–1875) oversees the construction of this (or possibly another) aviary. Upon his arrival at his new post, Birch also sends animals back to the gardens. This first aviary at the Botanic Gardens is built in 1873.

1873.2



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🍀 1873

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1876

On the shoulder of the hill

The menagerie at the Botanic Gardens

“... on the shoulder of the hill, a small aviary and monkey-house where specimens of some of the rarer birds, beasts and reptiles of the Straits and neighbourhood are on exhibition.” — **George Murray Reith**

1876.1



1876.1

The Acclimatisation Society in Melbourne donates Australian animals to the menagerie at the Botanic Gardens. These may include species such as this kangaroo (*Macropus* sp.), the skull on the left and tree kangaroo (*Dendrolagus* sp.), the skull on the right

A century before the world-famous Singapore Zoo 🌿**1973**, the Botanic Gardens has its own zoological gardens. Better known as the menagerie, its origins are in the existing aviary 🌿**1897**. It formally begins with the gift of a Sumatran Rhinoceros in 1875. Colonial diplomacy is a big contributor of animals as local rulers, diplomats and administrators make exchanges. The Acclimatisation Society in Melbourne also donates a large number of Australian animals. Following the inaugural donation of the rhinoceros, the menagerie is up and running in 1876.

1820

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🌿 **1876**

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1880

Local animal authorities

The mysterious Haji Marip

“The Singapore animal trade was started in 1880 by a Malay named Haji Marip, who carried on the business until his death in 1915. Many followed his example, and in Rochore Road to-day there are several Chinese dealers, but our two best-known collectors are Mr. Herbert de Souza, who has his collection at the East Coast Road, and Mr. W. L. S. Basapa, the proprietor of the Singapore Zoo at Ponggol, a truly delightful place that has the full approval of the local animal authorities.” — **Roland St John Braddell**

1880.1



1880.1

This engraving that shows a boy with a captive bird is published in 1893

1880.2

The postcard from the 1900s is captioned “Oran Utan, Singapore”. Orangutans (*Pongo* spp.) are not found in the wild in Singapore and the animal in this image is possibly from the animal trade

1880.3

Two views of an orangutan (*Pongo* sp.) skull

1880.2



Nothing else is known about Haji Marip but it is likely that a thriving trade in live animals exists even before him. William T. Hornaday, who visits Singapore in 1878 witnesses this trade first hand 🍀1885. Even earlier, Singapore is already well-known as for its shell-trade 🍀1853 and still earlier George Bennett acquires a gibbon at Singapore 🍀1830. The live animal trade continues for over a century but is now fully in compliance with international conventions after Singapore becomes a signatory to the Convention on International Trade in Endangered Species or CITES 🍀1986. According to historian Roland Braddell, the enigmatic Haji Marip starts his business in 1880.

1880.3



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🍀 1880

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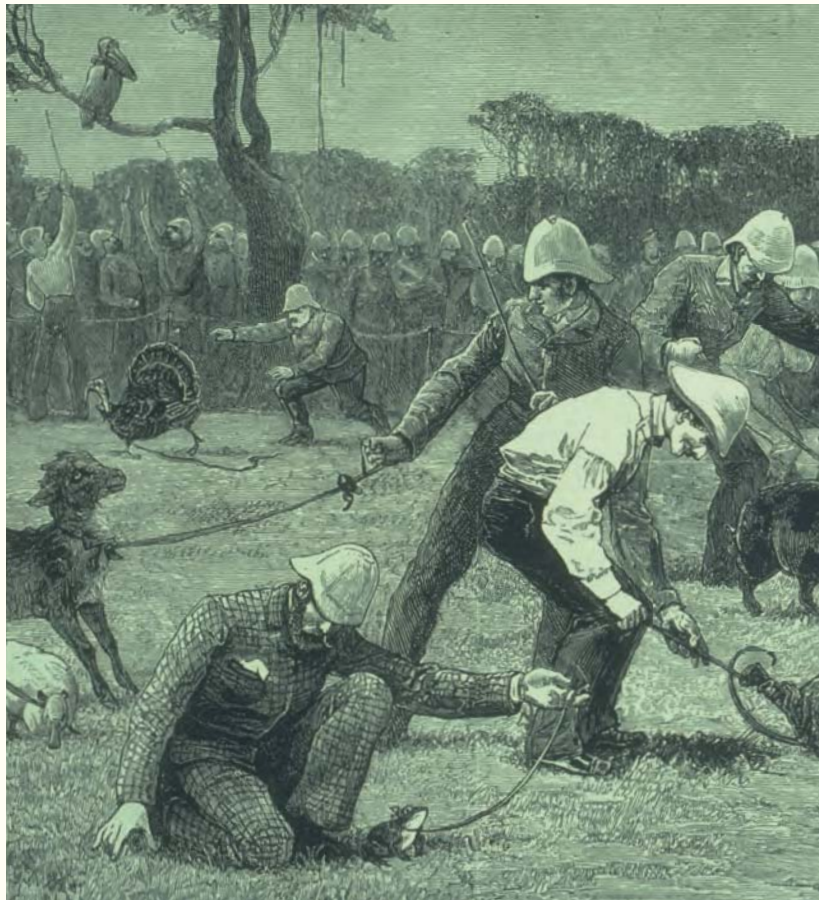
2000

1881

A string tied to the legs Menagerie races in Singapore

“... the officers’ menagerie race, one of the most laughable events of the day ... The animals driven by their owners or their friends by means of a string tied to the legs, were handicapped according to their respective abilities. The pelican got away ... and alighted on a high tree, being luckily caught in a few minutes afterwards. The pig was obstinate ... the turkey ‘gobbled’ ... the cat was spiteful ... the dog playful ... the goose, held steadily by his owner, ran straight for the winning post, and won the race by a good yard over the frog ...”

— Anonymous



1881.1

This illustration is entitled: “A menagerie race at Singapore” and is from ‘The Graphic’ (20 August 1881)

1881.2

The animals that compete against each other in the menagerie races are possibly pets that are owned by the wealthier parts of society. This photograph from the 1900s is captioned: “Queer pets”

One of the more bizarre animal-related activities in Singapore is the menagerie race. The inaugural race has the usual domestic animals as well as a pelican, a monkey and a crab named 'Queen of Sheba'. These races are an annual fixture in Singapore's social calendar. The last known race takes place in 1910. The first race is newsworthy enough to be illustrated in the 'The Graphic' from which the accompanying image comes from. The race takes place at the Tanglin Barracks on 7 June 1881.

1881.1



1881.2



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1885

Had I been a showman

William T. Hornaday witnesses the animal trade in Singapore

“Had I been a showman or collector of live animals, I could have gathered quite a harvest of wild beasts in Singapore, at very small cost. I was offered a fine tiger at \$150; baby oranges at \$20 to \$30, a fine pair of proboscis monkeys at \$100; a pair of full-grown tapirs at the same price; manis and slow lemurs at \$2; and a rhinoceros at \$250. ... The greatest bargain I heard of, was the sale of a full-grown orang-utan (*Simia satyrus*), four feet two inches in height, to the Hon. H. A. K. Whampoa, for the ridiculous sum of \$65, or \$35 less than the price first asked.” — William Temple Hornaday

1885.1



1885.1

This Currier's knife is used to prepare animal skins. It is manufactured in the 1900s by George Barnsley and Sons of Sheffield, England

1885.2

This drawing illustrates how a Currier's knife is used

1885.3

This engraving of a taxidermist at work is from Hornaday's book 'Taxidermy and Zoological Collecting'

1885.2



1885.3



American taxidermist William Temple Hornaday (1854–1937) comes to Southeast Asia in search of specimens. His account of live animals being sold in Singapore makes clear the scale of the trade 🍀1880. By the turn of the century, Hornaday becomes a staunch advocate of wildlife protection and conservation, and plays a key role in preventing the extinction of the American Bison. His account of the animal trade in Singapore appears in ‘Two Years in the Jungle’ which is published in 1885.

1885.4



1885.4

The “Whampoa” whom Hornaday refers to is Hoo Ah Kay, a businessman, diplomat and community leader from Singapore. Hoo Ah Kay’s garden is a well-known location in Singapore and descriptions of it can be found in several travel accounts. This print of his garden is made between 1875 and 1890

1885.5

Hoo Ah Kay (1816–1880), a businessman, diplomat and community leader from Singapore. In 2014, Hoo Ah Kay’s great-granddaughter, Madam Hoo Miew Oon, donates a tusk from a Narwhal (*Monodon monoceros* Linnaeus, 1758) to the Museum. The donation is given to celebrate five decades of Singapore’s independence and is on display at the Museum’s Mammal Zone

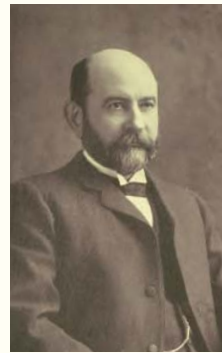
1885.6

William Temple Hornaday (1854–1937), American collector, taxidermist and conservationist

1885.5



1885.6



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🍀 1885

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1886

Carried away by a huge alligator

Crocodiles and humans in Singapore

“On Monday a Malay woman whilst picking clams on the side of the river in Ponggol, was seized and carried away by a huge alligator. No trace of the unfortunate woman has as yet been found.” — **Anonymous**

1886.1



1886.1

A Saltwater Crocodile skull (*Crocodylus porosus* Schneider, 1801). These animals are often referred to as “alligators” by early travellers to Southeast Asia

The “alligator” is the name given to the Saltwater (or Estuarine) Crocodile by early Europeans in Asia. The term “boa” is similarly in use for the Reticulated Python 🌿1879. Although crocodiles do not have the same fearsome reputation as tigers 🌿1840, 1870, crocodile attacks are nonetheless reported in the newspapers. The number of human fatalities due to crocodiles is much smaller than that attributable to tigers. Between 1842 and 1946, crocodiles kill 13 people while tigers kill 211 people between 1831 and 1930. This attack in Punggol occurs on 15 February 1886.

1886.2

These two species of clams are sometimes collected for food in Singapore and may have been those that the lady at Punggol is picking on that fateful day in 1886. The larger species is the Common Geloina, *Geloina coaxans* (Gmelin, 1791), while the smaller one is the Japan Venus, *Marcia japonica* (Gmelin, 1791)



1886.2



1820

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🌿 1886

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1890

Reason to believe it was poisoned

Animal mortality at the menagerie

“There was a good deal of mortality among the animals this year ... The two greatest losses were the wild dog (*Cyon javanicus*), which there is reason to believe was poisoned, and the crowned pigeon, which died of an attack of diarrhoea.” — Henry Nicholas Ridley

1890.1



Since its opening, the zoological gardens or menagerie at the Botanic Gardens **1876** is an attraction for visitors and specialists in animal cruelty. In the year after the menagerie opens, a cassowary, several kangaroos and a bear meet purposeful and cruel ends. This poisoning of a wild dog which is also known as the Dhole, and now known scientifically as *Cuon alpinus* (Pallas, 1811), is reported by Henry N. Ridley in 1890.

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1890.2



1890.1

The Dhole, *Cuon alpinus* (Pallas, 1811), is one of the species at the Botanic Gardens menagerie that is deliberately poisoned

1890.2

This skull is from a Dhole that is collected in 1909 from Bukit Gantong in Perak, Malaysia. The bones are not from the same individual and no collection data are associated with them

1900

All-conquering rubber

George P. Owen lays down his guns

“The days of sport on the island are almost over, and one cannot but regret that the all-conquering rubber has put an end to one of the most delightful pastimes which our predecessors of as recently as twenty years ago thoroughly enjoyed.” — **George Paddison Owen**

1900.1



1900.1

George Paddison Owen (1850–1928) and three of the tigers he kills. The one of Owen on his own (left) is entitled: “G. P. Owen with his first tiger”. The one with the bullock-cart (middle) is entitled: “Mr. G. P. Owen and a Singapore tiger”. The one with Owen not wearing his sola topi (right) is entitled: “A tiger hunt”



George Paddison Owen (1850–1928) comes to Singapore in 1879 and holds various positions at the fire brigade, as superintendent of rabies and various sporting clubs. He is well-known as an able hunter of tigers as the accompanying photographs show. A 4.7-metre-long Estuarine Crocodile that is killed by Owen in 1887 is now at the Museum. In a chapter in ‘One Hundred Years of Singapore’, Owen laments that the march of rubber plantations ends the sport of hunting, or ‘shikar’. Owen himself gives up hunting due to trouble with his eyesight in May 1900.

1820

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🌿 1900

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1940

1960

1980

2000



1902

25 Omar Road

Paul and Fritz Sarasin visit Singapore

“... we are waiting for a steamship to Batavia – we spent the day visiting the animal trader Mohammad Jaya of 25 Omar Road. He wasn’t really attentive, but it might interest Mr. Jung that a fine young female tiger costs 190 dollars or about 430 Francs. Rhino and tapir are not presently available but are however anticipated ...” — Fritz Sarasin

1902.1

The front and back of a postcard written by Fritz Sarasin to the director of the Basel Zoological Gardens. The postcard is written in the Sütterlin form of German handwriting. The portion of the message that is quoted is kindly translated by H. Rothweiler, H. Wagner, N. Wagner and J. Peuker

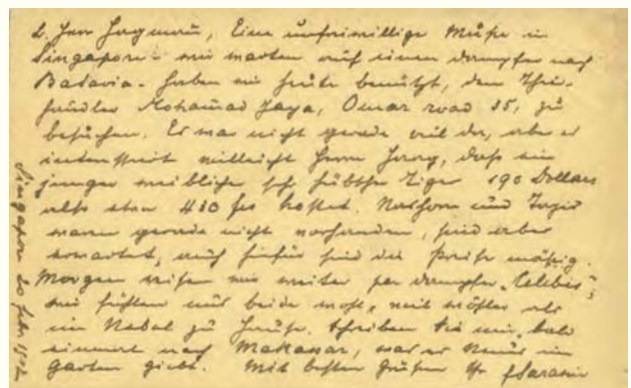
1902.2

These three plates depict slugs and snails from Sulawesi (“Celebes”), Indonesia. They are published in Paul and Fritz Sarasin’s ‘Materialien zur Naturgeschichte der Insel Celebes’ (‘Materials for a Natural History of the Island of Celebes’)

1902.3

Karl Friedrich “Fritz” Sarasin (1859–1942) (with knife) and Paul Benedikt Sarasin (1856–1929) (with gun) with an inhabitant of Sri Lanka. In their later years, both cousins become unwavering conservationists and are instrumental in origins of the International Union for Conservation of Nature (IUCN)

1902.1

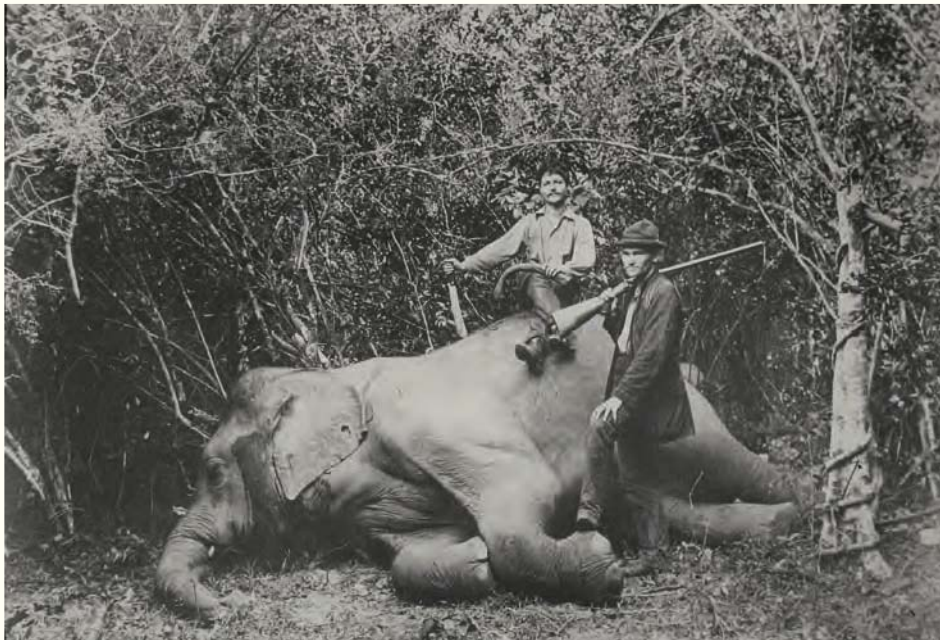


Swiss naturalists Paul Benedikt Sarasin (1856–1929) and his cousin Karl Friedrich “Fritz” Sarasin (1859–1942) make extensive natural history collections and observations in Celebes (now Sulawesi). During a stopover in Singapore, Fritz Sarasin sends a postcard to Gottfried Hagemann, director of the Basel Zoological Gardens, recounting a visit to an animal trader at 25 Omar Road. The cousins later become staunch advocates of wildlife conservation and are instrumental in the beginnings of the movement that becomes the International Union for Conservation of Nature (IUCN). This postcard from Fritz Sarasin to Gottfried Hagemann is signed 20 February 1902.

1902.2



1902.3



1820

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✿ 1902

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2000

1905

A manifestation of colonial power

The Botanic Gardens menagerie closes for good

“Despite its brief history, the menagerie at the Singapore Botanic Gardens had been a tremendous late-19th-century success, as its ability to cage, manage and exhibit—ultimately, subjugate—animals was a manifestation of colonial power ...” — **Timothy P. Barnard**

1905.1



1905.1

These are two of the species that are known to be kept at the Botanic Gardens menagerie: the Flat-Headed Cat, *Prionailurus planiceps* (Vigors & Horsfield, 1827), and the Rhinoceros Hornbill, *Buceros rhinoceros* Linnaeus, 1758

By 1901, the government is no longer willing to support the running of the menagerie at the Botanic Gardens 🍀1873, 1890 and Henry N. Ridley announces its closure in 1904. As a colonial project, however, historian Timothy P. Barnard considers the menagerie to be a success. It serves as a place where animals are kept for the edification of the privileged class and allows for the display of the spoils of expanding colonial influence over the Malay Peninsula 🍀1876. In any case, the final disassembly of the menagerie is completed by 1905.



1820

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🍀 1905

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1930

Loud frightening creatures Singapore's last Tiger?

“Whatever the source, it is documented that Changi served as a post-natal playground of many terrible female tigers during the 1900s. These animals swam across the straits from Johor to deliver their kittens in Changi, via a pit-stop in Pulau Ubin. Today, the loud frightening creatures that advance into and charge out of Changi are giant, noisy birds—airplanes landing and taking off on two four-kilometre-long runways, screeching, yowling and roaring ‘wheooooooooom’ at the rate of 175,000 flights a year. Changi Hill, upon which tigers once sought refuge, has been completely flattened. Its substance now lies beneath the airport runways, the product of ingenious land reclamation.”

— Tan Shzr Ee

1930.1

An engraving that is entitled “Tiger & Indian Bullock after Nature”. On 16 October 1930, what is possibly Singapore last native tiger is killed at Choa Chu Kang. The first report of a human fatality that is attributed to a tiger on the island occurs a century before 🌿1831

Tigers in Singapore progress from killing a person a day 🍀1831 to becoming so scarce that not a single one can be found 🍀1870. Nonetheless tigers persist on the island despite the efforts of hunters such as George P. Owen 🍀1900. At least two tigers swim over from Malaysia in the mid-1930s (including the infamous “municipal pet tiger”) but it is probable that Singapore’s last wild native tiger is killed on 16 October 1930.

1930.1



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🍀 1930

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1967

A rude shock

Sharks in Singapore waters

“A fishmonger at Ellenborough Market had a rude shock this morning when he sliced open a shark’s stomach to find parts of a human body inside. The 10ft-long shark, weighing over 300 katis, was caught at about midnight last night at a kelong off Pasir Panjang. It was brought to the market in Boat Quay early this morning for the usual fish auction. A large crowd gathered at the market to get a glimpse of the man-eating monster. When the shark was cut open, part of the limbs of a man and portion of his torso, flowed out. The body appeared to have been swallowed recently. Fearing that the shark might be poisonous, he decided to dump it in the nearby Singapore River. Late this afternoon, a police spokesman said that the whole shark together with its victim were being taken to the mortuary.” — **Anonymous**

1967.1



1967.1

These jaws are from the Tiger Shark that is brought to the Ellenborough Market on 2 July 1967 with human body parts in its stomach. The species is known scientifically as *Galeocerdo cuvier* Péron & Lesueur, 1822. It is unlikely that this particular Tiger Shark is responsible for killing the person whose remains are found in its stomach. Nonetheless, human fatalities that are caused by sharks are recorded in Singapore waters. The most infamous is the attack on Doris Bowyer-Smyth (d. 1925) who is fatally injured by a shark on 14 July 1925 at the Swimming Club near Katong. Between 1919 and 1954, at least 14 other shark attacks resulting in at least 11 fatalities are recorded in Singapore newspapers

Eric R. Alfred 🍀1966 recounts investigating this incident as just one of his many duties: “Talk about ‘multi-tasking’ even way back ... a Dr. So-and-So friend handling the ‘forensic’ case asked me to go take a look at the leg as well as the shark species. Was the human being already dead or still alive when the leg got eaten? Didn’t realise that a zoologist needed to answer so many questions. I thought hard and said that the cut on the leg looked too clean to suggest a living person’s wounds at the point of the bite”. The Tiger Shark arrives at the Ellenborough Market on 2 July 1967.

1967.2



1967.3



1967.2

This photograph shows Collyer Quay in about 1905. Several of the fatal shark attacks that are reported in Singapore newspapers between 1919 and 1954 occur here

1967.3

The Ellenborough Market in a 1953 photograph. The commotion on the morning of 2 July 1967 can only be imagined. Seven months later, the market is destroyed by a fire

1820

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🍀 1967

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2000

1982

A more harmless looking tapir

Frank Buck and 'Bring 'Em Back Alive'

“On the outskirts of Singapore is the small town of Katong where I maintained a compound. There I instructed Dahlam Ali, the Malay who served me on expeditions in and around the Malayan district ... to build a small pen for the tapir. He and another boy in my employ built one about twenty feet square. They drove posts into the ground and with two-by-four planks built an enclosure about five feet high, a height which the animal could not jump. When three sides were up I drove the animal in from his cramped native cage, and with Ali hastily nailed up the opening while the other boy kept our captive cornered with a pole. Never had I seen a more harmless looking tapir.” — **Frank Howard Buck**

1982.1



1982.2



1982.1

This photograph shows “Chop Joo Soon and his bird bazar” at North Bridge Road in Singapore. It is published in ‘A jungle business’, an article by Buck that details his first trip to Asia. The article is published in August 1922

1982.2

This photograph, also from ‘A jungle business’ is captioned: “Sampans moored at Singapore water-front” and is accompanied by the description: “Chinese Dealers Go Out to the Steamers in the Bay and Buy Animals from Ships’ Officers Who Have Called at Borneo, Sumatra and New Guinea”

Frank Howard Buck (1884–1950) is an American animal dealer and film celebrity. He makes several visits to Singapore to purchase live animals which are shipped back to zoos in the United States. The quote is from Buck's book 'Bring 'Em Back Alive'. Buck goes on to describe how this supposedly innocuous tapir later almost kills him. Singapore provides many of the filming locations for a movie that is based on the book and is also called 'Bring 'Em Back Alive'. A television series that is loosely based on the book and original film is released on 24 September 1982.

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1982.3



1982.4



1982.3

Another photograph from 'A jungle business'. The caption is "Malay boys in Singapore, playing with tree-lizard". The animal appears to be a species of monitor (*Varanus* sp.). The description that accompanies it is typical of Buck's tendency towards the spectacular: "Singapore, with the Shops of the Animal-Dealers Filled with Strange Birds, Tigers, Orangs and Panthers, Is as Thrilling as the Circus to the Small Boy"

1982.4

Frank Howard Buck (1884–1950), American animal dealer and film celebrity

🌿 1982

2000

Part 8

Part 8 Changing Landscapes, Changing Attitudes

Learning to Live with Nature

It is generally assumed that many of the more positive attitudes towards nature such as conservation and animal welfare are recent developments. As far back as the 1830s, a letter appears in a local newspaper with a call “to leave a few of the largest trees, here and there, to protect the earth from being parched up by the sun ...” ♣1835. The words of the letter are prescient and three decades later a drought occurs. Prior to this in 1857, Tan Kim Seng pledges his financial support ♣1858 to build the first reservoir, but it takes the drought to sufficiently motivate the authorities.

Maintaining a supply of water and keeping waterways clean are issues close to Mr Lee Kuan Yew ♣1977. His vision of a green “garden city” also lays the foundations for the Parks and Trees Act ♣1975 and of the National Parks Board ♣1996 which continue to ensure Singapore’s environment remains conducive to residents, both human and non-human. Similarly, the need for land reclamation in a country in which it is scarce ♣1968 is balanced by setting aside areas where biodiversity can thrive, such as Chek Jawa ♣2002.

The attitude towards animals also changes for the better—from being quarry to be hunted to becoming creatures that are deserving of protection. The lives of three game hunters reflect these changing attitudes. Theodore R. Hubback ♣1936 is pivotal in setting up what is today ‘Taman Negara’. Edward O. Shebbeare ♣1958 is the first president of the Malayan (now Malaysian) Nature Society. Not entirely giving up on hunting animals, Eric C. Foenander ♣1952 nonetheless advocates greater protection of large animals.

8.1

This is a portion of the title-page of the ‘Report of the Wild Animals and Wild Birds Committee Singapore’. Amongst its authors are Theodore R. Hubback ♣1936 and Frederick N. Chasen ♣1940. The report’s contents include such items as: ‘Zoological gardens’, ‘Overseas transport’, ‘Efficient control’ and ‘Inspection of bird shops’. The report thus signifies in many ways the changing landscapes and attitudes toward nature that are beginning to take place in the 1930s when this report is published

Similar changes can be seen in the way that the public perceives animals. In the first half of the nineteenth century, turtles are commonly sold as food and sell for the same price as fish ♣1841. Both meats are the cheapest available. Less than a century later, the killing of a Whale Shark ♣1964 elicits an outcry. Rescue efforts are launched to rescue a False Killer Whale ♣1994 and several Dugongs ♣1999 in Singapore waters, although these are ultimately unsuccessful. The story of the Asian Elephants that swim to Pulau Tekong ends on a happier note—they are safely captured and relocated to Malaysia ♣1990. The creation of the Singapore Zoo ♣1973, and its own evolution through time, arguably plays a role in the changing attitudes of animals being seen as attractions to becoming co-inhabitants of the planet, that now more than ever require our respect and protection to co-exist.

Alien species are another facet of changing landscapes. Domestic cats and dogs appear to be brought to Singapore at a very early time ♣1836. The Pygmy Spiny-tailed Skink ♣1925 and the Mozambique Tilapia ♣1938 arrive in Singapore most likely as a result of trade. The movement of animals and plants to and from Singapore becomes highly regulated when Singapore joins CITES ♣1986, and the wildlife that previously exists (see Part 7) is consigned to history.

The changing environmental landscape does cause irreversible changes, however. The last known Banded Leaf Monkey from Bukit Timah ♣1987 is mauled to death by dogs and less than a decade later, the Cream-coloured Giant Squirrel is seen for the last time ♣1995. These last two events in particular, remind us that our changing attitudes are always a work in progress.

8.1



REPORT OF THE WILD ANIMALS

AND

WILD BIRDS COMMITTEE

SINGAPORE

1835

To leave a few of the largest trees An early conservation discourse in Singapore

“That hills of this island are not without means of giving life to and sustaining a strong vegetation is sufficiently indicated by the dense masses of large trees and brushwood which cover their very tops; and they may retain for a long time the power of yielding abundance, if care be taken by the first settlers to leave a few of the largest trees, here and there, to protect the earth from being parched up by the sun and at the same time, to attract moisture from the clouds.”
— ‘Agricola’

1835.1



One of the earliest calls for conservation is a letter to the editor of the ‘Singapore Free Press’ by the pseudonymous ‘Agricola’. In the same letter, the writer worries that “[i]t is but too well known by sad experience that regions within the tropics, formerly of great fertility, have become equally sterile by the removal of the trees which both shaded and moistened them”. The concerns of ‘Agricola’ are not exaggerated and three decades later there will be an island-wide drought 🍀1858. The letter is published on 8 October 1835.

1835.1

These are four scenes from Singapore that are published in 1876. From left to right: Bukit Timah, Seletar, and two views of Changi. They show that many tall trees are still present at this time. ‘Agricola’ calls for the “first settlers to leave a few of the largest trees, here and there, to protect the earth from being parched up”



1836

Progenitors of mongrel dogs

Early alien species in Singapore

“In this year the descendants of a male and female Jackall, that an individual had brought from Bengal, became very noisy and troublesome animals, and killed fowls in people’s compounds, and were said to be the progenitors of mongrel dogs here in the jungle.” — Charles Burton Buckley

1836.1

The “Jackall” that Buckley refers to is more likely to be a feral dog (*Canis familiaris* Linnaeus, 1758) than the Golden Jackal (*Canis aureus* Linnaeus, 1758) that is depicted here. This species is only found in the wild to the north and east of Thailand

The 'Singapore Chronicle' of 8 May 1828 recounts how domestic cats brought from India to Singapore promptly becoming feral in the forests. The same article notes that "jackals" brought from India at an even earlier date are by then beginning to multiply and become a nuisance. These animals probably refer to feral dogs (*Canis lupus familiaris* Linnaeus, 1758) which do resemble the Indian Jackal (*Canis aureus* Linnaeus, 1758). The quote by Charles Burton Buckley (1844–1912) is from his 'An Anecdotal History of ... Singapore' in which he recounts how these dogs multiply and become a general nuisance by 1836.

1820

1836

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1960

1980

2000

1836.1



1841

Turtle at the rate of fish per lb.

Exploitation of wild animals for food

“Fish, 5 cents per lb. but it is seldom weighed when the fish is not large enough to require being cut up. Turtle at the rate of fish per lb.” — **Anonymous**

1841.1



1841.1

The turtle trade in 1898 in Florida, USA. When it is viewed through a stereoscope, the image on this stereoscope card appears three-dimensional

1841.2

This list from the 'Singapore Free Press' of 16 December 1841 shows the prices of various meats and other food items

Turtles, and other chelonians such as tortoises and terrapins, are a convenient and easily-transportable source of protein and “turtling” is a common practice. Ethical considerations aside, they can be flipped upside-down and kept alive until needed. Contemporary accounts state that the meat is “toothsome”. A price list from the mid-nineteenth century show turtles as cheap as fish and both being the cheapest meats available. This indicates that marine animals are probably abundant at this time. Turtles will become less plentiful but fish continue to be cheap and abundant in fish markets 🌿1913. This price list appears in the ‘Singapore Free Press’ on 16 December 1841.

1841.2

Prices of supplies fluctuate a good deal—but the following may be considered average ones :—

Beef on shore 6 to 8 cents of a dollar per lb. Sent to ship-ping 11¼ cents per lb.—pork 10 to 11 cents per lb.

A sheep 9 to 10 dollars.

Mutton—hind-quarter 2½, Fore-quarter 2 dollars

Poultry—A goose, 1 dollar ; Turkey, 3 dollars per pair; Ducks, 3½ to 4½ dollars per dozen; Fowls, large, 3½ to 4 dollars per dozen, medium 2½ to 2½ dollars the dozen; Fat Capons ¾ dollar each.

English ham, 25 cents per lb.

Bread various—The first quality is 6 cents for the loaf weighing 14½ tael—there being about 10¾rd taels to one pound.

Butter 12 chittacks, per dollar. évide table of wt.

Milk 12 chupahs per dollar—a chupah being about 64 cubic inches.

Fish, 5 cents per lb. but it is seldom weighed when the fish is not large enough to require being cut up. Turtle at the rate of fish per lb.

Eggs, \$1¼ to 1½ per 100. These are small on the average. But the Cochinese Fowl’s eggs are equal in size those of the English fowls. The bird is larger than the common English breed. The cock is a majestic looking bird—but he is an arrant coward, and is easily driven from the field by one of the smaller Straits breed. Coconut Oil 7 dollar per picul—which is 133lbs.

Cheese 25 to 30 cents per lb.

1820

🌿 1841

1860

1880

1900

1920

1940

1960

1980

2000

1858

High sense of gratification

Tan Kim Seng and the first reservoir

“I have the honor to forward for your perusal copy of a letter ... from the Hon’ble the Governor of the Straits and express to you the high sense of gratification it will afford His Honor to bring the subject (as his Honor immediately will) to the notice of the Right Hon’ble the Governor General in Council.”

— Henry Somerset Mackenzie

1858.1

Built in 1857, the Impounding Reservoir is Singapore’s first. It is renamed the MacRitchie Reservoir in 1922. This postcard is from the 1900s

1858.1



Tan Kim Seng (1805–1864) is a prominent trader and philanthropist who recognises the need for a “permanent supply of water to the Inhabitants of Singapore”. He pledges 13,000 Straits Dollars towards what is in essence the first reservoir in 1857, although it is not built until an island-wide drought in 1864 provides the necessary impetus. Reservoirs change the natural landscape of Singapore. Balancing the needs for a supply of water and conserving nature continue to the present day. Here, resident councillor Henry Somerset Mackenzie acknowledges Tan Kim Seng’s generous offer on 11 January 1858.

1820

1840

1858

1880

1900

1920

1940

1960

1980

2000

1858.2



1858.2

The Tan Kim Seng Fountain at the Esplanade Park in Singapore. This fountain commemorates Tan’s 1858 donation of 13,000 Straits Dollars towards the construction of the first “permanent supply of water to the Inhabitants of Singapore”

1925

In a cargo of sandalwood

Trade and alien species

“We have recently examined an example of the Australian scink, *Egernia depressa* (Gunth.) which was captured near the Tanjong Pagar docks in Singapore and as there are four other specimens of *Egernia* in the Raffles Museum, three certainly, and all presumably, taken on the island there seems to be a reasonable chance of this alien becoming established. Two of the older specimens are labelled as having been caught in the dock area and one was discovered in a cargo of sandalwood. ... Those boats carrying timber, largely exported from the ports of south-western Australia, are no doubt the means by which the scink reaches Singapore ...” — **Frederick Nutter Chasen**

1925.1



1925.2



The rise of plantation agriculture 🌿1834, new crops 🌿1897 and Singapore's role as a nexus of trade in the British Empire all have consequences for the island's natural history. These human activities are the means for the introduction of alien species. Unlike the deliberate introduction of cats and dogs 🌿1836, the Pygmy Spiny-tailed Skink is likely an inadvertent introduction, as appears to be the case with the Cat-eyed Gecko 🌿1864. The specimen that is reproduced here is one of those that Chasen refers to. This report by Frederick N. Chasen 🌿1940 is published in April 1925.

1925.1

A specimen of the Pygmy Spiny-tailed Skink, *Egernia depressa* (Günther, 1875). This specimen is one of those that Chasen refers to in his 1925 report. The associated specimen data include the remark: "from sandalwood cargo, Western Australia"

1925.2

This photograph that is taken in 1907 shows sandalwood being loaded in Victoria Quay, Fremantle, Australia

1925.3

Australian Sandalwood (*Santalum* sp.)

1925.3



1820

1840

1860

1880

1900

🌿 1925

1940

1960

1980

2000

1936

A tactless wildlife ‘fanatic’

Theodore R. Hubback and Malaysia’s first national park

“The King George V National Park was the product largely of the tenacity of one man, Hubback. Nonetheless, his uncompromising personality and his reputation, even among his close friends, as a tactless wildlife ‘fanatic’, continued to pose a problem for the government.”

— Jeyamalar Kathirithamby-Wells

1936.1



The zeal of engineer and hunter-turns-conservationist Theodore Rathbone Hubback (1872–1944?) is not appreciated by everyone, as historian Jeyamalar Kathirithamby-Wells points out. Nonetheless, Hubback is instrumental in establishing King George V National Park in Malaysia (now ‘Taman Negara’). Hubback is also a pioneer of wildlife photography and his images appear in the ‘Mammals of Malaysia’ by John C. Moulton 🍀1923. Hubback appears to evade the Japanese during World War II but mystery surrounds the circumstances of his death. The cementing of Hubback’s great legacy, the King George V National Park, is formalised during a debate in the British House of Commons on 5 May 1936.

1820

1840

1860

1880

1900

1920

🍀 1936

1960

1980

2000

1936.2



1936.1

This photograph is published as the frontispiece of ‘Three Months in Pahang in Search of Big Game’ by Hubback. It is captioned “The Bag”. Hubback is seated at the centre with a gun across his lap

1936.2

Wan Teh bin Salleh (b. 1913?) is Hubback’s assistant (and later adopted son). Hubback speaks highly of his adopted son: “Wan Teh had made my most spectacular elephant film when he was working by himself”. Wan Teh is later accused of murdering Hubback but is acquitted. The circumstances of Hubback’s death remain a mystery

PHOTOGRAPHY IN A MALAYAN JUNGLE

21 ELEPHANTS AT A TIME

Written and Illustrated by
THEODORE HUBBACK

[This article was posted to COUNTRY LIFE from Kuala Lipis, Pahang, only a few days before the Japanese invasion of Malaya began. If Mr. Hubback escaped we should be glad to hear from him.—Ed.]

NOT very far from my home on the Jelai River in Pahang, in the Federated Malay States, is a well-known salt-lick called Jenut Lanau, *jenui* being the Malay word for salt-lick and *lanau* the name of a small stream that meanders through the clearing in which the lick is situated. This lick is a favourite rendezvous for wild elephants and I have often enjoyed the privilege of watching elephants there. I have actually identified eight tuskers who have from time to time visited the lick, but of course there are many others that I have not seen and I have not included the little ones.

That reminds me of a good story told of a resident in Malaya whose stories, although entertaining, were not meticulously accurate. This man—I will call him B—was a planter who lived some way out of the little town where the government had its headquarters, and where there was a congenial club patronised by all, as is the way in the East. B occasionally came in for an evening "yap" and generally had some good yarn, nearly always new because it would generally be about himself. One evening he came into a well-filled club, obviously bursting to tell us something.

"Well," he said, "I had an adventure last night which will surprise you chaps when



SELADANG, THE WILD CATTLE OF MALAYA, IN A SALT-LICK IN PAHANG

I tell you about it—I've never seen so many wild elephants in my life. I was bicycling down the road to M— just about dusk when a large white elephant came out of the jungle and stepped on to the road about 12 yards from me. I pulled up pretty quickly, I can tell you, and as I stood on the road elephant after elephant came from the jungle on to the road, and after waiting for a few seconds, crossed into the jungle on the other side.

"As you fellows know, there are miles of virgin jungle in the vicinity of M—. These elephants took three hours to get clear and I counted 63 of them."

None spoke—we knew our prevaricator—but no doubt most of us thought what

wonderful eyesight he had to be able to count elephants in the dark. There the matter might have ended, but a few weeks later B was in the club again and repeated his story. But this time he said he counted only 42 elephants. It must then have crossed his mind that he had told the tale before, so he quickly corrected himself by adding: "Of course, that was not counting the little ones." One of his audience who had heard the yarn the previous time and was a bit tired of B's tall stories, said: "B, to be a good liar you must have a good memory; you haven't."

To return to the salt-lick. A few months ago I was anxious to find out if all was well in Jenut Lanau, but being somewhat under the weather, I sent my Malay camera-man, who is also my head boatman and drives my outboard motor-boat, to make a quick trip up the river to investigate. These licks, if left unvisited for long, are liable to be shot over by poachers, and it is as well to let the fraternity know that an eye is being kept on their movements.

My man's name is Wan Teh. He has worked with me for many years, helps to take photographs of wild life, and is thoroughly familiar with the workings of my cameras and the likely reactions of wild animals when in salt-licks. Of course, there is nothing to it when he is with me, but when he is by himself the natural fear of large wild animals, which is endemic in Malaya, has to be considered. However, as this yarn will show, he has had so much experience when with me that he had no more concern for elephants than I have, and stood up to his job like a man.

Wan Teh left my landing-place at 8 a.m. on the morning of September 3, arriving at the camping site for the salt-lick



TWO DOE SAMBHUR IN A BEAUTIFUL SETTING IN THE MALAYAN JUNGLE

about half-past three in the afternoon. From now on I will let him tell the story as he told it to me when he returned two days later.

"Sir," said Wan Teh, "when I arrived at Kuala Lanau I met two Sakai (an aboriginal tribe), one of which was Grey, who told me that elephants had been trumpeting round the lick for three or four nights and as they had not crossed the river, were probably nearby. After making camp, I went up to the lick and made a rough hide. There was nothing in the lick when I arrived, but I could see that a lot of elephants had been there the previous night. I had Grey and another Sakai with me, as well as one of the Malay boatmen. Shortly before five o'clock I heard an elephant rumble in the jungle on the far side of the lick, and almost at once a very big cow elephant came out of the jungle

surrounding the lick was full of elephants coming and going, but not to the lick, as all the best places were occupied by the five big elephants and one baby, which I could no longer see among the forest of enormous legs.

"I took an entire reel (100 ft.) of cine and 36 stills. There were altogether 21 elephants, seven big cows, seven small tuskers, and seven others, of which four were small calves. It was a wonderful sight."

It must have been. These elephants were within 25 to 35 yards of the cameras. I asked Wan Teh if the Sakai were frightened. He replied that Grey, who has often been on jungle trips with me, was not frightened at all, but that the other fellow, a stranger to him, turned a sickly green colour, and would not even look at the elephants, cowering in a corner shivering with fright, with Grey's

his trunk, bending it into the shape of an inverted question mark and then rubbing the top of his head with the bend.

I developed the stills the day after Wan Teh returned, and although under-exposed, they were exceptionally good for a late afternoon exposure. The cine is perfectly exposed, but there I had a 2 ins. lens with a full aperture of F.1.5, whereas with the other camera I had a 13.5 cm. telephoto lens with a full aperture of F.4.5. I had told Wan Teh to use the 1/20th of a second exposure for the stills because anything slower will not eliminate motion. I think the accompanying pictures show that he made a good job of his photography.

The really lucky coincidence was that Wan Teh went to the lick on the last occasion that these elephants visited it on their



"THE CLEARING WAS FULL OF ELEPHANTS COMING AND GOING"

But all the best places were occupied by these five and a concealed baby. These photographs were taken by a Malay servant of the author's

and walked quickly to the lick. The day was still fine and bright and there was good photographic light.

"The cow immediately started to stir up the mud and as I had already got the cine-camera trained on the spot where I had heard the rumbling, I was able to get going the moment she left the jungle. Shortly after the big cow had got well down to it in the lick a little calf came along, followed by a big cow, obviously the nurse. The three of them got busy and were joined by three more within a minute or two, all coming by the same game-trail.

"The cine had now run down, so I took a few stills with another camera and then, after winding up the cine, started in again on the movie. But by this time the clearing

hand continually soothing him to prevent him running away or screaming.

In the cine film one can actually count 19 elephants, and among them are two somewhat out of the common. One small tusker, not more than 6 ft. in height, I should estimate, had only one tusk. This was probably congenital, because he was too young to have been wounded and thus lost his tusk. The other one, smaller than the single tusker, had a long pair of slender tusks, quite out of proportion to his size. Either he is a stunted elephant or more probably a normal elephant with an abnormal pair of tusks, which will be a magnificent pair in a few years, if he survives. One young tusker gives a good demonstration of how an elephant scratches his head with

rounds. They have a wide beat in the jungle and sometimes do not come near Jenut Lanau for several months. No doubt they visit other licks in the interval. Wan Teh spent the whole of the next day in the lick, but nothing came in at all, and subsequent enquiries showed that he was only just in time.

One wants some luck when photographing wild life in dense jungle, and often one may wait for days and days and get nothing. On that account I was more pleased that Wan Teh had made my most spectacular elephant film when he was working by himself than if I had taken it myself.

In addition to the elephant photograph I send you two others showing two doe sambar and two wild cattle at another salt lick in Pahang.

1938

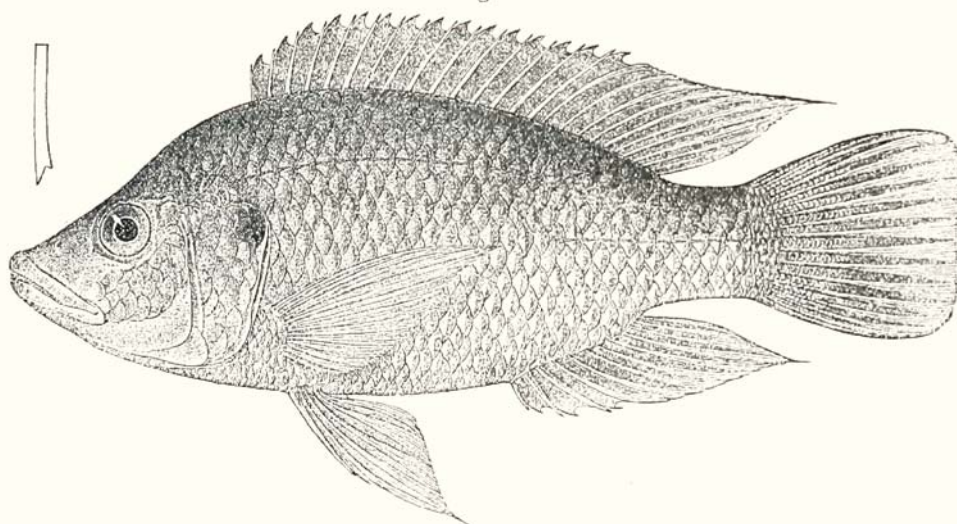
The tale of Tilly Tilapia

Singapore and the Mozambique Tilapia

“The tale of Tilly Tilapia. Once upon a time there was a happy little fish that lived in East Africa—and nowhere else in the world. It was called *Tilapia Mossambica* (Tilly for short), and it was two or three inches long. Then it started seeing the world. A fish fancier in Java thought it would be very nice if he had a few Tilapia in his aquarium, so he ordered some by post. Many months later—or it might have been years—some of his Tilapia escaped from their tank in the aquarium, slipped hand in hand down the corridors and out into the world of adventure.” — Wynona “Noni” Hope Wright

1938.1

Fig. 101.



Tilapia mossambica.
Zanzibar Coast. $\frac{5}{16}$.

Tilapias are amongst the most widespread alien freshwater fish in the world, with the Mozambique Tilapia being the champion traveller. How this species got from Africa to Southeast Asia remains a mystery. New Zealand film director Wynona “Noni” Hope Wright (1913–1964) retells one of the conventional versions of the Mozambique Tilapia’s ‘Out of Africa’ story in which the fish first appears in Indonesia. From there, the fish is then thought to be introduced into Singapore by the occupying Japanese forces during World War II. One alternative theory is that the fish is instead transferred from Singapore to Indonesia. Singapore does have a history of incoming alien species 🍀1836, 1864, 1896, 1897, 1922, 1925 and is known to be the origin of the Mozambique Tilapia that make their way to Fiji and Hawai‘i. Tilapia expert Roger S. V. Pullin suggests that an aquarist from Singapore may be responsible for the transfer of the Mozambique Tilapia to Indonesia in 1938.

1938.1

This drawing of a Mozambique Tilapia, *Oreochromis mossambicus* (Peters, 1852), appears in the ‘Catalogue of the Freshwater Fishes of Africa’ by George Albert Boulenger (1858–1937). Boulenger names about two thousand new species of amphibians, fish and reptiles, before switching to studying roses

1938.2

This Mozambique Tilapia specimen is collected at the Sungei Buloh Wetland Reserve in Singapore

1938.2



1952

Hit fair and square

Eric C. Foenander and 'Big Game of Malaya'

"... Hit fair and square, supplementary shots may not be necessary as the beast seems easy to kill and any of the high velocity rifles of a .318 to a .375 bore would be adequate for use against it." — **Eric Carl Foenander**

1952.1



1952.1

These photographs of three large mammals are taken by Theodore R. Hubback 🍀1923 and appear in the 'Mammals of Malaysia' by John C. Moulton 🍀1923. They are the Asian Elephant, *Elephas maximus* Linnaeus, 1758 (left); Sumatran Rhinoceros, *Dicerorhinus sumatrensis* (Fischer, 1814) (middle); Seladang, *Bos gaurus* Smith, 1827 (right). Foenander's book the 'Big Game of Malaya' also features Hubback's photographs

Eric Carl Foenander (1902–1974) holds appointments in various forestry departments in Malaya (now Malaysia). Like Theodore R. Hubback 🍀1936, Foenander is also a hunter of large animals and owns a large collection of mounted trophy heads, horns and tusks. Unlike Hubback who gives up the gun for the camera, Foenander continues to advocate the hunting of large animals, albeit in a regulated manner. Here, he provides advice on how best to kill a Malayan Tapir, *Tapirus indicus* (Desmarest, 1819) 🍀1909. This recommendation comes from his book, ‘Big Game of Malaya’ that is published in 1952.



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🍀 1952

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1958

Non-human lifeforms

Edward O. Shebbeare and
'Soondar Mooni'

“Whilst most historians treat him as a footnote to the Everest expeditions, he developed a legendary reputation amongst south-east Asian conservationists. In the mountains, jungles and forests of the Himalaya, E O Shebbeare became a pioneering naturalist and forest conservationist, eventually becoming chief conservator of wildlife for Malaya. ... As well as significant contributions to the scholarly literature on the flora and fauna of south-east Asia, in his retirement he wrote ‘Soondar Mooni’ ... a book that explores non-human subjectivities and agency, providing us with evidence of Shebbeare’s deep sensibility for the natural world and the non-human lifeforms we share it with.”

— Jonathan Westaway

1958.1

Edward Oswald Shebbeare (1884–1964), British explorer, mountaineer, hunter and conservationist. This warm portrait of Shebbeare is taken in the early 1930s by Swedish ornithologist Bengt Berg (1885–1967). Berg is one of the first natural history filmmakers and Shebbeare facilitates Berg’s pioneering camera-trap expedition to photograph the wildlife of Bengal. This photograph is reproduced with the permission of Sue Morton, Shebbeare’s granddaughter

Edward Oswald Shebbeare (1884–1964) is a mountaineer, hunter and conservationist. He is a founding member of the Himalayan Club and transport officer on several early Mount Everest expeditions. The knowledge Shebbeare acquires as a hunter is later put to use in wildlife conservation. He is appointed game warden of King George V National Park (now ‘Taman Negara’) in 1938, after its establishment through the efforts of Theodore R. Hubback ♣1936. Shebbeare is also the first president of the Malayan Nature Society ♣1954, and corresponds regularly with Museum directors Frederick N. Chasen ♣1940 and Michael W. F. Tweedie ♣1946, 1953. ‘Soondar Mooni’, Shebbeare’s acclaimed elephant book, is published in 1958.

1958.1



1820

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♣ 1958

1980

2000

1964

Harmless shark, nine men and a bren A Whale Shark in Singapore waters

“Harmless shark, nine men and a bren. I have just read the report of the marine police, “exciting hour-long battle with a rare one-ton whale shark.’ The feelings I had while reading the prowess of the killing-team leader were far from admiration of appreciation. Let me quote from the report: This whale shark is ‘rare’, ‘it is perfectly harmless, and you can even ride on its back.’ Those seem to me compelling reasons to leave this animal alive. ... I am a school teacher and every day try to teach my students not to destroy harmless creatures.”

— ‘Sympathiser’

1964.1



1964.1

The Whale Shark (*Rhincodon typus* Smith, 1828) that is killed on 6 June 1964 off Pulau Sebarok in Singapore. Tham Ah Kow 🌿1962 tells the ‘Straits Times’ that the shark is to be used for research at the University of Singapore but no trace of it remains. The photograph appears to be taken by John L. Harrison

1964.2

Singapore’s first and only known Whale Shark is found trapped in a ‘kelong’ or fishing-stake. This photograph of a ‘kelong’ is taken in 1965 in Singapore

A Whale Shark (*Rhincodon typus* Smith, 1828) is reported to be causing problems at a 'kelong' (fishing-stake) off Pulau Sebarok. The marine police who arrive on the scene kill it with at least 13 shots from a Bren gun. This angry response from 'Sympathiser' appears in the 'Straits Times' on 13 June 1964. A few days later, another article in the 'Straits Times' quotes Alec Fraser-Brunner ♣1935 as saying that the words of 'Sympathiser' are "rather harsh" and that "[i]t has to be remembered that, so far as I can discover, this is the first whale shark ever seen in Singapore. Neither fishermen nor police knew that it was not dangerous. Its very size was alarming even though it was only half-grown". Nonetheless, the same article goes on to say that "Mr. Fraser-Brunner also said that it was gratifying to know that there were civilised people, like 'Sympathiser,' eager to take up the cause of persecuted animals". Things certainly change. Today swimming with sharks is an attractive proposition for many Singaporeans. This first and only known record of a Whale Shark in Singapore waters occurs on 6 June 1964.

1964.3



1964.2



1964.3

John Leonard Harrison (1917–1972), zoologist and author. This photograph is taken in about 1960 on Mount Kinabalu, Sabah, Malaysia. Harrison is holding an unidentified species of *Rafflesia* (*Rafflesia* sp.). Harrison is the author 'An Introduction to Mammals of Singapore and Malaya' ♣1954, and co-author of 'Malayan Animal Life' with Michael W. F. Tweedie ♣1946. The Museum holds a collection of photographic slides and other materials from Harrison

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♣ 1964

1980

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1968

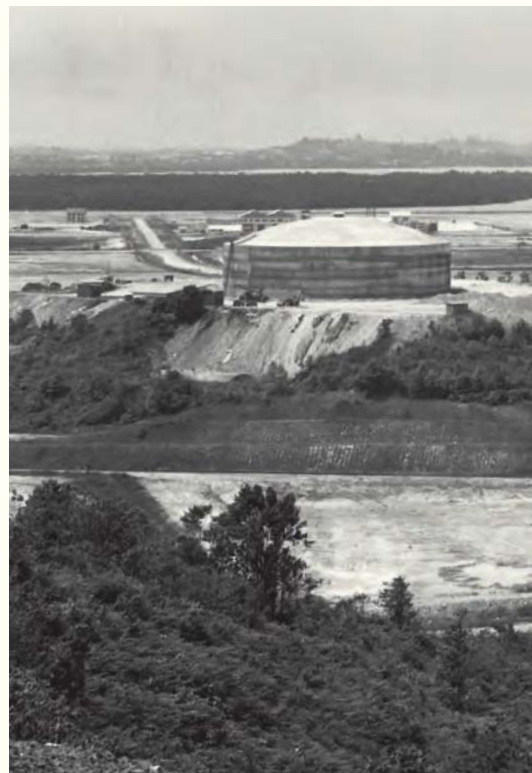
Crocodile-infested no more

Land reclamation in Singapore

“Singapore’s first industrial estate is located in Jurong. Before its transformation into an industrial estate, Jurong was a landscape covered in forest and swamp, with crocodile-infested rivers. There were also fish and prawn ponds. Reclamation work began in the 1960s. Swampland was reclaimed using earth obtained from the levelling of hills in the area. Subsequently, land was also reclaimed in Tuas and the southern islands. In the 1990s, work commenced to combine the southern islands to form Jurong Island, with the objective of creating a petrochemicals hub. The task of developing Jurong was initially undertaken by the Economic and Development Board, but the Jurong Town Corporation (JTC) was founded in 1968 to oversee the continued industrialisation and management of the estate.” — **Marsita Omar**

1968.1

This view of the Jurong Industrial Estate area is taken on 31 July 1966



Land reclamation is important in land-scarce Singapore. It changes the country's coastlines dramatically. But it is not a recent development. Mount Guthrie 🍀1906 is levelled, likely to provide soil for reclamation, and is no longer extant by 1923. This first reclamation work, however, begins a century before in 1822. That year, a committee is appointed by Stamford Raffles 🍀1820 to examine the merits of reclaiming areas along the Singapore River to create more land. On this occasion, Raffles and William Farquhar 🍀1822 are able to agree with one another and the project is completed in the second half of 1822. This results in the reclamation of the south-west bank of the river. A century and a half later and half the island away, a very large reclamation and industrialisation project is underway in Jurong. To oversee this, the Jurong Town Corporation (JTC) is created on 1 June 1968.

1968.1



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🍀 1968

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2000

1973

A damned fine zoo

The Singapore Zoological Gardens

“The man who helped design the Singapore zoo gulped a piping hot shot of black coffee, sat back in a reflective mood, and said simply: ‘It’s a damned fine zoo.’” — **Anonymous**

1973.1



The “man who helped design” the Singapore Zoological Gardens (now the Singapore Zoo) is Ong Swee Law (1935–1995), its executive chairman from its inception. After many visits to zoos worldwide, Ong selects wildlife and zoo expert Lyn de Alwis (1930–2006) as consultant for the project. The zoo is a popular destination from the day it opens. Shortly after it is launched, the carparks are so full that visitors abandon their cars along Mandai Lake Road and walk the remaining three kilometres. Today, the Singapore Zoo is a world-acclaimed zoological gardens that conducts and funds conservation research. The Singapore Zoological Gardens is officially opened on 27 June 1973.



1973.1

Two Orangutans (*Pongo* sp.) that are photographed on 17 May 1997 at the Singapore Zoological Gardens. The sign shows the name of the zoo at this time. It is later renamed the Singapore Zoo

1820

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1960

 **1973**

1980

2000

1975

Frustrating the efforts Parks and Trees Act

“No tree on a vacant plot of land can be cut down if its trunk measures over one metre (3ft 4in) and is half a metre tall (1ft 8in) from the ground. Under the Parks and Trees Bill passes by Parliament yesterday, the owner or occupier of the vacant plot of land would be held responsible if such a tree is felled. Moving its second reading, the Minister for Law and National Development, Mr. E. W. Barker, said the new provision was to prevent anyone from frustrating the efforts of Commissioner for Parks and Recreation to make Singapore a garden city with recreational facilities for the urban population.” — **Anonymous**

1975.1

A slice from the Chengal Pasir (*Hopea sangal* Korth.) at Changi that is cut down illegally in 2002. It is on display at the Museum's Plant Zone

In late 2002, a tree that is thought to be no longer found in Singapore is rediscovered in Changi. A lone specimen of Chengal Pasir (*Hopea sangal* Korth.) near Halton Road is identified during a survey. It is suggested that this is the species which gives the Changi area its name. Just months later on 20 November 2002, a property developer cuts down the tree. The firm pays 84,035 dollars in fines and damages, an amount some may feel is insufficient for killing a tree that is thought to be 150 years old. Nonetheless, the Parks and Trees Act provides the legal framework by which such fines can be issued and through which trees all over Singapore receive protection. The act is previously enforced by the Parks and Recreation Department (as is mentioned above) that later becomes the National Parks Board 🍀1996. A slice from the unfortunate tree is now on display at the Museum. The passage of the act is announced under the headline “Trees that can’t be chopped down” in the ‘Straits Times’ of 28 March 1975.

1975.1



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1920

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1960

🍀 1975

1980

2000

1977

Let us have fishing

Cleaning up the Singapore and Kallang Rivers

“In ten years let us have fishing in the Singapore River and fishing in the Kallang River.” — **Mr Lee Kuan Yew**

1977.1



1977.1

The Singapore River before the clean up. This photograph shows hawker stalls along the river in 1970

These are the words of former Prime Minister Lee Kuan Yew when he opens the Upper Peirce Reservoir in 1977. At this time the Singapore and Kallang Rivers are used for the transportation of goods and often as a dumping ground for refuse. For example, a shark and its stomach contents are thrown by a fishmonger into the Singapore River 🍀1967. Today, the Singapore and Kallang Rivers are part of the Marina Reservoir that is surrounded by parks. It is also home to a much-loved romp (which is a perfectly apt collectively noun) of Smooth-coated Otters, *Lutrogale perspicillata* (Geoffroy Saint Hilaire, 1826). These developments can be traced back to Mr Lee's speech at Upper Peirce Reservoir on 27 February 1977.

1820

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1940

1960

🍀 1977

2000



1986

30,000 pangolin skins

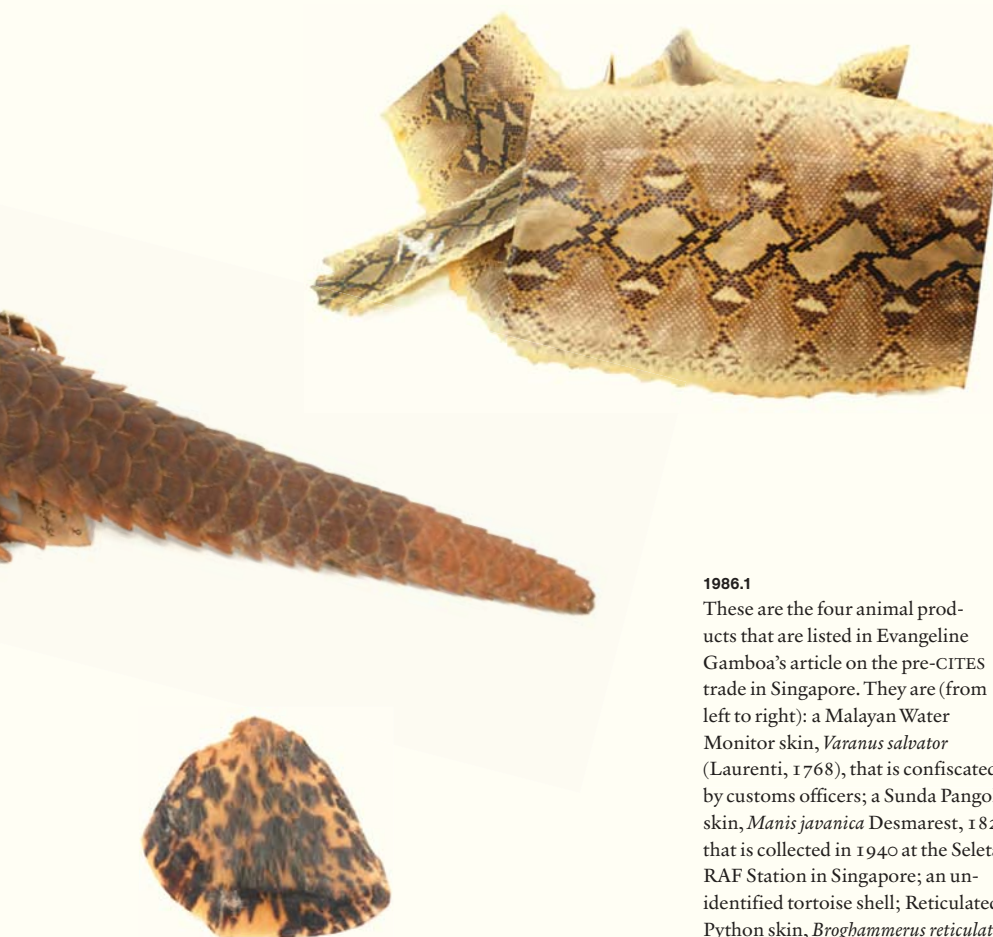
Singapore joins CITES

“According to the Wildlife Trade Monitoring Unit in Britain, from 1980 to 1982, Singapore exported 424,000 water monitor lizard skins, 82,246 reticulated python skins, and 48,766 kg of unworked tortoise shells (green turtle). In 1981, it exported 30,000 pangolin skins.” — **Evangeline Gamboa**

1986.1



Singapore is a historical trans-shipment point for the trade in both animal products ♣1844, 1853 and live animals ♣1876, 1880, 1885, 1902, 1982. The term “historical” is appropriate and accurate. Within just a few years of Evangeline Gamboa’s newspaper article in which these statistics are cited, Singapore becomes a signatory of the Convention on International Trade in Endangered Species or CITES. This international treaty closely regulates the movement of animals, plants and their products (which is sometimes necessary). Singapore’s national legislation conforms to that of Category I (the highest) of the CITES National Legislation Project. This means that Singapore’s laws provide a legal framework within which CITES regulations are legally enforceable. Singapore becomes a signatory to CITES on 30 November 1986.



1986.1

These are the four animal products that are listed in Evangeline Gamboa’s article on the pre-CITES trade in Singapore. They are (from left to right): a Malayan Water Monitor skin, *Varanus salvator* (Laurenti, 1768), that is confiscated by customs officers; a Sunda Pangolin skin, *Manis javanica* Desmarest, 1822, that is collected in 1940 at the Seletar RAF Station in Singapore; an unidentified tortoise shell; Reticulated Python skin, *Broghammerus reticulatus* (Schneider, 1801).

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♣ 1986

2000

1987

Into the snapping jaws of five dogs Last Bukit Timah Banded Leaf Monkey

“When Miss Lua Hui Kheng looked out of the window of her house near Bukit Timah Hill in 1987, she saw a banded leaf monkey descending a tree — into the snapping jaws of five dogs. By the time the Raffles Museum of Biodiversity Research curator chased them away, the monkey was seriously injured. She said: ‘It died minutes later.’ The elderly female monkey, the last member of a tribe at Bukit Timah forest, now gazes sadly at visitors from a container in the museum.” — **Chang Ai-Lien**

1987.1



A century and a half after the Banded Leaf Monkey is first given a scientific name ♣️1838, a female Banded Leaf Monkey climbs down a tree in Bukit Timah for the last time. Lua Hui Kheng is a former curator at the Museum and the body is brought to the Museum. After an examination it is preserved. This individual is believed to be the last of the population living in Bukit Timah. This specimen is part of the Museum's public gallery at the Science Library building ♣️2001 for many years and is used to teach students and visitors about the threats facing local biodiversity. The Bukit Timah Banded Leaf Monkey troop ceases to exist with the death of its last member in October 1987.

1987.2



1987.1

This is the female Banded Leaf Monkey, *Presbytis femoralis* (Martin, 1838), that climbs down from a tree in October 1987 and is mauled to death by dogs. This takes place 150 years after this species is given a scientific name ♣️1838. This specimen is part of the Museum's gallery at the Science Library building ♣️2001 for many years

1987.2

These two photographs show the Banded Leaf Monkey after it dies in 1987



1820

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1960

1980

♣️ 1987

2000

1990

Singaporeans were captivated Elephants on Pulau Tekong

“For about a week in early June 1990, Singaporeans were captivated by media reports of runaway elephants on Pulau Tekong. This was reportedly the first time in recent history that elephants had swum across the Johor Straits to Tekong, an island used by the Singapore Armed Forces for military training. The wild Asian elephants (*Elephas maximus*) were first sighted by national servicemen on 29 May 1990. With the collaboration and co-operation of the Singapore and Malaysian governments, the Singapore Zoo, Malaysian wildlife authorities and Tekong army personnel, the bull elephants were captured about a week later on 7 June 1990.” — **Nureza Ahmad**

1990.1

A change for the better. This postcard (that is captioned “Singapore”) from earlier in the twentieth century shows a common fate of elephants. In 1990, when the three male elephants are found on Pulau Tekong, they are re-located to Endau-Rompin National Park in Malaysia 🌿1989



On 29 May 1990, national servicemen training on Pulau Tekong make unexpected contact. Three male Asian Elephants (*Elephas maximus* Linnaeus, 1758) appear to make the swim across from Malaysia. There are calls from the public to let the elephants remain on the island but this presents risks to the animals and military personnel. The decision is made to return the elephants home to Malaysia. This effort involves the Singapore Zoo 🌿1973 and a team from the wildlife department in Malaysia. The elephants are captured and released in Endau-Rompin National Park 🌿1989 on 10 June 1990.

1990.1



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🌿 1990

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1994

A Singapore Willy

A False Killer Whale at Tuas

“The whale stranded off Tuas died on Sunday of a combination of factors. These included infection from old wounds, old age and severe stress in a strange environment, said a vet called in by the Underwater World Singapore to conduct a post-mortem on the whale. ... The whale, nicknamed by the press as Singapore Willy, attracted hundreds of on-lookers to Tuas Bay over the past week.” — **Anonymous**

1994.1



A False Killer Whale, *Pseudorca crassidens* (Owen, 1846), appears off the coast of Tuas on 24 January 1994. Crowds of onlookers gather to catch a glimpse of the animal, which is classified scientifically as a dolphin. Attempts are made to guide “Willy” out to sea but these fail. Possibly as a result of old age, disease or stress from the movement of large numbers of onlookers and boats, “Willy” is found dead a few days later. A necropsy suggests these possible causes for its death, and also reveals “Willy” to be female. This False Killer Whale is found dead off Tuas on 30 January 1994.

1994.1

This lower jaw is all that remains of the False Killer Whale that is found dead on 30 January 1994 at Tuas. The rest of the animal is buried in a landfill along Lorong Halus near Tampines

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🌿 1994

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1995

Guest at the breakfast-table

Farewell to the Cream-coloured Giant Squirrel?

“... a third species, which may be named *Sciurus affinis* was found abundantly in the woods of Singapore (on the occupation of that station by the British in 1819) ... One of them, which has been in my possession about ten months, and is now alive, has not changed colour perceptibly in that time. This animal is remarkably tame, and has become a regular and very amusing guest at the breakfast-table.” — Thomas Stamford Bingley Raffles

1995.1



Commonly known as the Cream-coloured Giant Squirrel, this species is described scientifically by Raffles, who calls it *Sciurus affinis*. Today several subspecies are known to occur and the one that is originally named by Raffles from Singapore is known as *Ratufa affinis affinis* (Raffles, 1821). Found in Peninsular Malaysia, Borneo and Sumatra, this species faces an uncertain future due to threats from habitat loss, and to a lesser degree, from hunting. In Singapore, this species is possibly extinct. It goes from being “found abundantly in the woods of Singapore” to not being found at all since 1995.

1995.1

In 1821, the Cream-coloured Giant Squirrel is given a scientific name by Raffles 🌿1820. A century later this specimen is collected on 27 February 1921 on Pulau Ubin in Singapore by Percy M. de Fontaine 🌿1937



1820

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🌿 1995

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1996

The best living environment

The National Parks Board

“To create the best living environment through excellent greenery and recreation, in partnership with the community.”

— National Parks Board (NParks)

1996.1



1996.1

This postcard from the 1900s shows what is today called the Tanglin Gate at the Singapore Botanic Gardens. The National Parks Board's headquarters are located within the gardens

The history of the National Parks Board (NParks) is closely linked to Mr Lee Kuan Yew's tree-planting programmes that begin just before Singapore's independence. NParks' precursor, the Parks and Recreation Department, is formed in the same year that the Parks and Trees Act is passed 🌿1975. Through the years, the mission of the board evolves from that of creating a "Garden City" to that of creating a "Biophilic City in a Garden". This stems from the ideas of biologist Edward Osborne Wilson. NParks today carries out its work from its headquarters located within the Botanic Gardens 🌿1859 that is Singapore's first and only UNESCO World Heritage Site. The National Parks Board is formed when the Parks and Recreation Department is renamed in July 1996.

1996.2

The Tanglin Gate at the Botanic Gardens today. The gardens are Singapore's first and only UNESCO World Heritage Site

1996.3

The headquarters of the National Parks Board

1996.2



1996.3



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🌿 1996

1999

A creature this huge and beautiful A spate of dead Dugongs

“Dead dugong: a decomposing adult *Dugong*, (a sea-cow) washed up along Changi beach yesterday near the Changi Cargo Complex. Two-metre-long, it has two visible wounds on its left side. One of the wounds was so deep, it almost severed its tail, evidently cause by boat propeller blades. Mr Abu Bakar, 55, who saw the carcass wash ashore said: ‘It’s a sad loss, for a creature this huge and beautiful.’” — **Anonymous**

1999.1



The Dugong, *Dugong dugon* (Müller, 1776), is first known from Singapore waters from Raffles' description of it 🍀1820. These large and shy marine mammals feed on seagrasses 🍀1959 and the feeding trails they leave in seagrass meadows are often the only sign that they are present. In Singapore waters, the Dugong is threatened by the loss of seagrass meadows, fishing nets that can cause drowning and sailing vessels that can inflict serious injuries. The last year of the twentieth century is a bad one for Dugongs and at least four individuals are found dead in waters in or around Singapore. The newspaper report that is cited here appears in the 'Sunday Times' on 28 February 1999.

1999.2



1999.1

Dugong feeding trails at a seagrass meadow on Cyrene Reef. The photograph is taken in December 2017

1999.2

This Dugong skull is from an individual that is found dead in July 2006 on Pulau Tekong in Singapore. The animal is too large to transport back to the Museum and only the skull and a tissue sample 🍀1820 are collected



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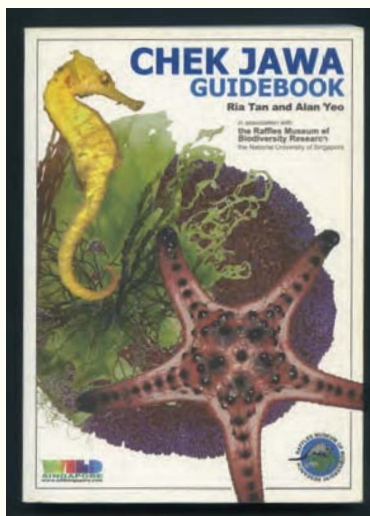
🍀 1999

2002 The happy end-result

Chek Jawa

“Chek Jawa, at the eastern tip of Pulau Ubin, is a unique natural environment that is unusually rich in biodiversity. It was first brought to public attention in the middle of 2001. Many groups and individuals with a heartfelt interest in Chek Jawa came forward with detailed and insightful feedback about the unique character of the place. They appealed for the area to be left as it is, to be used as an outdoor classroom and research site for students and scientists. Land is scarce in Singapore and there are many competing needs for it. The government had to weigh the trade-offs between keeping Chek Jawa and creating new land to meet our needs. In the end, after seeking the views of experts and ensuring that our critical land use needs would not be unduly compromised, we decided that Chek Jawa would be kept in its natural state for as long as it was not needed for development. This decision was the happy end-result of close partnership and constructive collaboration between the government and experts as well as members of the public who gave their inputs.” — **Mr Mah Bow Tan**

2002.1



2002.1

The cover of 'Chek Jawa: Guidebook'. This book provides an introduction to the area's rich biodiversity. The Raffles Museum of Biodiversity Research's 1998 logo can be seen at the bottom right corner

In this foreword in ‘Chek Jawa: Guidebook’, then-Minister for National Development Mah Bow Tan gives a short summary of the events that lead to the preservation of Chek Jawa. This coastal area at the eastern tip of Pulau Ubin is a mix of three habitats: mangroves, intertidal flats and coastal vegetation. As marine biologist Chou Loke Ming writes: “It is an oasis of coastal biodiversity, relatively untouched and harbouring an abundance of species that are now rare on most other shores. It is a living legacy of Singapore’s intertidal biodiversity, offering a glimpse of what most shores must have looked like in the 1950s and earlier”. In the years since development is deferred, the area does fulfil the role as an “outdoor classroom”, one of the roles that Mr Mah outlines. The decision to preserve Chek Jawa is made on 14 January 2002.

2002.2



2002.2

An “oasis of coastal biodiversity”: Chek Jawa showing the varied habitat types that are found there. This photograph is taken on 27 June 2009

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2002

Part 9

Part 9 Towards a Local Natural History

Singapore-focused Publications and Research

Natural history, in its various forms, begins to take on a local ‘flavour’ with publications and activities that are more focused on Singapore. The demographics of the people making these contributions is also increasingly represented by locals or long-term residents. So too are the publications in which they appear. Local newspapers become an important avenue for the publication of accounts of natural phenomena and natural history-related activities. These include the first tremors that are known to be felt in Singapore 🌿1833 and an excursion by members of the public to Gunung Pulai 🌿1863.

Two publications that are printed in Singapore, the ‘Journal of the Indian Archipelago and Eastern Asia’ and the ‘Singapore Naturalist’ play an important role in the diffusion of local natural history knowledge. The first journal is published by James R. Logan who also writes about the geology of Pulau Ubin 🌿1850. Thomas Oxley publishes an article in this journal that is entitled the ‘Zoology of Singapore’ 🌿1849.

The second journal is published by the Singapore Natural History Society 🌿1921. The society itself plays an important role in the progress of the field locally. So do the articles that are published in the ‘Singapore Naturalist’ such as Charles J. Saunders’ on bird vocalisation 🌿1918 and Vincent H. J. Jarrett’s on the Giant African Snail 🌿1922. These articles have lasting scientific value. Though the lifespan of the Singapore Natural History Society is relatively short, another society is started as a way of reviving it. This is the Malayan (now Malaysian) Nature Society. The Singapore Branch of this society is the precursor to the current Nature Society (Singapore) 🌿1954.

Increasingly, discoveries of local flora and fauna are made by researchers who are based in Singapore. These include Henry N. Ridley’s description of the Singapore Durian 🌿1916. The knowledge of the island’s flora and fauna get a further boost when books written and edited by

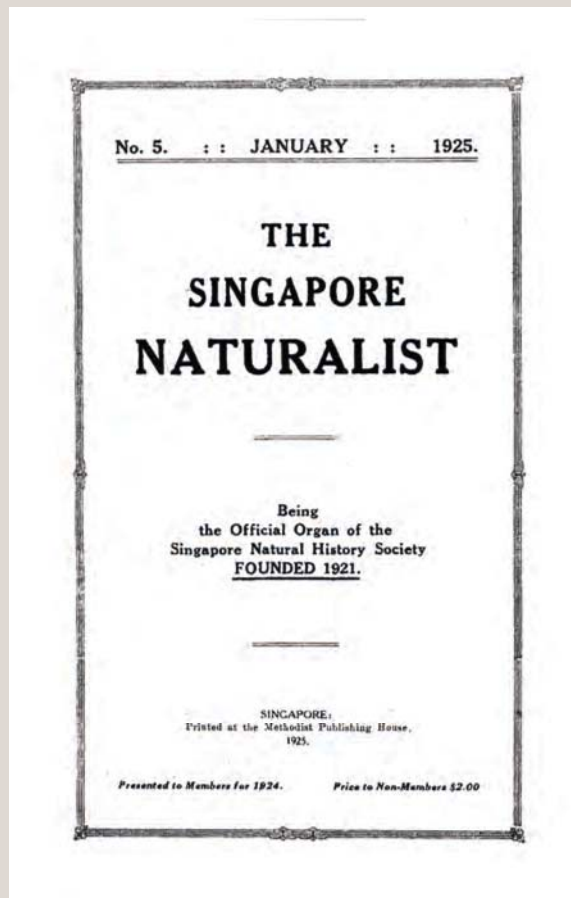
9.1

Perhaps no publication is more representative of the growth and development of a truly ‘Singaporean’ natural history than the ‘Singapore Naturalist’ 🌿1921. This cover is from the fifth number that brings the first volume of the journal to a conclusion. It is published in January 1925

Chuang Shou-Hwa 🍀1961 like ‘On Malayan Shores’ and ‘Animal Life and Nature in Singapore’ are published. Our knowledge of snakes also grows through the contributions of Francis L. K. Lim 🍀1978 and Lim Boo Liat 🍀1979.

Singapore’s first public aquarium, the Van Kleef Aquarium 🍀1935, which only opens in 1955 brings live aquatic animals to the public for the first time. It also conducts research of its own. Just behind where this aquarium is located, archaeological research is carried out on Fort Canning (1984) that adds to our understanding of Singapore’s natural (and political) history prior to the nineteenth century—and raise more questions.

9.1



1833

A tremendous motion of the earth Singapore's first recorded tremors

“On Sunday night the 24th ... at 25 minutes to 9 o'clock, a slight shock of Earthquake was distinctly felt at this Settlement. It was followed by a tremendous motion of the earth which lasted for upwards of a minute or perhaps longer. ... From what we can learn the shock was felt more distinctly at Campong Glam, than in the town. ... It is conjectured that the Volcano in Sumatra, ‘Gunong Berapi’, is now violently at work.” —**Anonymous**

1833.1



1833.1

This engraving is entitled “Incident during the earthquake at Sumatra (1861)” and shows the effects of the magnitude 8.4 earthquake, the third-most powerful in Sumatra’s history. The first tremors recorded in Singapore are caused by the magnitude 8.75 earthquake of 1833, which is the second-most powerful to hit Sumatra

The shocks felt in Singapore in this 1833 account are not due to volcanic activity but are caused by the second-most powerful earthquake to affect Sumatra. Tremors from a later (and the third-most powerful) earthquake to hit Sumatra are recorded in Singapore by Castelnau 🍀1861. The 1861 earthquake has a magnitude of 8.4, while the 1833 one measures 8.75. The first published record of tremors felt in Singapore is found in the 'Singapore Chronicle' on 28 November 1833.

1820

🍀 1833

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1849

Methinks a rat would be palatable

Thomas Oxley and the 'Zoology of Singapore'

"I may add several species of the Bat tribe, amongst them that most destructive one, to all fruits, the Flying Fox or *Pteropus*; fortunately however they are as yet scarce, but at no distance from us, they are numerous beyond count, I have seen a flock of them whilst anchored in the Straits of Malacca, so large as to take several hours in passing. Their flesh is eaten by the natives but no real Fox smells to my mind one half so rank as they do, methinks a Rat would be palatable food compared with them." — Thomas Oxley

1849.1



1849.1

This engraving from 1881 shows flying foxes leaving the roost to feed at night

1849.2

A skull of a Large Flying Fox, *Pteropus vampyrus* (Linnaeus, 1758). This specimen is collected in 1920 from Teluk Palabuhanratu, West Java, Indonesia

1849.3

This postcard from the 1900s from Singapore shows a boy posing with several flying foxes

1849.2



Thomas Oxley (1805–1886) is a British doctor who makes important contributions to medicine in Singapore during the years 1830–1857. He publishes the ‘Zoology of Singapore’ in the ‘Journal of the Indian Archipelago and Eastern Asia’ 🍀1850. This is one of the earliest accounts of the animals of Singapore. Oxley’s supposition that Flying Foxes are nothing but destructive to crops will continue to the present day despite evidence that they are also efficient pollinators of some fruit trees such as the durian (*Durio* spp.). Oxley’s article appears in 1849.

1849.4

Although flying foxes do feed on fruit trees and sometimes damage crops, they are also efficient pollinators of several economically important fruit trees such as durians (*Durio* spp.). This screengrab from a research camera trap shows a Variable Flying Fox (*Pteropus hypomelanus* Temminck, 1853) pollinating Durian flowers (*Durio zibethinus* L.). The footage is recorded in Pulau Tioman, Malaysia. Some species of flying foxes, in particular the Large Flying Fox or *Pteropus vampyrus* (Linnaeus, 1758), are endangered by humans hunting them for food, medicine and for sport

1849.3



1849.4



1850

Have been entirely obliterated

James Richardson Logan and

Ubin granite

“I can only afford to notice a few of the most remarkable rocks, although a faithful description of the whole is desirable, since the Chinese quarrymen are proceeding so rapidly in their work of destruction that it is to be feared these grand and singular natural phenomena will, in a few years, have been entirely obliterated.” — **James Richardson Logan**

1850.1



1850.1

This photograph that is published in 1889 shows a quarry on Pulau Ubin. It is captioned: “Convicts stone-quarrying, at Pulo Obin, Singapore”

James Richardson Logan (1819–1869) is a British lawyer, naturalist and publisher of the ‘Journal of the Indian Archipelago and Eastern Asia’ (which is sometimes known as “Logan’s Journal”). This journal is an important venue for early papers on the natural history of Singapore 🌿1847, 1849. His descriptions on the rocks of Pulau Ubin in the 1840s are some of the earliest and most detailed. He also recounts that even at this early date granite was already being quarried for construction. One of the more famous projects to utilise Ubin granite is the Horsburgh Lighthouse on Pedra Branca 🌿1980. The foundation stone for Horsburgh Lighthouse is laid on 24 May 1850.

1820

1840

🌿 1850

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1850.2

The locations of the quarries on Pulau Ubin can be seen in this map from 1910

1850.3

This rock specimen is from the former Pulau Ubin Quarry

1850.4

On 20 October 1869, John R. Logan dies of malaria in Penang. This memorial to him and his brother Abraham (1816–1873) is located at the Old Protestant Cemetery (or Northam Road Cemetery) in Penang, Malaysia

1850.3



1850.2



1850.4



1863

The entire absence of animal life

A nature excursion in the
mid-Victorian era

“We were struck by the entire absence of animal life the whole way, a snake and a butterfly being the only denizens of the jungles we saw, with the exception of innumerable large flies that bit through double flannel, and annoyed us very much.” — **Anonymous**

1863.1



An excursion from Singapore to Gunung Pulai in Johor is reported in the ‘Singapore Free Press’. Like Raffles 🌿1820, they encounter a Dugong, *Dugong dugon* (Müller, 1776), that “yielded a quantity of red and white flesh sufficient to supply a hundred men ... said to resemble pork in taste”. They also observe a dearth of animal life. Nonetheless, such trips emphasise the assistance provided by local rulers and administrators. Just as Wallace 🌿1865 and Hugh Low 🌿1911 are assisted by Rajah Brooke, the excursion is given assistance by the “Rajah of Johor” 🌿1877. The party going to Gunung Pulai departs Singapore on 9 June 1863.

🌿 1863

1863.1

This photograph is taken by Norman Smedley 🌿1929. The handwritten caption at the back of this photograph reads: “Rest Hut, Gunung Pulai, 1929”. This photograph is from a later expedition to Gunung Pulai by staff of the Raffles Museum

1916

Mr. Raffles did not know how to eat durian

The Singapore Durian is described

“One day while Mr. Raffles was in the middle of discussing with his Malay clerk ... one of the Malays suddenly came in bearing six durians. ... But as soon as Mr. Raffles caught the smell of the durian he held his nose and ran upstairs. ... It was then that I discovered the truth that Mr. Raffles did not know how to eat durian. So far from eating them he could not even bear to smell them. After a little while he came down saying ‘The smell of those durians has given me a headache. That food is nauseating’ ... ”

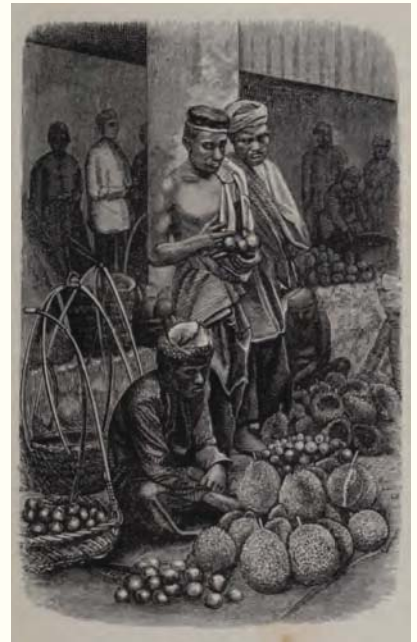
— Abdullah bin Abdul Kadir (Munshi Abdullah)

1916.1



1916.1

Durians for sale. The engraving is from 1875 while the photograph is from the 1920s



The durian is a fruit that divides. We now know that Raffles is clearly on the side of those who dislike it, despite being something of a gastronomic adventurer 🍀1820. The most widely-eaten and cultivated species is *Durio zibethinus* L., which comes in dozens of varieties. Odoardo Beccari 🍀1866 describes many new species from Borneo collected during his travels. There are over three dozen described species but most do not contain any edible pulp. Unfortunately for local durian connoisseurs, the Singapore Durian belongs to the group of inedible species and the fruits contain only seeds. Henry N. Ridley 🍀1897 describes the Singapore Durian in July 1916.

1916.2



1916.2

Specimens of the Singapore Durian, *Durio singaporensis* Ridl. from Singapore. Botanists use the abbreviation "Ridl." for Henry N. Ridley 🍀1897

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🍀 1916

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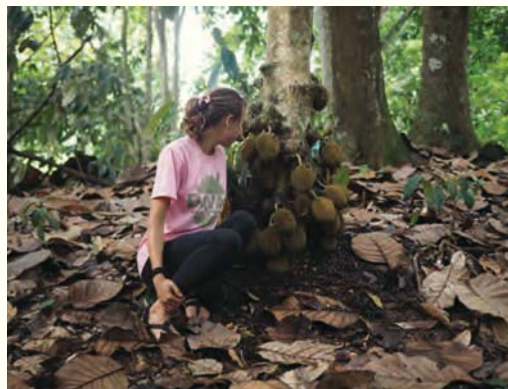
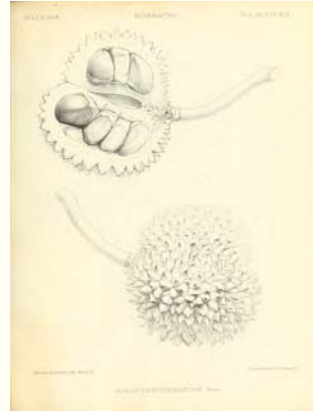
2000

1916.3

**1916.3**

A painting of the Durian (*Durio zibethinus* L.), that is made in about 1824. This painting is made by a Chinese artist for Raffles 🌿**1820**

1916.4



1916.4

Three species of durians that are described and named by Beccari 🌿1866. From left to right (with the drawings that accompany Beccari's original descriptions above): Red Durian, *Durio dulcis* Becc.; Yellow Durian, *Durio graveolens* Becc.; Tortoise Durian, *Durio testudinarius* Becc.

1820

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🌿 1916

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1918

Only an abnormal night-jar

Charles J. Saunders and visualising
bird calls

“The night-jar (*Caprimulgus macrurus*) granted suitable weather and light, is ordinarily heard soon after sunset or on a dull evening even earlier, and the early-waker may hear it as day breaks together with the bulbul and the Straits robin as long as the kingfisher (*Halcyon chloris*) does not overpower every other sound with his squawk. But I suggest that it is only an abnormal night-jar that calls by full daylight. In April 1918 there was one bird—I assume that it was always the same bird—which habitually ‘sung’ by day on Goodwood Hill. I first noted it for certain at 8 a.m. on April 1st by bright sunshine, but on one or two days not long before I had thought that I heard a single note.

On April 14th at 8.30 a.m., on a clear day and with the temperature at 82° F, it really got going. It began a ‘break’ and I fetched a pencil: this ‘break’ I estimated at 20 calls. It then went on with 16. 10. 2. —. —. 6. 4. 3. 2. 7. 11. 3. 6. 2. 3. 1. 3. 4. 3. 6. 1. 4. 10. 2. Then, as Mr. F. J. Hallifax rode by just below it, it stopped for a while. It soon continued with

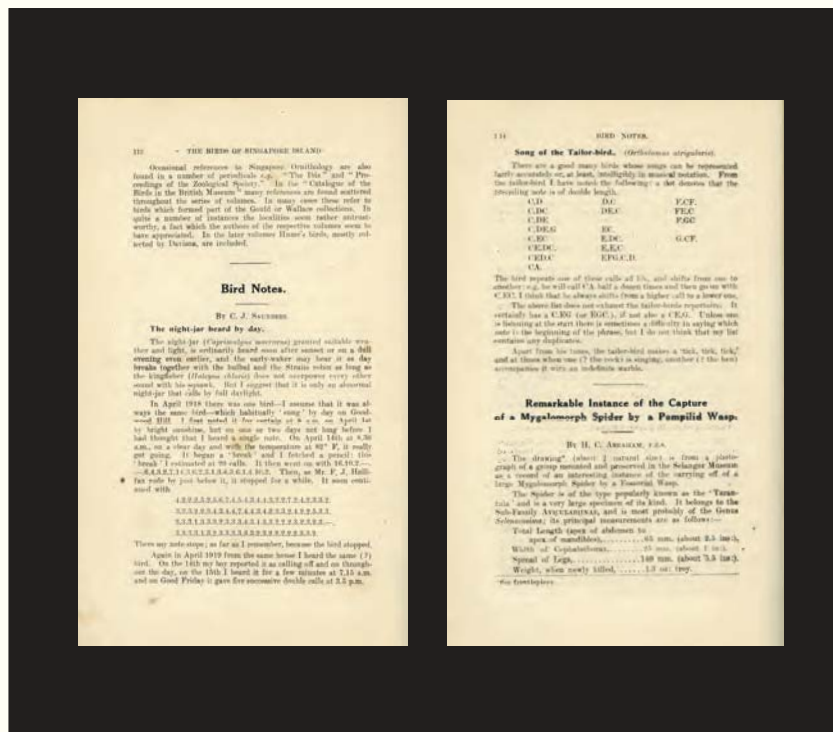
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3. 3. 3. 1. 3. 3. 3. 2. 3. 3. 3. 4. 3. 4. 3. 3. 2. 2. 2. 3. 2. 3. 2. 3. —.
3. 3. 3. 3. 1. 3. 2. 3. 3. 3. 3. 3. 3. 2. 3. 2. 2. 2. 2. 3. 3. 2.

There my note stops; as far as I, remember, because the bird stopped.”

— Charles James Saunders

Charles James Saunders (1868–1941) is a British colonial administrator and member of the Singapore Natural History Society 🍀1921. In an article in the society's journal, the 'Singapore Naturalist', Saunders publishes his observations on the calls of various birds found in Singapore using rather ingenious methods to visualise these vocalisations. This article is a good example of early citizen science in Singapore. Saunders makes his observations of this abnormal day-calling Large-tailed Nightjar, *Caprimulgus macrurus* (Horsfield, 1821), in April 1918.

1918.1



1918.1

The first and last pages of Saunders' article on bird vocalisations. They show Saunders' method for visualising these bird vocalisations. This article is published in the 'Singapore Naturalist' in April 1923, although Saunders makes his observations on the nightjar that does not live up to its name in April 1918

1921

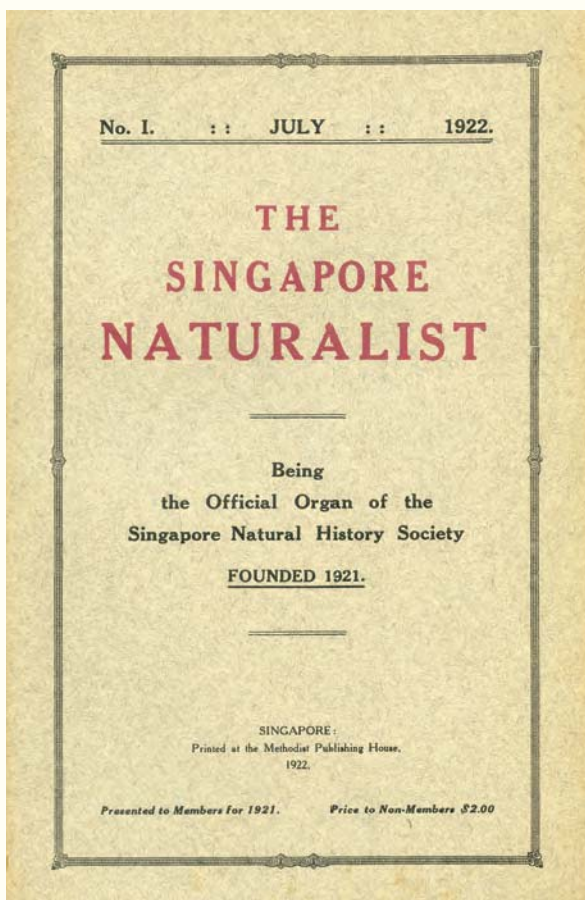
A meeting of a few residents

The Singapore Natural History Society

“... a meeting of a few residents interested in Natural History was held in the Board Room of the Straits Trading Company ... Those present then formally constituted themselves into a society under the title of the ‘Singapore Natural History Society’ and elected Mr. F. N. Chasen as the hon. secretary.”

— *Anonymous*

1921.1



1921.1

The cover of the inaugural issue of the ‘Singapore Naturalist’ that is published in July 1922

1921.2

This nest is exhibited during the 6 November 1922 meeting of the Singapore Natural History Society. It is constructed by a captive orangutan (*Pongo* sp.) in Singapore. These apes construct nests in which to sleep each night. The society’s meetings are often held at the Raffles Museum and this may be the building in the background

And so the Singapore Natural History Society begins its life. The Raffles Museum is a frequent venue for subsequent meetings and John C. Moulton ♣1923 is the society's first president. The society organises excursions to various places in Singapore and also publishes the 'Singapore Naturalist', which is of lasting scientific value ♣1918, 1922. The society loses its driving force with the death of its last president, George Dexter Allen (1863–1929). Its last known meeting is on 27 February 1930, less than nine years after the first meeting on 30 May 1921.

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1921.2



♣ 1921

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1922

Not native to Malaya

Vincent H. C. Jarrett and the Giant African Snail

“The Raffles Museum in February, 1922, received a very interesting contribution from a Straits Chinese resident, in the form of several snails which are not native to Malaya yet were stated by the donor to have been found in a compound in the Balestier district of Singapore. The molluscs were identified by me as somewhat dark specimens of *Achatina fulica*.”

— Vincent Hubert Charles Jarrett

1922.1



Journalist and naturalist Vincent Hubert Charles Jarrett (1895–1973) reports the presence of the Giant African Snail in Singapore for the first time in the ‘Singapore Naturalist’ 🍀1921. He also later documents the spread of this species in Hong Kong, Malaya and Sarawak. The Giant African Snail becomes a global ecological problem in the years to come and the problem of alien species in Singapore is a recurring one 🍀1836, 1836, 1864, 1896, 1897, 1925. Jarrett receives the first specimens from Singapore in February 1922.

1922.2



1922.1

Specimens of the Giant African Snail, *Achatina fulica* (Férussac, 1821), from Singapore. The larger one (13.7 centimetres in length) is collected in 1990 from Jurong while the smaller (7.8 centimetres in length) is collected in 1988 from Kent Ridge

1922.2

The Giant African Snail is considered to be one of the 100 most invasive species in the world by the Invasive Species Specialist Group of the International Union for Conservation of Nature

1820

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🍀 1922

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1935

Fish in them have died The Van Kleeef Aquarium

“Singapore’s new Van Kleeef Aquarium today hides a secret: Why is it strictly forbidden to the public? Its 30 glass tanks, which were reported only last month to be ‘well stocked,’ are almost empty. The fish in them have died.”

—Anonymous

1935.1



1935.1

This photograph shows the Van Kleeef Aquarium at River Valley Road in October 1955, a month after it opens

The Van Kleeef Aquarium results from a bequest of businessman Karl Willem Benjamin van Kleeef (1854–1930) for “the embellishment of the town” of Singapore. The aquarium opens in 1955 after numerous difficulties, including a spate of fish deaths that leave the tanks “almost empty”. Fish experts that include Francis D. Ommanney 🌿1956 and Tham Ah Kow 🌿1962 are brought in to solve some of these problems. The aquarium later successfully breeds anemonefish in captivity. A major step towards the Van Kleeef Aquarium is the decision to site it at Fort Canning, which is announced on 22 November 1935.

1935.2



1935.2

The Yang di-Pertuan Agong of Malaysia, Tuanku Syed Putra, visits the Van Kleeef Aquarium on 12 November 1963. His Majesty is accompanied by then-Minister for Education Yong Nyuk Lin

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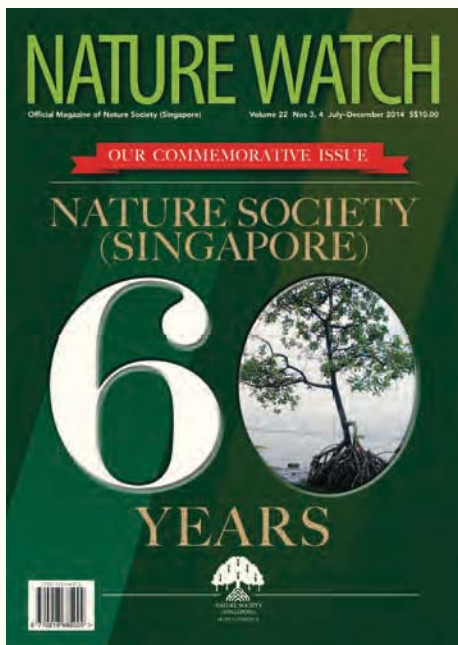
2000

1954

Tortuous and circuitous Roots of the Nature Society (Singapore)

“The Singapore Branch was also involved in 1979 in one of the many critical stages of the tortuous and circuitous journey of the Raffles Museum zoological collection from Stamford Road to its present safe haven in the Lee Kong Chian Natural History Museum. In early 1979, neither the then University of Singapore authorities nor the then Nanyang University authorities would commit to the combined financial and space costs of keeping the collection intact and in Singapore. A swift-thinking Professor Anne Johnson, Honorary Secretary of the Singapore Branch as well as Chair of the Nanyang University’s Department of Biology, turned the story over to Nancy Byramji, journalist and Singapore Branch member.” — **Margie Hall, Charlotte Lim and Klyth Tan**

1954.1



1954.1

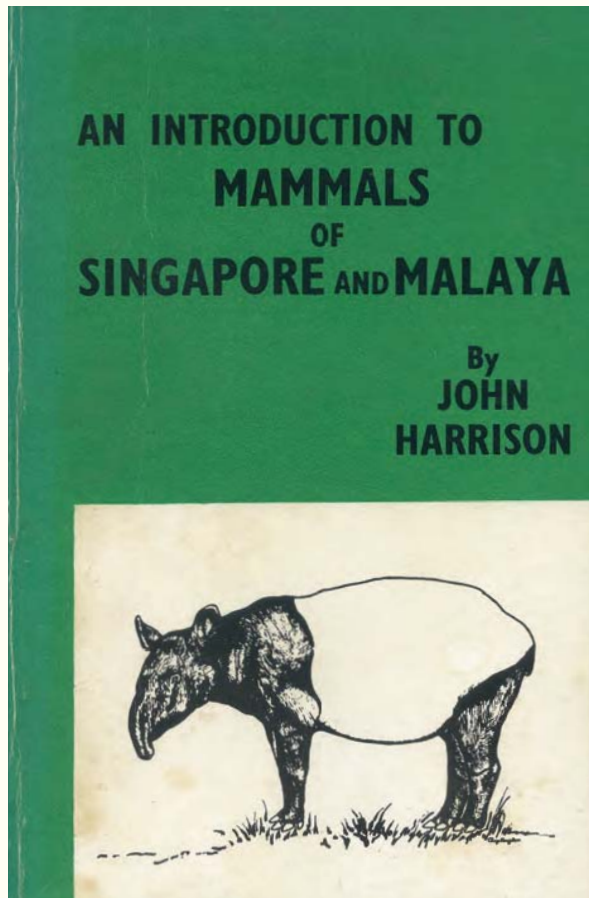
This is the cover of 'Nature Watch' that commemorates the six decades of the Nature Society (Singapore) and its predecessor organisations in 2014

1954.2

The cover of 'An Introduction to Mammals of Singapore and Malaya' by John L. Harrison 🍀1964. This book is published by the Malayan Nature Society (Singapore Branch) in 1966. It represents one the branch's contributions to natural history in Singapore and Malaysia

The Nature Society (Singapore) traces its roots to the Singapore Natural History Society 🍀1921 which is defunct by the 1930s. In 1940 Edward O. Shebbeare 🍀1958 sets up the Malayan Nature Society or MNS. In 1954, the Singapore Branch of the MNS is created. Members of the Singapore Branch such as Nancy Byramji and Anne Johnson 🍀1959 are instrumental in keeping the Museum's zoological collection together 🍀1972. On 28 October 1991, the Singapore Branch splits from the MNS and is renamed the Nature Society (Singapore). The Nature Society (Singapore) plays what is arguably its most important role in the future of the Museum's zoological collections during its Singapore Branch phase that begins in 1954.

1954.2



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1961

The book has limitations

Chuang Shou-Hwa's 'On Malayan Shores'

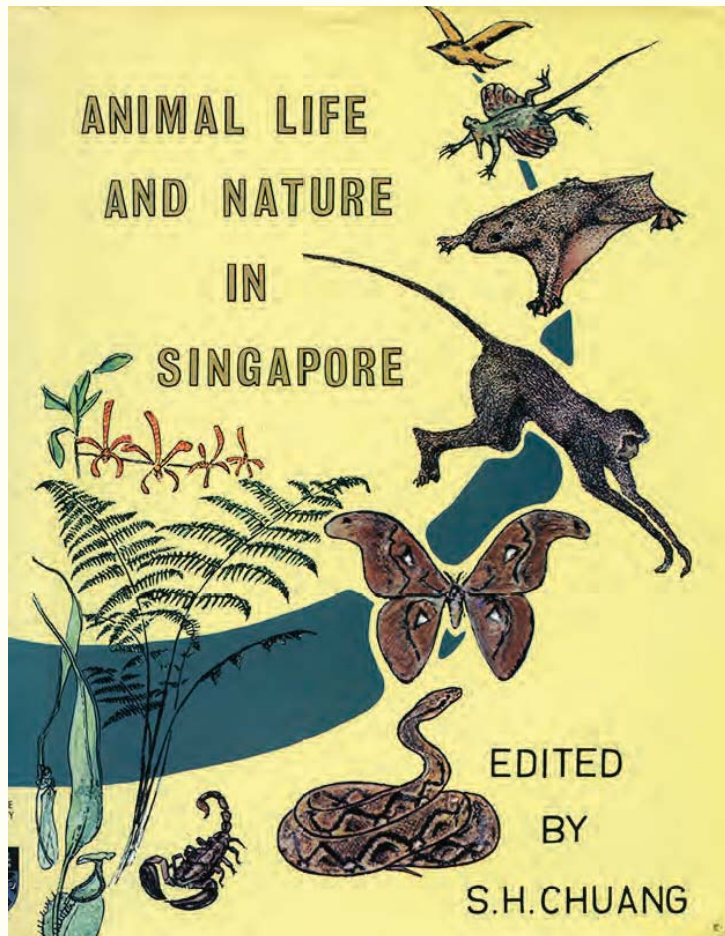
“Admittedly the book has limitations: it is not an exhaustive scientific monograph on the flora and fauna. Yet if it were, it would not be one small volume, but many large volumes. Rather than disparage the book for omissions, we should commend the author for producing a volume of considerable value to biologists, and regret that books such as this are not available for other areas in the tropical Pacific.” — **Albert Henry Banner**

1961.1

The cover of 'Animal Life and Nature in Singapore' that is edited by Chuang Shou-Hwa. This book is published in 1973 and covers a broad range of topics on the natural history of Singapore

While a professor at the University of Singapore, Chuang Shou-Hwa (b. 1919) is involved in the transfer of the Museum's zoological collections to the university. Chuang takes over this responsibility from Tham Ah Kow 🍀1962. Like Michael W. F. Tweedie 🍀1946, Chuang also plays an important role in bringing natural history to the public. His book 'On Malayan Shores' is one of the first such books written by a local author. When reviewing Chuang's book, marine biologist Albert Henry Banner (1914–1985) laments that there are not more of such books. Chuang also edits 'Animal Life and Nature in Singapore' which contains a broader range of topic on natural history in Singapore. The Museum continues this tradition with its 'Private Lives' series of books 🍀2007. 'On Malayan Shores' is published in July 1961.

1961.1



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1978

Would have been forgotten

Francis L. K. Lim and the Smooth Slug Snake

“Thirty years ago, on an unrecorded date in 1978, a brown snake was found at the end of Mandai Lake Road, within the compound of the Singapore Zoo, in a drain by the former laboratory that was located next to the present Night Safari entrance complex. It had appeared listless and died soon after capture. The snake was identified as *Asthenodipsas laevis* (Boie), the smooth slug-snake. It is the first record of this species in Singapore ... Although it was photographed and preserved, the specimen was misplaced and is now lost. This record would have been forgotten if I had not retrieved it from my notebooks recently.” — **Francis Leong Keng Lim**

1978.1



Here, reptile expert Francis Leong Keng Lim recounts how the first Singapore record of the Smooth Slug Snake, *Asthenodipsas laevis* (Boie, 1827), is almost forgotten. It is the only known record of the species until 2014 when a second specimen is found just a few kilometres from where Lim's specimen is found in 1978. Lim is a former reptile keeper at the Singapore Zoo 🌿1973 and his books contribute to the natural history of Singapore and the surrounding region. These include the 'Fascinating Snakes of Southeast Asia' that is co-authored with Monty Tat-Mong Lee. The first known specimen of the Smooth Slug Snake from Singapore is found by Lim on "an unrecorded date" in 1978.



1978.1

The Smooth Slug Snake, *Asthenodipsas laevis* (Boie, 1827), in this photograph is the specimen that is collected by Lim in 1978. It is the first known record of this species from Singapore. The whereabouts of the specimen are not known

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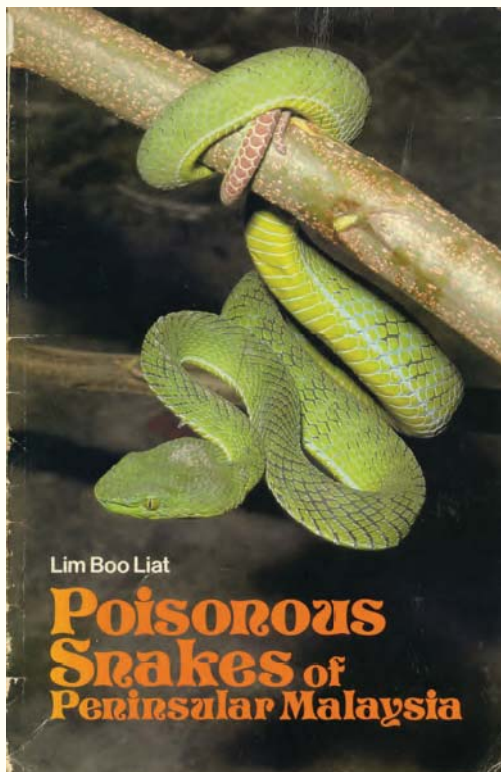
Smooth as an otter's bottom

Lim Boo Liat, 'Orang Asli Tales' and poisonous snakes

“Tapir woke up three days later feeling as if a coconut had dropped on his head. He rubbed his throbbing temples and realised that his horns were missing. Looking around in alarm, he noticed that half of his beautiful black coat was now white, and upon further investigation he realized that his previously razor-sharp fangs were now as smooth as an otter's bottom.”

— Lim Boo Liat

1979.1



1979.1

The cover of the 'Poisonous Snakes of Peninsular Malaysia'. Like another book on snakes 🐍1953, Lim's book is popular and goes through several editions, including one in Malay with the title 'Ular-ular Bisa di Semenanjung Malaysia'

1979.2

The Sumatran Pit Viper, *Trimeresurus sumatranus* (Raffles, 1822), is one of the species that is featured in Lim's 'Poisonous Snakes of Peninsular Malaysia'. This specimen is collected by John L. Harrison 🐍1964 in 1949 from Bukit Lagong, Selangor, Malaysia

Lim Boo Liat (b. 1926) is a Malaysian naturalist and researcher. Much of his work is devoted to parasitology and topics related to disease-transmitting animals. Lim also makes important contributions to natural history, particularly of mammals and reptiles. His book on animal stories recorded from the indigenous peoples of Malaysia, 'Orang Asli Tales', goes through several editions. The story that is quoted of why the Malayan Tapir 🍀1909 looks the way it does is from this book. On a more serious topic, Lim also writes the 'Poisonous Snakes of Peninsular Malaysia' which provides important information on the identification of venomous snakes. This book is first published in 1979.

1979.2



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1984

Dark red, shiny, and hard

“Singapore dammar”, archaeology and natural history

“... one item found on fourteenth-century Fort Canning that was known to have been a major Chinese import ... This is tree resin used as incense, a substance normally known as ‘damar’ in Malay. Dictionaries give the word ‘dammar’ as an English word, adopted from Malay in the seventeenth century. In the early twentieth century a particular variety was termed ‘Singapore dammar’, but it is not known whether it actually grew here or was only reexported ... Excavations near the Keramat recovered numerous fragments of dammar from the fourteenth-century stratum. They normally appear as brittle lumps, yellowish white and powdery on the outside, but dark red, shiny, and hard on the inside. It has not yet been possible to determine which of the many trees which yield dammar produced this particular variety, but it might also have been imported.”

— John Norman Miksic

1984.1



Fort Canning is also known as ‘Bukit Larangan’ (Forbidden Hill) or Government Hill. The history of the hill goes deep into Singapore’s past. Amongst the many man-made artefacts that are found on Fort Canning is a natural substance called ‘damar’. It is the hardened resin of certain trees that is used as incense and is widely traded. Archaeologist John Norman Miksic writes that there is even one type called “Singapore dammar”, although it is not known if this is a Singapore production or a re-exported good. Another natural product found in archaeological excavations in Singapore is tortoiseshell from the Parliament House Complex. These findings raise interesting questions about the movement of plants, animals and their products in Singapore and the region before 1800. The first archaeological excavation on Fort Canning begins on 18 January 1984.

1984.2



1984.1

This “View of the town and roads of Singapore from the Government Hill” is published in John Crawford’s ‘Journal of an Embassy ...’ 🌿1828

1984.2

The ‘Damar’ is the hardened resin of certain trees that is used for incense. It is widely traded throughout Asia and is during the archaeological excavations at Fort Canning. This specimen is from Malaysia



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Part 10

Part 10 The Years 1874–1923

The Raffles Library and Museum at Fifty

The Raffles Library and Museum does not have the best of beginnings. Great things are expected of the first librarian and curator, James Collins ♣1874, but he disappoints and is dismissed within three years. Things improve markedly with a new curator, Nicholas B. Dennys ♣1877. He reorganises collections, adds new display cases and acquires additional specimens for display, often by encouraging donations.

At this time, the Museum does not have a building of its own. The excitement of Frederick A. Weld, governor of the Straits Settlements, is apparent in a speech he gives to the Royal Colonial Institute in which plans for a purpose-built building are unveiled ♣1884. Three years later, Weld opens the new building as one of his last official duties ♣1887.

The next decade is not a smooth one. William R. Davison ♣1893 is a capable naturalist and as with Collins, much is expected from his appointment as curator. Davison's delimitation of the geographical scope of Museum's collections and in many ways its research focus is his lasting legacy ♣1888. This focus is still largely in place today. Sadly, the death of his wife precipitates mental health problems and leads to his premature death. There are further problems with staffing at the Museum ♣1894 and the loss of the Sultan of Perak's replica regalia during a break-in does not help. To make matters worse, within just a few years of its opening, termites are found to be infesting the building ♣1891.

The 1895 arrival of Richard Hanitsch ♣1919 marks the start of a period of stability. This period lasts for some 24 years—the tenure of Hanitsch as director. The post of director is created when Hanitsch joins the Museum, making him both the first and the longest-serving director. The tenure of Hanitsch's successor, John C. Moulton ♣1923, is short but leaves a lasting impression. “Moulton the Organiser” rearranges the collections along systematic lines and places an emphasis on research.

10.1

These two stamps are found in books that are already in the collections of the Raffles Library and Museum during the first half-century of its existence. One is stamped on 15 April 1898 and the other on 2 December 1911

One additional footnote of the history of this period that is of interest is a letter that is written to the ‘Singapore Free Press and Mercantile Advertiser’ 🍀1920. The letter is interesting because it raises many issues over the role of the Museum that resonate a century later. This is an appropriate conclusion to the first half-century of the Raffles Library and Museum.

10.1



RAFFLES LIBRARY.
2. 12. '11
SINGAPORE.

1874

He did not keep the place tidy

A rocky start to the Raffles Library and Museum

“James Collins was appointed in 1868 and was clearly very enthusiastic. He wrote papers on various museum specimens and tried to obtain more, but he did not keep the place tidy, which was fundamentally what the Council wanted. ... ‘the Committee visited the museum and found it very dirty. Mr Collins promised to have it cleaned by Monday ...’ Collins was dismissed in October 1868.” — **Briony Hudson and Maureen Boylan**



It is supposed to be a good start when the Legislative Council approves funds for the Raffles Library and Museum, giving it space at the Town Hall (today the Victoria Theatre and Concert Hall). Botanist James Collins (1844?–1900?) is put in charge, a second chance following his dismissal in 1868 from the Pharmaceutical Society's museum in London (as Briony Hudson and Maureen Boylan recount). Collins starts well, actively encouraging the Museum's role in the development of natural resources. A string of absences and failures leads to his dismissal three years later. This is not the best of beginnings for the Museum that just starts life on 28 March 1874.

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1874.1



1874.1

This print of the Town Hall in Singapore is made between 1864 and 1872. The Raffles Library and Museum occupies three rooms in the building between 1874 and 1876

1877

Will repay a visit of inspection

Nicholas B. Dennys and the natural history collection

“The rhinoceros skeleton in the Raffles Museum has been very neatly mounted and will shortly be placed in position. A large boa constrictor (live) was presented this morning by H. H. the Maharajah of Johore, and it is, we understand, intended to stuff it by way of affording visitors to the Port an idea of the size of one of the ‘Straits residents.’ ... The Robber Crab in one of the cases is, we may note, a considerable curiosity, very few preserved specimens being found in museums. It is excellently mounted and will repay a visit of inspection.”

—Anonymous

1877.1



1877.1

This postcard shows the Raffles Institution in the 1890s. The Raffles Library and Museum occupies two floors of the three-story block on the right from 1876 to 1887

1877.2



Civil servant and journalist Nicholas Belfield Dennys (1839–1900) comes to Singapore as assistant protector of Chinese. Previously curator at the Hong Kong Museum, he is appointed acting curator after James Collins ♣1874 is dismissed. Dennys reorganises the collections, now at the Raffles Institution. He also adds new display cases and specimens. Dennys grows the natural history collections by actively encouraging donations. The Maharaja (later Sultan) of Johor continues to play a role in natural history ♣1863 by donating numerous specimens. Dennys becomes acting curator on 3 August 1877.

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1877.3



1877.4



1877.2

A visitor to the Raffles Library and Museum in 1877 while it is located at the Raffles Institution writes that “[t]he Robber Crab in one of the cases is, we may note, a considerable curiosity, very few preserved specimens being found in museums. It is excellently mounted and will repay a visit of inspection”. This photograph is from the ‘Guide to the Zoological Collections of the Raffles Museum’ ♣1908. It is not known if this is the same specimen as one in the 1877 description. The Coconut (or Robber) Crab, *Birgus latro* (Linnaeus, 1767), is later the subject of Carl A. Gibson-Hill’s observations on Christmas Island ♣1947

1877.3

This Maharaja (later Sultan) of Johor, Abu Bakar ibni Almarhum Temenggong Seri Maharaja Tun Daeng Ibrahim (1833–1895) donates many natural history specimens to the Raffles Museum, including a “large boa constrictor” that is described by the visitor whom is quoted here. This snake is probably a Reticulated Python ♣1852

1877.4

This Nicholas Belfield Dennys (1839–1900), civil servant, journalist and acting curator of the Raffles Library and Museum

1884

Science generally will be benefitted

Frederick A. Weld and a new museum building

“A museum, which it is proposed to build on a large scale, which will render it the most complete institution of the kind in that part of the world, is to contain a department for industrial exhibits and a library. I am anxious to establish a scientific department in charge of it. ... In botany, zoology, ichthyology, entomology, much remains to be done, and not only the colony but science generally will be benefitted.” — **Frederick Aloysius Weld**

1884.1

The laying of the foundation stone of the Raffles Library and Museum in 1884. Among the prominent individuals present are: Hoo Ah Kay (second from left) 🌿1885 and Charles Buckley (third from left) 🌿1836

1884.1



The Raffles Institution is under space constraints and having to accommodate the Museum 🌿**1877** does not help. Henry McCallum, a colonial engineer, submits plans for a new museum building in 1882 and construction begins along what is today Stamford Road. The quotation by Frederick Aloysius Weld (1823–1891), governor of the Straits Settlements, during a speech given in July 1884 to the Royal Colonial Institute clearly conveys his excitement for the project. The new building for the Museum is amongst the “new public buildings” that are announced in the ‘Straits Times’ on 18 October 1884.

1884.2

Another image of the laying of the foundation stone of the Raffles Library and Museum in 1884. The governor of the Straits Settlements, Frederick A. Weld, is pictured standing to the right of the foundation stone

1884.2



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1887

Precisely at five o'clock

The Raffles Library and Museum building opens

“In the late afternoon of Wednesday, 12th October 1887 a crowd of Singapore residents began to gather on the grounds of the settlement’s newest and one of its most imposing buildings, the Raffles Library and Museum. Precisely at five o’clock Frederick Weld, Governor of the Straits Settlements, arrived in his carriage at the front porch accompanied by his wife. He was handed a polished brass key and ceremoniously unlocked the front door ... A hush fell over them as he began to speak ...” — **Gretchen Liu**

1887.1



1887.2



1887.1

The Raffles Library and Museum building before 1904 when work on the extension at the back commences

1887.2

The Raffles Library and Museum building in about 1925. The library extension at the rear is completed in 1916

1887.3

A very rare side view of the Raffles Library and Museum building in about 1890. Fort Canning is to the right of the image

This is historian Gretchen Liu's recounting of the opening of the new Raffles Library and Museum building. Governor of the Straits Settlements, Frederick Aloysius Weld **✚1884** opens the building as one of his last official duties. The building is a permanent home for the collections and a headquarters for the study of natural history in Singapore. This golden era will last for over eight decades **✚1972**. The doors to the new building are opened by Weld on 12 October 1887.

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1884.3



1884.4

1887.4

Frederick Aloysius Weld (1823–1891), governor of the Straits Settlements from 1880 to 1887. On 12 October 1887, Weld and his wife Lady Weld (Filumena Mary Anne Lisle Phillipps) arrive at the new Raffles Library and Museum building for its opening. Weld opens the building as one of his last official duties



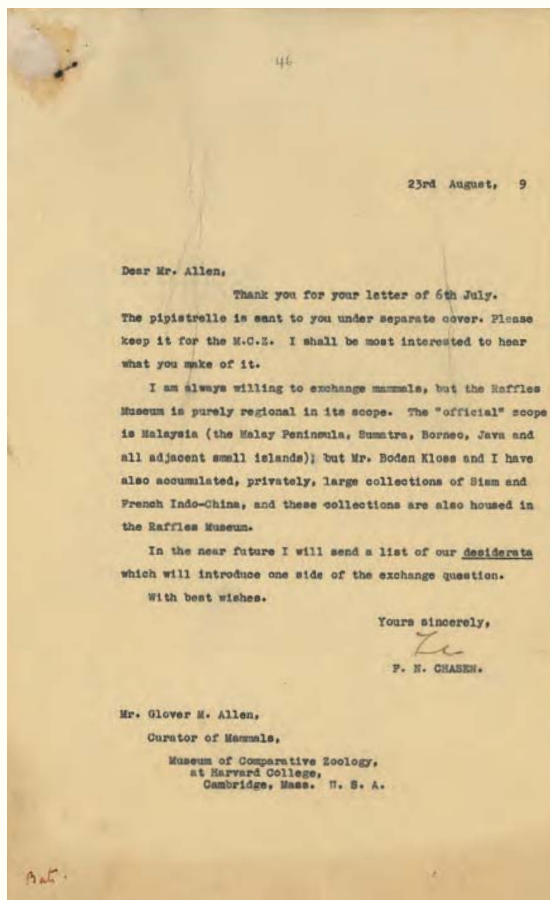
1888

A true Malaysian region

Geographical limits to the collections of the Raffles Museum

“Limits.—The Collections in the Museum for the most part comes from Singapore and neighbouring Malay countries ... With the limited space available and realising the futility of attempting to exhibit more than a ridiculously small collection ... it was decided to limit the collections of this Museum as far as possible to a true Malaysian region.” — John Coney Moulton

1888.1



1888.1

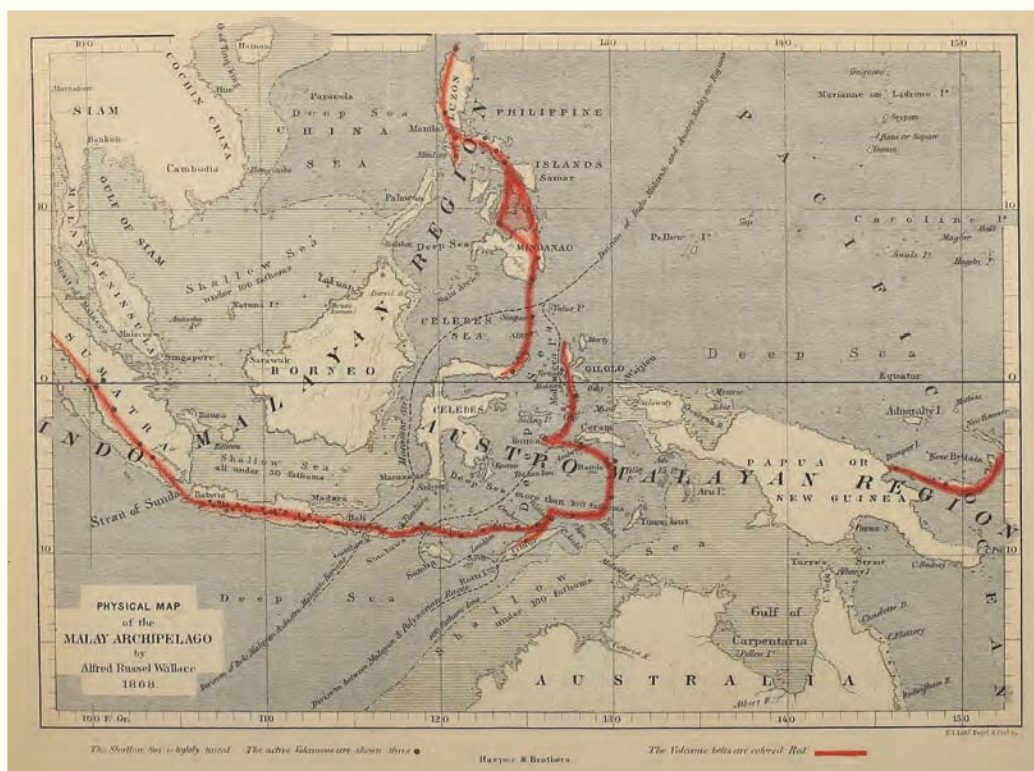
Letter from Frederick N. Chasen to Glover M. Allen that is dated 23 August 1939. Chasen conspiratorially writes that although the collections have geographical limits, “large collections” of material from outside these limits “are also housed in the Raffles Museum”

Space for storage at the Museum is a perpetual problem. In 1920, John C. Moulton ♣1923 finds it necessary to reiterate the limits that are laid down three decades earlier by William R. Davison ♣1893. Davison's original limit is demarcated by Wallace's Line and today the Museum largely inherits these limits, focusing on Southeast Asia. Reality and policy are often worlds apart, as Frederick N. Chasen ♣1940 conspiratorially confides in his letter to mammalogist Glover Morrill Allen (1879–1942). Davison first proposes these limits in 1888.

1888.2

This map that is entitled “Physical Map of the Malay Archipelago by Alfred Russel Wallace, 1868” is published in the “The Malay Archipelago” ♣1854. The dashed line that passes between Borneo and Sulawesi (“Celebes”) is today referred to as Wallace’s Line

1888.2



200: Points in

Singapore's Natural History

Part 10:

The Years 1874–1923

305

1891

The ravages of white ants

Termites infest the museum

“Unfortunately the building has suffered during the year from the ravages of white ants. There is not a portion of the building in which they have not appeared, but they have been especially numerous in the quarters vacated by the Curator which, closed and quiet, have suffered more than any other portion of the building.” — **William Ruxton Davison**

1891.1



Termites or “white ants” have a fearsome reputation in the tropics 🍀1857 and the Raffles Museum is not spared. Besides termites gnawing at the building, the Museum must also deal with dermestid beetles which feed on specimens as well as outbreaks of fungal mould. The new building 🍀2015 is designed with minimal points of entry into the collections to minimise contamination. During the move to the new building, each and every specimen is frozen at −21 degrees Celsius for two weeks to kill any potential pests. The termite damage is reported by Davison in 1891.

1891.1

These termites (*Coptotermes* sp.) and their nest are collected in 2018 in Singapore. The nest is constructed by the termites using their faeces and saliva. This differs from other species that tend to incorporate soil as a building material. The Museum’s building is found to be infested by termites in 1891



1893

One of the best collectors

The death of William R. Davison

“Davison was one of the best collectors that the world has ever seen. He was indefatigable as a worker in the jungle, but it was next to impossible to get him to write anything about his experiences, although, in conversation, his stories of the habits of birds were always interesting.”

—Richard Bowdler Sharpe

1893.1



1893.1

William Ruxton Davison (d. 1893), naturalist and Raffles Museum curator from 1887 to 1893

1893.2

Allan Octavian Hume (1829–1912), British civil servant, ornithologist and botanist. Before joining the Raffles Museum, Davison is employed by Hume as a bird collector. When Hume closes his museum in India, some 82,000 specimens of birds are sent to the British Museum (Natural History)—over and above the 20,000 that Hume destroys due to insect infestation

After collecting for the ornithologist Allan Octavian Hume (1829–1912) for many years, William Ruxton Davison (d. 1893) is already an established naturalist when he joins the Museum in December 1887. Davison also speaks Malay and there are hopes that the Museum can become a base for launching expeditions to the Malay Peninsula, of which several do take place. Davison also institutes geographical limits to the collection 🍀1888. Sadly, the death of his wife in 1891 precipitates a decline in Davison's mental health and affects his work. He passes away tragically on 25 January 1893.

1893.2



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1894

The Museum was broken into Administrative uncertainty at the Raffles Museum

“On the 12th May last, the Museum was broken into, and a portion of the replica of the Raja of Perak’s Regalia was stolen. The Police did not succeed in tracing the perpetrators of the theft.” —**Thomas Francis Seton Quin**

1894.1



1894.1

The replica regalia of the Sultan of Perak. Some or all of these items are stolen during a break-in at the Museum on 12 May 1894

1894.2

Sultan Idris Murshidul Azzam Shah of Perak (1849–1916)

Following the death of William R. Davison ♣1893, George Darby Haviland (1857–1901) takes over as curator of the Raffles Museum with Thomas Francis Seton Quin (1864?–1896) in charge of the library. The arrangement does not last long: Haviland resigns in 1894 and Quin quits in 1895. Although John Graham takes over from Quin, it is only with the arrival of Richard Hanitsch that stability returns. To add to this period of difficulty, thieves make off with the replica regalia of the Sultan of Perak on 12 May 1894.

1894.2



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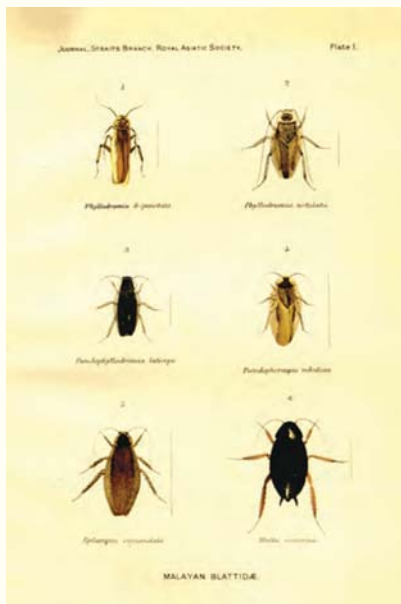
1919

Scores of large, live cockroaches

Karl Richard Hanitsch retires

“In Singapore, there are still many who remember Dr. Hanitsch. He had a ready wit. The tale is told of how a senior local newspaper editor suggested that a recently published journal of the Asiatic Society—of which Hanitsch was editor and secretary for many years—contained too many of the editor’s own contributions on the study of local cockroaches. A few days later, the editor opened a neat parcel in his morning mail, and his room was immediately flooded with scores of large, live cockroaches.” — ‘The Onlooker’

1919.1



1919.2



1919.1

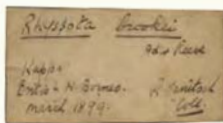
This plate accompanies an article on cockroaches by Hanitsch that is published in 1915. In this article *Epilampra* (now *Rhabdoblatta*) *circumdata* is described Hanitsch based on specimens from Singapore and Malaysia. It is the species at the bottom left. The figures are produced by Valentine Knight 🍀1912

1919.2

A specimen of *Rhabdoblatta circumdata* (Hanitsch, 1915) that is collected in 1917 from Penang, Malaysia

Karl Richard Hanitsch (1860–1940) joins the Raffles Museum as its first director in 1895 and holds this post for an unrivalled 24 years. Under his guidance, the first and only guide to the zoological collections of the Museum is published 🍀1908 and an extension is added to the Museum building 🍀1910. Like Robert W. C. Shelford 🍀1872, Hanitsch is passionate about cockroaches and describes several new species from Singapore. He is also witty, as the quote from ‘The Onlooker’ suggests. Hanitsch continues his cockroach research at Oxford after retirement. Hanitsch leaves Singapore aboard the ‘Marama’ on 8 April 1919.

1919.3



1919.3

The specimen of *Bertia brookei* (A. Adams & Reeve, 1848) is collected by Hanitsch in March 1899 from British North Borneo (today Sabah, Malaysia). The species is first collected during the voyage of HMS ‘Samarang’ 🍀1843 and is named after James Brooke 🍀1855

1919.4

This image shows Hanitsch in the new library extension at the Raffles Library and Museum. The extension is completed in 1916

1919.5

Karl Richard Hanitsch (1860–1940), zoologist, cockroach specialist and first director of the Raffles Library and Museum

1919.4



1919.5



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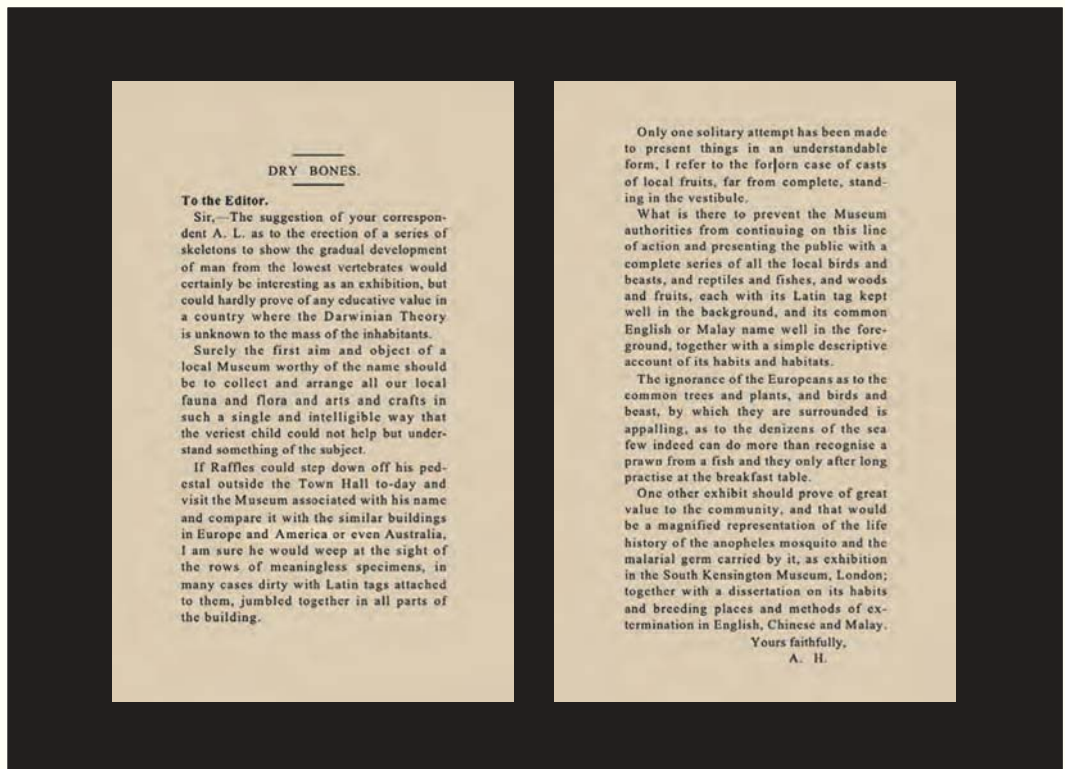
Dirty with Latin tags

An early debate on the role of the Raffles Museum

“If Raffles could step down off his pedestal outside the Town Hall to-day and visit the Museum associated with his name and compare it with the similar buildings in Europe and American or even Australia, I am sure he would weep at the sight of the rows of meaningless specimens, in many cases dirty with Latin tags attached to them, jumbled together in all parts of the building.”

— ‘A. H.’

1920.1



In a letter entitled 'Dry bones', a person who signs off as 'A. H.' writes a response to a suggestion that the Raffles Museum should contain "a series of skeletons to show the gradual development of man from the lowest vertebrates". The language seems dated today but many of the issues that 'A. H.' raises continue to resonate. It is for this reason that the text of the letter is reproduced in full. This letter appears in the 'Singapore Free Press and Mercantile Advertiser' on 30 September 1920.

1920.2



1920.1

This letter that is entitled 'Dry bones' is published in the 'Singapore Free Press and Mercantile Advertiser' on 30 September 1920

1920.2

A name plate from Raffles Museum at Stamford Road. This may be one of the "Latin tags" that 'A. H.' refers to in 'Dry bones'. The name plate accompanies specimens of the Asian Palm Civet at the Raffles Museum. The scientific name is incorrectly given as "*Paradoxurus hermaprodyta*", the correct name being *Paradoxurus hermaproditus* (Pallas, 1777). The Asian Palm Civet is later adopted as the unofficial mascot of the Museum and the Museum's volunteers 🍀1997, 1998



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Climbing of Singapore lamp posts

John C. Moulton leaves the Raffles Museum

“Thus the study of insects is not to be despised. But it was not always reckoned of importance. It is perhaps amusing to recall that only last century the Will of the Countess of Glanville (after whom our Glanville Fritillary in England was named) was disputed on the grounds of insanity as evidence of which it was stated that she collected butterflies. The first night I spent in Singapore, some 12 years ago, a highly-respected dignitary of the church and I amused ourselves climbing lamp-posts in search of moths. At least I did the climbing; he annexed the spoils. But the up-to-date Malay Police who saw us did not question our sanity. Thus far you see we are fortunate enough to live in a truly enlightened age. And I have no hesitation in suggesting to you as a form of innocent and useful amusement the climbing of Singapore lamp posts in search of moths.”

— John Coney Moulton

1923.1



1923.1

This unidentified moth is collected by John C. Moulton on 14 November 1922 in Singapore. It is not known if it is found near a lamp post

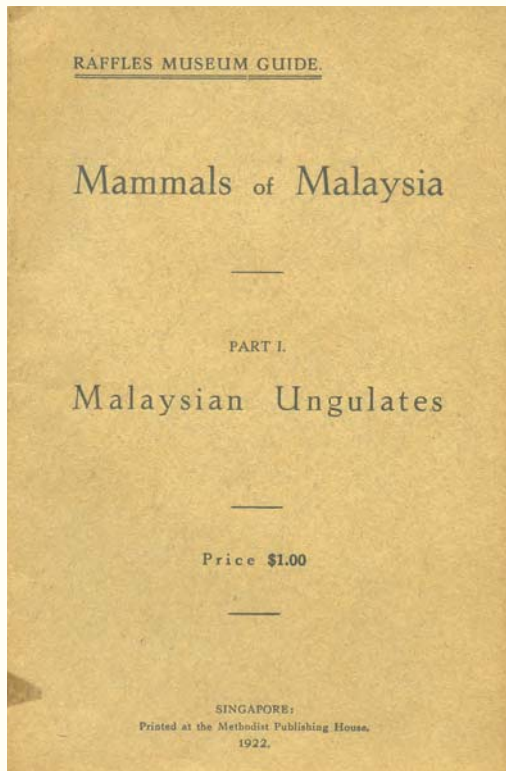


John Coney Moulton (1886–1926) succeeds Richard Hanitsch 🌿1919 as director of the Raffles Museum. Moulton is passionate about moths and climbing lamp posts, as he recounts in this excerpt from his inaugural address as the first president of the Singapore Natural History Society 🌿1921. Moulton comes from a military background and historian Kevin Y. L. Tan describes him as “Moulton the Organiser”. Tan highlights Moulton’s role in rearranging the zoological collections according to the principles of systematics and placing emphasis on research. Moulton resigns as director of the Raffles Museum following his appointment as the Chief Secretary of Sarawak in October 1923.

1923.2



1923.3



1923.2

John Coney Moulton (1886–1926), British soldier, civil servant and second director of the Raffles Library and Museum

1923.3

The cover of the ‘Mammals of Malaysia’ by John C. Moulton. It appears that further instalments of this ‘Raffles Museum Guide’ series are envisioned but only this first part that is subtitled ‘Malaysian Ungulates’ is published. Some of the photographs in this guide are taken by Theodore R. Hubback 🌿1936

1820

1840

1860

1880

1900

🌿 1923

1940

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1980

2000

Part 11

Part 11 Enumerating, Growing and Exhibiting The Zoological Collections at the Raffles Museum

The ‘Heritage Specimens’ in today’s Lee Kong Chian Natural History Museum’s are defined by being over a century old when the building at Conservatory Drive opens in 2015 (see Part 18). It is testimony to the dedication of the staff that care for them that specimens like these survive the ravages of time, pests, war and being moved multiple times.

Administering the zoological collections is no mean feat. An important aspect is the cataloguing and inventorying of the collections. The first listing of the collection is carried out by Arthur Knight ♣1882. An updated catalogue is published by Richard Hanitsch in 1912. Hanitsch also publishes the first and only ‘Guide to the Zoological Collections’ ♣1908.

The Collections are constantly added to through the years. The sources are as diverse as they are interesting. British resident Dudley F. A. Hervey hears of a stranded Blue Whale in Melaka and obtains it for the Museum ♣1892. This whale is arguably the most iconic specimen on display. Unusual animals are also often obtained for or sent to the Museum. From Singapore, a Painted Terrapin that is found near the Serangoon Road police station ♣1899 and a very large King Cobra from the Island Golf Club ♣1950 are two such examples.

From what is today Vietnam, a Mainland Serow that is found swimming offshore is sent to the Museum after it dies ♣1917. An “Ocean Sunfish” from a ‘kelong’, or fishing-stake, in Indonesia also arrives at the Museum ♣1932. The Museum also receives a fish from physician Lim Boon Keng ♣1901 who uses it in his research. An inspector at the Clyde Terrace Market, W. Perreau,

11.1

LIST OF THE

BIRDS, REPTILES AND AMPHIBIANS

IN THE

**Raffles Museum,
Singapore.**

11.1

Cataloguing is an important and unending part of the Museum’s work. These are the titles of the two earliest Museum catalogues that are published thirty years apart ♣1917

is constantly on the lookout for unusual species brought in by fishermen, which he sends to the Museum ♣1913.

Natural history materials are also deposited in the Museum by individuals who are engaged in other forms of research. Dennis Collings ♣1934 is an anthropologist and curator at the Museum who also collects land snails while conducting his archaeological fieldwork. Anne Johnson ♣1959 is an academic and botanist who deposits hundreds of specimens of plants and algae in the Museum's herbarium. The Museum's staff also make collections in nearby areas, such as Pedra Branca ♣1980. These numerous small collecting trips are over and above the large-scale expeditions that are organised by the Museum (see Part 13).

The public galleries are also an important part of the Museum's *raison d'être*. The construction of an extension to the Museum building at Stamford Road allows for the relocation of the zoological collection to this larger space. Following this reorganisation, the Museum sees a very large increase in the number of visitors during the Chinese New Year holiday ♣1910. The role of taxidermists and curators in preparing parts of the Collection for display cannot be overstated. Valentine Knight ♣1912 and Percy M. de Fontaine ♣1937 work on many of the well-known displays, including the whale. In addition to making collecting trips around the region, both men are also very skilled at making casts of large fish for display, using materials such as plaster and papier-mâché ♣1914.

CATALOGUE
OF
EXHIBITS
IN THE
RAFFLES MUSEUM,
SINGAPORE.

1884.

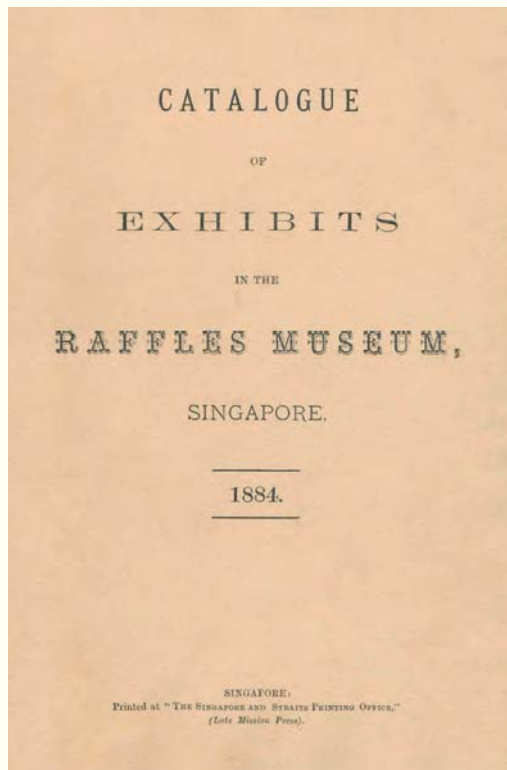
1882

To prepare a catalogue of the Museum Arthur Knight and first listing of the collections

“At the same meeting the Curator was requested to prepare a catalogue of the Museum. However, the catalogue was not published until 1884. It was prepared chiefly or entirely by Mr. A. Knight, printed by the Singapore and Straits Printing Office and numbered 198 pages. But the collections were at the time not yet in a fit condition to be satisfactorily catalogued.”

— Karl Richard Hanitsch

1882.1



Arthur Knight (1834–1916) is appointed curator of the Raffles Museum following the request by Nicholas B. Dennys 🌿1877 to separate this role from that of librarian. Knight holds this appointment on and off until 1887. One of his first tasks is to prepare a catalogue of the Museum’s collections. Although not much more than a list, it provides an invaluable snapshot of the holdings during these early years. The meeting at which Knight is tasked with the preparation takes place in June 1882.

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🌿 1882

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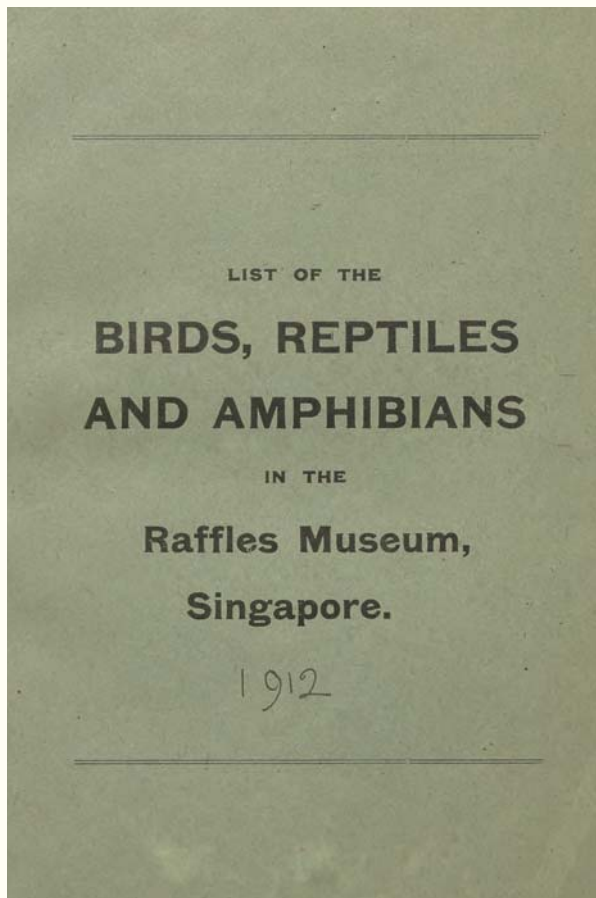
1940

1960

1980

2000

1882.2



1882.1

The ‘Catalogue of Exhibits in the Raffles Museum, Singapore’ that is published in 1884. Although it is published anonymously, its authorship is attributable to Arthur Knight

1882.2

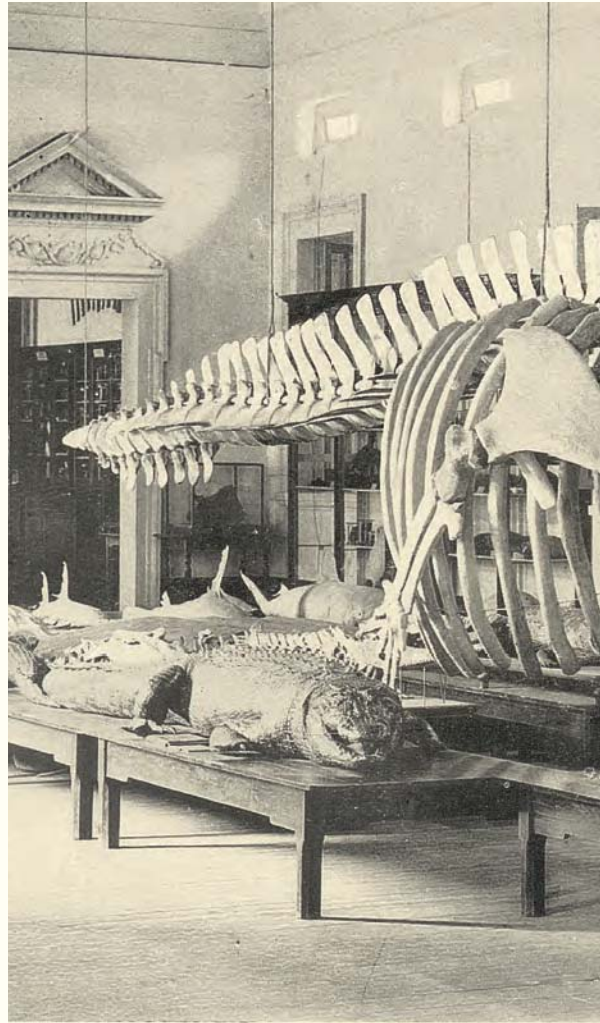
The ‘List of the Birds, Reptiles and Amphibians in the Raffles Museum, Singapore’ that is published by Richard Hanitsch in 1912

1892

Took possession of the skeleton Dudley F. A. Hervey and the whale

“The whale was left stranded at a place called Sa’Batu about eighteen miles to the south of Malacca town on 19th June, 1892. A ‘pagar’ was built round it to prevent it getting back to sea at high tide. ... Mr. Hervey, the Resident, gave a ‘hadiah’ to the Penghulu and others and took possession of the skeleton.”

— Maurice Hellier

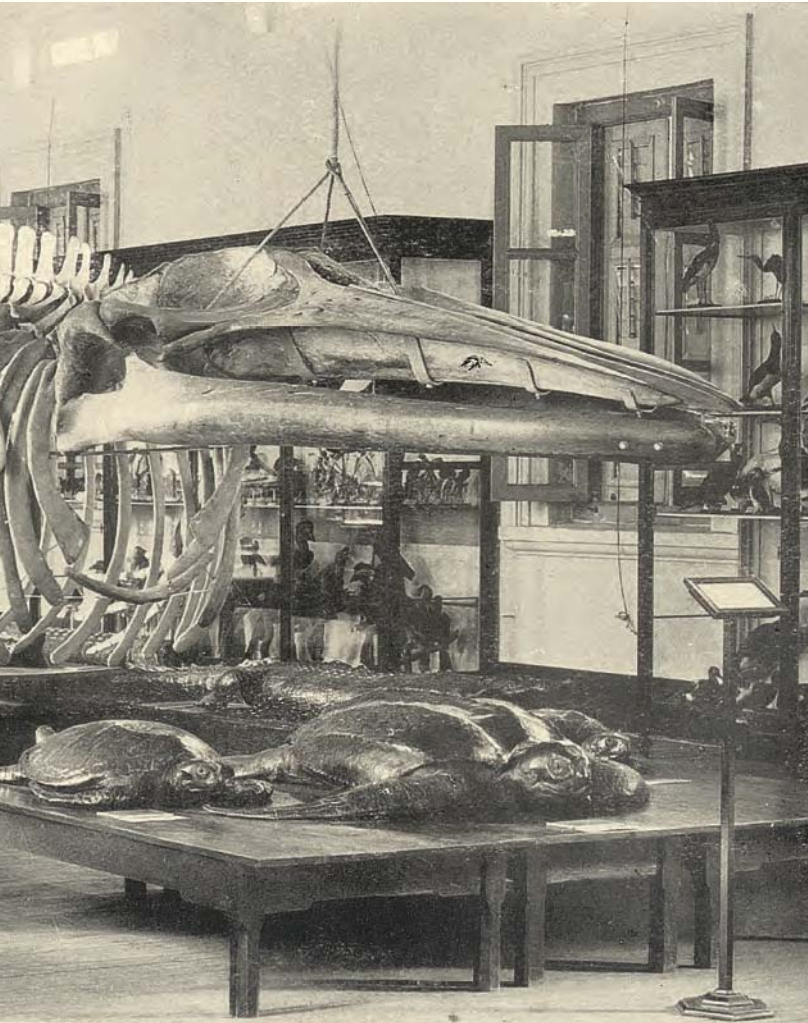


1892.1

This photograph is originally captioned: “The Indian Whale (*Balaenoptera indica*)”. *Balaenoptera indica* Blyth, 1859 is currently known as the Blue Whale, *Balaenoptera musculus* (Linnaeus, 1758). The skeleton of this whale is now in Labuan 🌿1974. The photograph appears in Hanitsch’s ‘Guide’ 🌿1908

In the account of how the Museum obtains its famous whale, Maurice Hellier, who is inspector of schools and later acting curator of the Museum 🍀1901, writes that a stockade is placed around the beached whale until it dies. Dudley Francis Amelius Hervey (1849–1911), British resident of Melaka gives a gift (‘hadiah’) to the headman (‘Pengahulu’) and obtains the skeleton for the Museum. The whale in turn becomes a ‘hadiah’ to Malaysia 🍀1974. The tantalisingly-named ‘Kampung Solok Ikan Paus’ (Whale Dale Village) near Sebatu (“Sa’Batu”) is possibly a reminder of the stranding that occurs on 19 June 1892.

1892.1



1820

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🍀 1892

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1899

First authentic record from Singapore

A very unusual terrapin in Singapore

“A specimen of the turtle *Callagur picta* with the striking red colouration of its snout, was caught on January 3rd, 1899, near the Seranggong Road Police Station. Although the Museum already possesses two specimens of this species, yet this is the first authentic record from Singapore.”

— Karl Richard Hanitsch

1899.1



The contemporary account identifies the terrapin as *Callagur picta* (Gray, 1862) but this species is now known as *Batagur borneoensis* (Schlegel & Müller, 1845), or the Painted Terrapin. While the provenance of this specimen of a Painted Terrapin is not in doubt, it creates an interesting problem. This species is currently known only from Borneo, southern Thailand, Peninsular Malaysia and Sumatra. Is this the last individual of the Singapore population? The Painted Terrapin is caught near the Serangoon Road police station on 3 January 1899.

1899.2



1899.1

This Painted Terrapin, *Batagur borneoensis* (Schlegel & Müller, 1845), specimen is collected in 1939 from Sarawak, Malaysia

1899.2

The Serangoon Road police station at which the Painted Terrapin is caught in 1899 may look like this one that is identified as the Geylang police post. The postcard is dated 21 or 27 March 1902

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1901

No foundation in fact Lim Boon Keng dispels a medical myth

From the Hon'ble Dr. Lim Boon Keng was received one fish (*Chorinemus moadetta*). To the eating of this fish (the Malay name of which is 'Talang') the natives of Singapore attribute the skin disease 'Panau' which gives rise to the curious white patches often seen on their hands and feet. I understand that Dr. Lim Boon Keng after an examination came to the conclusion that it was quite wholesome and that its connection with 'Panau' has no foundation in fact."

— Maurice Hellier

1901.1



1901.1

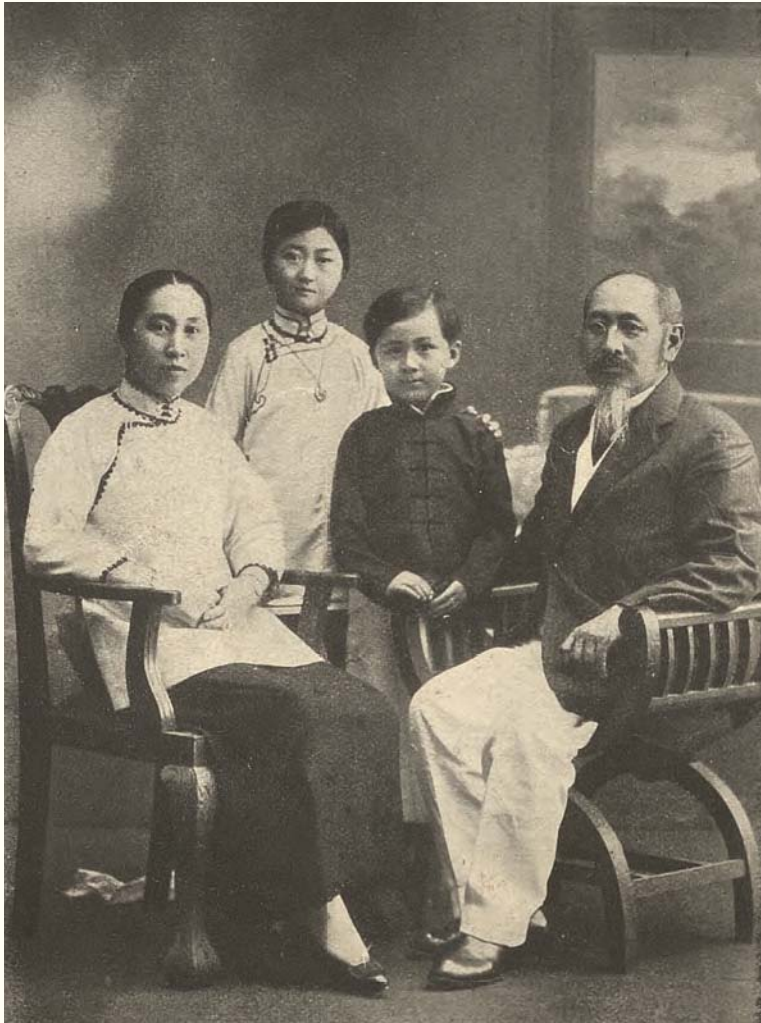
A specimen of the Doublespotted Queenfish that is collected in 1972 from the Andaman Sea. Hellier's report refers to this species as *Chorinemus moadetta* Cuvier, 1832, but this species is currently known as *Scomberoides lysan* (Forsskål, 1775)

1901.2

Lim Boon Keng (1869–1957), medical doctor and public intellectual. Lim is pictured here with Mrs Lim (Grace Yin Pek Ha)

Lim Boon Keng (1869–1957) is a medical doctor and public intellectual in Singapore. He contests the link between ‘panau’ and eating the Talang or Doublespotted Queenfish. Some Chinese avoid the Talang because its spots are said to be fingerprints of a deity. ‘Panau’ (now known to be a fungal infection) seems to be another reason for avoiding the fish. Acting curator Maurice Hellier 🍀1892 reports Lim’s donation of the Talang to the Museum in 1901.

1901.2



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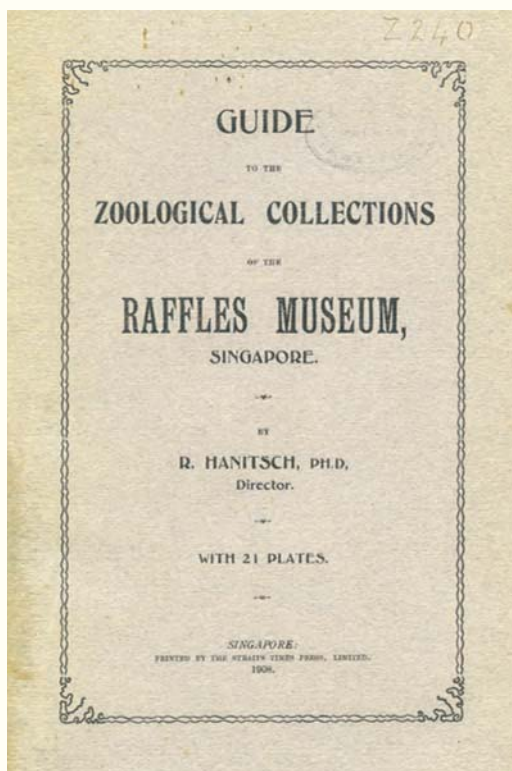
1908

Experience a little difficulty

‘Guide to the Zoological Collections of the Raffles Museum’

“In fact it would have been more correct to entitle the book ‘An Introduction to the study of the Fauna of the Malay region, as illustrated by the specimens in the Raffles Museum,’ especially as no attempt has been made in its pages actually to guide the visitor from case to case and shelf to shelf. The visitor is expected to use his eyes, and if here and there he should experience a little difficulty in finding a particular bird or insect, he will also, when successful, partake of the joy of the numerous collectors who brought the specimens together.” — **Karl Richard Hanitsch**

1908.1



The 'Guide to the Zoological Collections of the Raffles Museum' does not become the bestseller Richard Hanitsch 🍀1919 envisions. However, the photographs taken by the brothers Sim Boon Kwang and Sim Boon Eng, provide an invaluable snapshot of the collections as they appear at the start of a tumultuous twentieth century. A half-century later, the Raffles Museum is renamed 🍀1960 and the zoological collections removed shortly thereafter 🍀1972. This first and only guide to the zoological collection appears in December 1908.

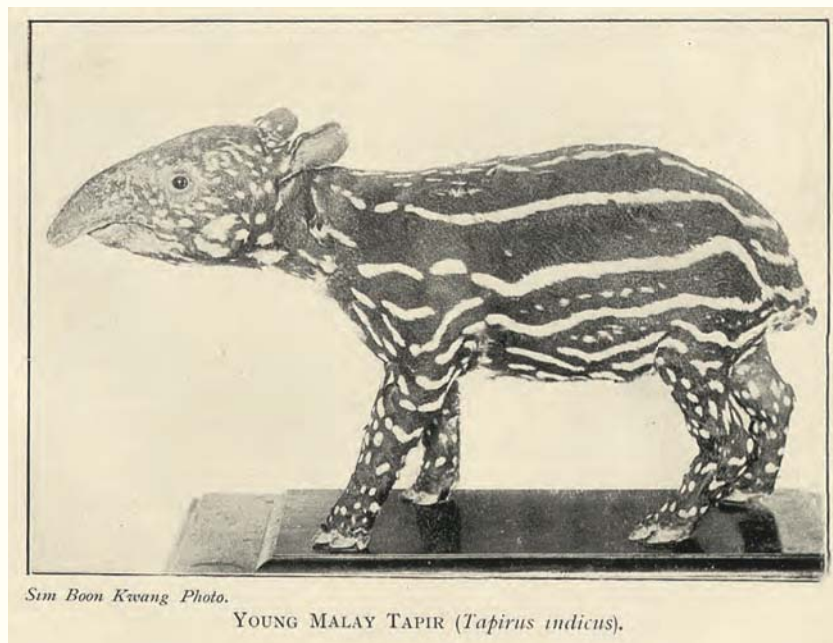
1908.1

The cover of 'Guide to the Zoological Collections of the Raffles Museum' that is published in 1908 by Richard Hanitsch

1908.2

This photograph of a juvenile Malayan Tapir (*Tapirus indicus* Desmarest, 1819) is from Hanitsch's 'Guide'. The specimen is still extant and is on display in the Museum's Mammal Zone

1908.2



1910

Rumah Rimau

Chinese New Year uptick in visitorship

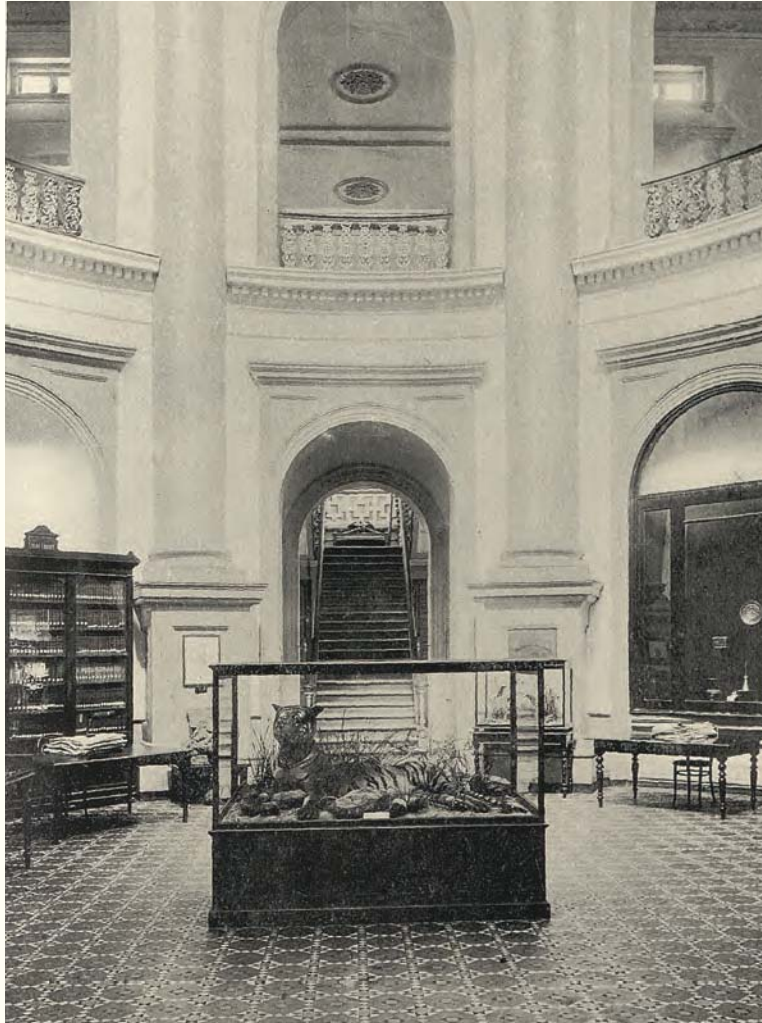
“Amongst all the varied holiday delights indulged in lately by the natives here, a visit to Raffles Museum has seemed to prove this resort as a favourite. On Thursday and Friday about ten thousand Chinese and Malays crossed the portals. ... Much excitement was evinced on alighting and receiving the white tickets at the door ... But ‘Why Rumah Rimau’ one asked and was promptly annihilated by the scathing answer, ‘Did not the gigantic Rimau guard the entrance, beholding every new comer,’ and kechil Malays listened with bated breath and clutched their fathers’ sarongs while told tales of the Were Tiger.” — **Brathay**

1910.1

The entrance to the “Rumah Rimau” (Tiger’s House) in 1908. As Brathay recounts: “Did not the gigantic Rimau guard the entrance, beholding every new comer”. The Tiger, *Panthera tigris* (Linnaeus, 1758), is a gift from Sultan Ibrahim of Johor in 1903

In 1906, an extension added to the Raffles Museum is complete and Richard Hanitsch 🍀**1919** begins the task of moving the entire zoological collections to this new extension. The displays are reorganised and refurbished when correspondent Brathay visits and describes the scene at the “Rumah Rimau” (Tiger’s House) during the Chinese New Year. This early twentieth century account gives an idea of the exhibits that are most popular amongst visitors. These throngs of visitors come to the Museum during Chinese New Year which falls on 10 February 1910.

1910.1



1820

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🍀 **1910**

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1912

Flattering testimonial to the artist

Valentine Knight becomes assistant curator

“The most notable addition to the Ethnological collection, the one which decidedly drew most visitors and was always surrounded by crowds of fascinated natives, was the life-size model of a Malay, dressed in festive garments. A member of the Museum staff had bravely lent himself for the somewhat painful operation of having a cast taken, in Plaster of Paris, of his head, hands and feet, and the result was such a life-like figure, with baju, sarong and kriss, that many of the more simple-minded visitors could not be persuaded that it had not been prepared by the same process of skinning and stuffing, as the specimens in the animal gallery, certainly a flattering testimonial to the artist, Mr. Valentine Knight. It was his last large piece of work before his departure in May. It is intended to add casts of other Eastern races, as opportunity occurs.”

— Karl Richard Hanitsch

1912.1

“*Trionyx subplanus* from Bukit Timah, Singapore, 15.4.1908”. This painting is made and signed by Knight. The common name of this species is the Malayan Soft-shelled Turtle and its current scientific name is *Dogania subplana* (Geoffroy Saint-Hilaire, 1809)

1912.1



Valentine Knight (1866–1944) from Edinburgh joins the Museum in 1902 as chief taxidermist. Knight and another taxidermist, Percy M. de Fontaine 🍄1937 work together on many projects. These include the famous whale 🍄1892, many of the fishes 🍄1914, replicas of local fruits and vegetables, as well as a model of a Malay man, as Hanitsch recounts here. Knight also collects natural history specimens for the Museum. Even after retirement, Knight assists Hanitsch with illustrations for the latter’s cockroach paper 🍄1919. Knight is appointed assistant curator on 1 July 1912.

1912.2



1912.2

These specimens of the Pacific Bubble (*Bulla ampulla* Linnaeus, 1758) are collected by Knight in the 1900s in Bunguran, North Natuna Island, Indonesia. Like Percy M. de Fontaine 🍄1937, Knight also collects specimens from islands around Singapore

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🍄 1912

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1913

Specimens of interest

Fish markets and research

“Fishes.—The collection of fishes received a considerable number of interesting additions. ... The most frequent donor, however, to whom the Museum is greatly indebted, was Mr. W. Perreau, Inspector, Clyde Terrace Market, who whenever he noticed specimens of interest being brought in, secured them and presented them to the Museum, as specimens of *Diodon hystrix*, *Amphiprion Stethojulus*, *Chorinemus moadetta*, *Chiloscyllium indicum*. Of special interest was young example of the Sea Devil or Ox Ray (*Dicerobatis eregoodoo*), measuring only 9 inches across, as against the full-grown specimen in the Museum which measures over 12 feet across.” — **Karl Richard Hanitsch**

1913.1



1913.1

“The most frequent donor, however, to whom the Museum is greatly indebted, was Mr. W. Perreau, Inspector, Clyde Terrace Market, who whenever he noticed specimens of interest being brought in, secured them and presented them to the Museum ...”. This postcard shows the Clyde Terrace Market and Beach Road in the early 1900s

“Fish is not a luxury, but an absolute necessary of life, with a rice-eating population” is an observation made by Krishna Govinda Gupta (1851–1926), an Indian civil servant and lawyer. By virtue of this necessity and by their bringing all manner of marine life together, fish markets make important contributions to research. Several new species fish are described from specimens bought in fish markets in Singapore, although their wild origins remain unknown. Colonial administrators also play a role by looking out for unusual specimens, particularly when fish are so abundant in the markets 🍀1841. Very little is known about W. Perreau but he is mentioned in the Raffles Museum’s annual report for 1913.

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🍀 1913

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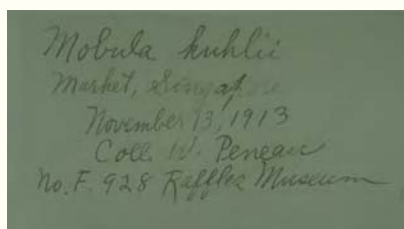
1913.2



1913.2

These two plates are from 'Malayan Fishes' that is published in 1921 by British colonial administrator Charlton Neville Maxwell (1872–1940). The two plates are captioned: "Photo taken at Clyde Terrace Market Singapore". The Malay names of the fishes are also given: "Yu, Pari, Malong, Duri" (left) and "Kĕrapu, Kurau, Merah, Tĕnggiri, Talang, Parang" (right). As Maxwell writes in the preface: "The writer was unable to find time to be present at the Clyde Terrace Market, Singapore, where most of the photographs were taken, the fish being borrowed for a minute or two from the stall-holders ..."

1913.3



1913.3

The specimen the “Sea Devil or Ox Ray” that is presented by W. Perreau is still present in the collections of the Museum today. Its scientific name is *Mobula eregoodootenkee* (Bleeker, 1859), a species currently considered to be distinct from *Mobula kuhlii* (Müller & Henle, 1841), as is written on the label

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1914

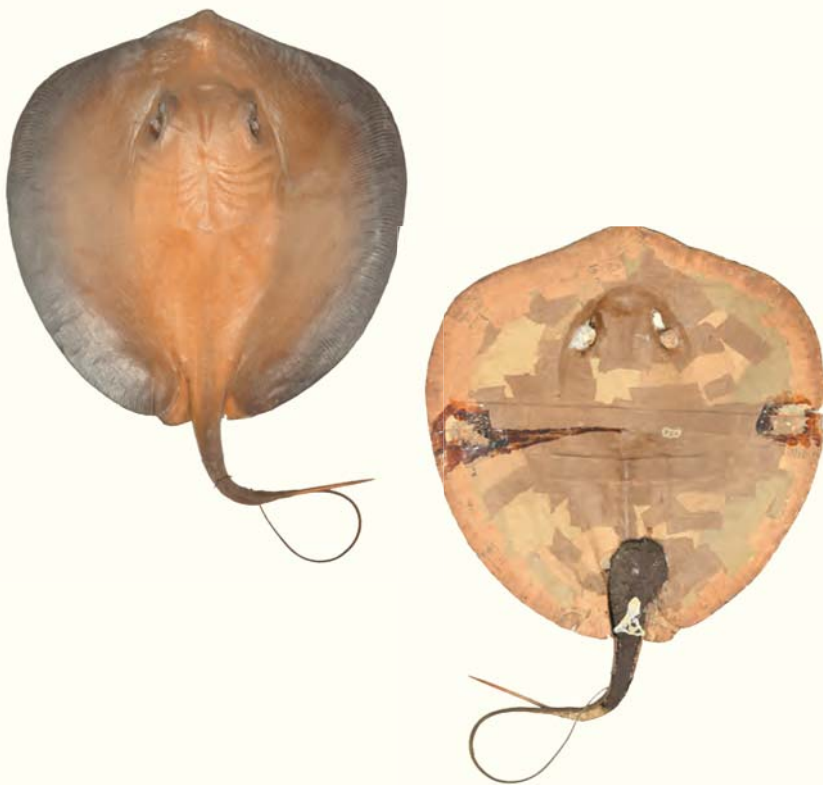
Little leisure for other work

Casts of large fish for display

“The Report on the Museum is short and may seem meagre. The reasons for this are: (1) I was away on leave during the greater part of the year; (2) Mr. Valentine Knight, the Assistant Curator, who acted for me, had for eight months to devote much of his time to office, chiefly Library, work; (3) the preparing of a number of casts of the larger local Sharks and Rays for the show collection required considerable time, and left little leisure for other work.”

— Karl Richard Hanitsch

1914.1



1917

Its eyes were rolling for terror

The case of the swimming serow

“The animal had been picked up in the sea by native fishermen ... off the peninsula of Phu'ong Mai (lat. about $13^{\circ}30'N$) in Annam, having apparently fallen from the high cliffs there. Monsieur Toulouse, Commissioner of Police, was the first to hear of it and informed M. Chochod and M. Saint-Poulof of this strange occurrence. They hastened to the spot and found the animal alive, tied to a tree and surrounded by gaping Annamites. The animal was uninjured, but seemed much frightened and pulled hard on the rope. It allowed itself to be touched and to be caressed, though all the same its eyes were rolling for terror.”

— Karl Richard Hanitsch

1917.1



Serows are a type of wild goat found throughout Asia. They are often found climbing mountain cliffs, which possibly explains how this individual ends up taking a swim in the sea off Phuong Mai in Annam (now Vietnam). Following its rescue, it is bought by Gabriel Saint-Poulof who tries unsuccessfully to keep it alive. It dies three days later. Identified as a Mainland Serow, *Capricornis milneedwardsii* David, 1869, it is donated to the Museum and put on display. As Richard Hanitsch recounts, this serow is first found by fishermen on the morning of 5 February 1917.

1917.2



1917.1

These photographs accompany Hanitsch's article 'On a serow from Annam' which describes the Mainland Serow that is found swimming off Phuong Mai in what is today Vietnam. One shows the animal while it is still alive and the other its skull after it is prepared and brought to the Museum

1917.2

The name plate that accompanies the Mainland Serow when it is displayed at Raffles Museum at Stamford Road in 1900s. The date on the plate is probably when the specimen is presented to the Museum. Like several others, the specimen is no longer extant and the name plate is all that remains 🍀1819, 1917

1820

1840

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1880

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🍀 1917

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2000

1932

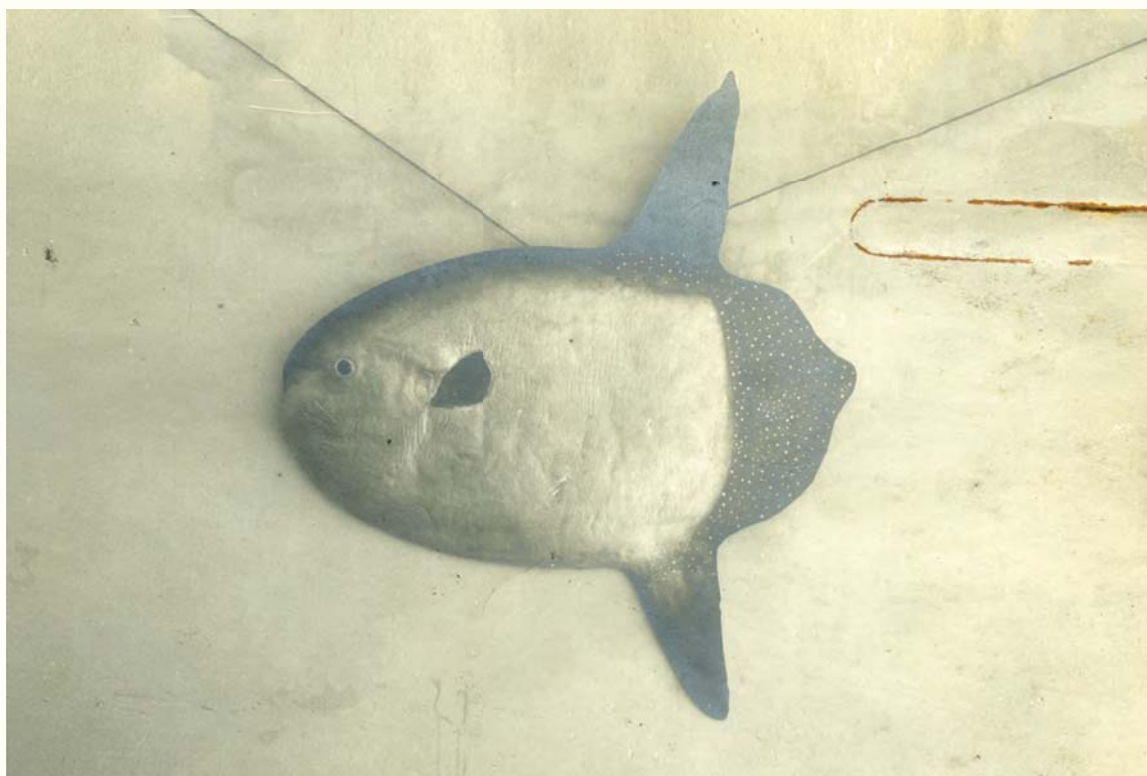
Peculiarly watery nature of the fleshy parts

The Museum acquires an “Ocean Sunfish”

“Adult specimens of the genus *Mola*, owing partly to their bulk, and in part to the peculiarly watery nature of the fleshy parts, are difficult to preserve. A cast was therefore taken immediately after the specimen had been photographed. The specimen itself was treated with formalin and sun-dried.”

— Norman Smedley

1932.1



Specimens of large marine animals are scientifically valuable but rare and are usually the result of fortuitous circumstances. Best known are the whales ♣1892, 1994, 2016. The specimen of a large Sharptail Mola, which Norman Smedley ♣1929 calls an “Ocean Sunfish” is unusual enough for him to write to the journal ‘Nature’ about. Sadly, like the Whale Shark ♣1964, all trace of the Sharptail Mola are now lost. The Sharptail Mola is donated by Heng Chye Hee who obtains it near a ‘kelong’ (fishing stake) on the night of 11 April 1932.

1932.2



1932.1

This photograph from the Norman Smedley Collection shows the cast of the “Ocean Sunfish”. The image is taken in 1934 by Michael W. F. Tweedie ♣1946. The common and scientific names currently in use for this species are, respectively, Sharptail Mola and *Masturus lanceolatus* (Liénard, 1840). The handwritten caption at the back of the photograph reads: “*Mola lanceolata* (Liénard). Cast 1934, from model 1932. Photo sent by Tweedie. Cast made by de Fontaine from my model. cf. photo of original in Bull. Raff. Mus. no. 7., Dec., 1932”. The name “de Fontaine” refers to Percy M. de Fontaine ♣1937

1932.2

The name plate from Raffles Museum at Stamford Road that accompanies the cast (or dried specimen) of the “Ocean Sunfish” in the 1930s. The fish is obtained at Pulau Numbing in Indonesia. Neither specimen nor cast is extant and like many others, only the name plate remains ♣1819, 1917

1820

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1920

♣ 1932

1940

1960

1980

2000

1934

Gifted in various strange ways

Dennis Collings and Eric A. Blair

“When you were in that part of the world did you go to Singapore by any chance? I have a great friend there at the Raffles Museum, Dennis Collings his name is, an anthropologist & very gifted in various strange ways—for instance he can do things like forging a medieval sword so that you can’t tell it from a real one.” — **Eric Arthur Blair**

1934.1

These specimens belong to an unidentified species of *Diplommatina*. Like other species in the same genus, they are found on limestone karsts. Collings collects these specimens in 1947 during a visit to Gua Peraling (“Peraling Cave”) in Kelantan, Malaysia

1934.2

The front and back of a slide of different species of *Diplommatina* that are collected in the 1940s from various localities, all of which are limestone karst areas in Peninsular Malaysia. The caves found in these areas are often rich in archaeological artifacts—the focus of Collings’ research. The two specimens in column “20” are possibly collected by Collings from Gua Peraling in 1947 as they have the same data as the previous slide

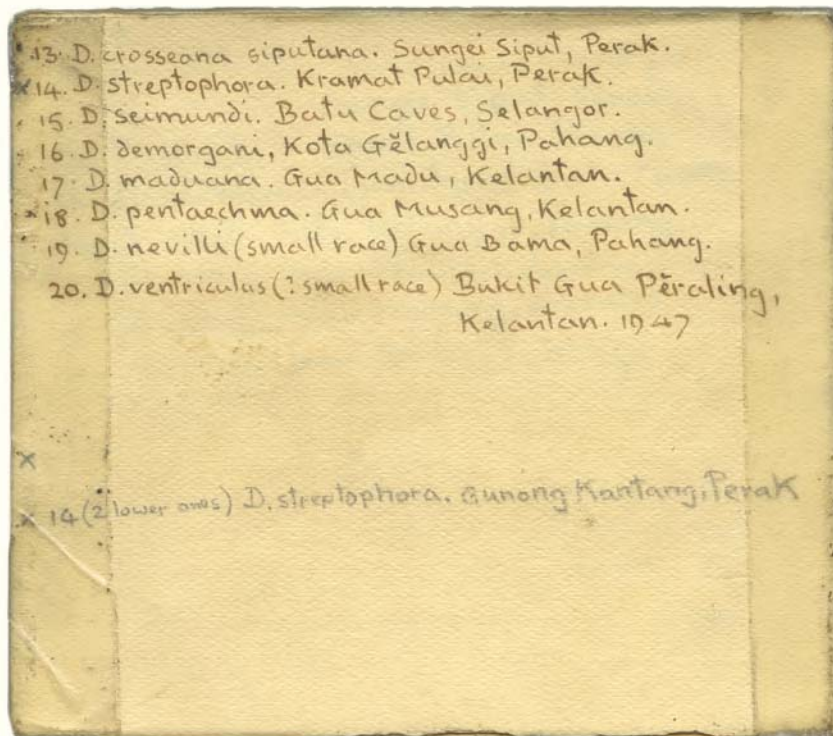
1934.2



1934.1



Eric Arthur Blair (1903–1950) speaks highly of his anthropologist friend Hubert Dennis Collings (1905–2001). Academic John Sutherland states that “Collings was Cambridge” to Blair’s intellectual growth. Blair goes on to write ‘Nineteen Eighty-Four’ and ‘Animal Farm’ under a pseudonym. During his time in Singapore, Collings visits many of the limestone karsts in Peninsular Malaysia which are often rich in archaeological artifacts. Collings also collects zoological specimens for the Museum. Together with Peter D. R. Williams-Hunt 🍀1948, Collings visits Pulau Ubin to look for archaeological material. Collings joins the Raffles Museum as an assistant curator on 3 August 1934.



1937

A most fascinating art

Taxidermist Percy M. de Fontaine retires

“Taxidermy, after listening to Mr. de Fontaine—happy in the midst of his plaster of paris, wood shavings, bottles of pickled snakes, lizards, plaster casts of tombstones ad fishes, a stuffed bird on the wing high up on the showcase top—becomes a most fascinating art. Taxidermists should rank high in the estimation of the populace. Theirs is a remarkable type of work. Who else is there who ‘cures’ animals and other beings—after death and for the edification of an inquisitive public?” — **Anonymous**

1937.1



Cyanide dissolved in alcohol

The Island Golf Club King Cobra

“The Island Club Hamadryad brought to the museum alive on Monday 10 July having been caught by three greensmen one of whom commenced by seizing it by the tail. We kept it in the box in which we received it, allowing it to drink, until Wed. morning, when it was killed with chloroform followed by injection into the oesophagus of potassium cyanide dissolved in alcohol. It measured 15 feet 7 inches (tail 36 inches) & weighed 26½ lbs. ... The spring balance was used and afterwards corrected against a certified scale in the Singapore Cold Storage Co).” — **Anonymous**

[illegible]

'King Cobra meets a swift death'. This article is published in the 'Straits Times' on 13 July 1950. The man holding the head of the King Cobra at the right of the upper photograph and in the left of the lower photograph is Shariff bin Hashim, the Museum's taxidermist. The girl in the lower photograph is Josephine Tweedie, the daughter of Michael W. F. Tweedie 🍀1946

'The Island Club Hamadryad'. This unpublished note, possibly written in the days after the King Cobra is brought to the Museum, provides further information on the capture of the Hamadryad and its fate. The author of the note is not known with certainty but the handwriting is similar to that in a letter that is written by Michael W. F. Tweedie that is reproduced elsewhere in this book 🍀1953

In Greek mythology, a hamadryad is a type of tree-dwelling forest nymph whose fate is intertwined with its home—it dies when the tree is cut down. Mortals who harm these trees risk the wrath of the gods and other spirits. It is thus both ironic and apt that the Hamadryad (or Hamadryas) is another common name for the King Cobra. Theodore E. Cantor ♣1946 gives the scientific name *Hamadryas* (now *Ophiophagus*) *hannah* to this snake in 1836. After it is killed, the Island Club Hamadryad is used to make a papier mâché cast. Such casts are especially suitable for animals with a “watery nature” such as fish ♣1914, 1932. The ‘Straits Times’ reports that by 1947, the Museum has plaster casts of “a complete set of Malaysian snakes, comprising about 128 varieties”. To this will be added the papier mâché cast of the Island Club King Cobra that arrives in a box on 10 July 1950.

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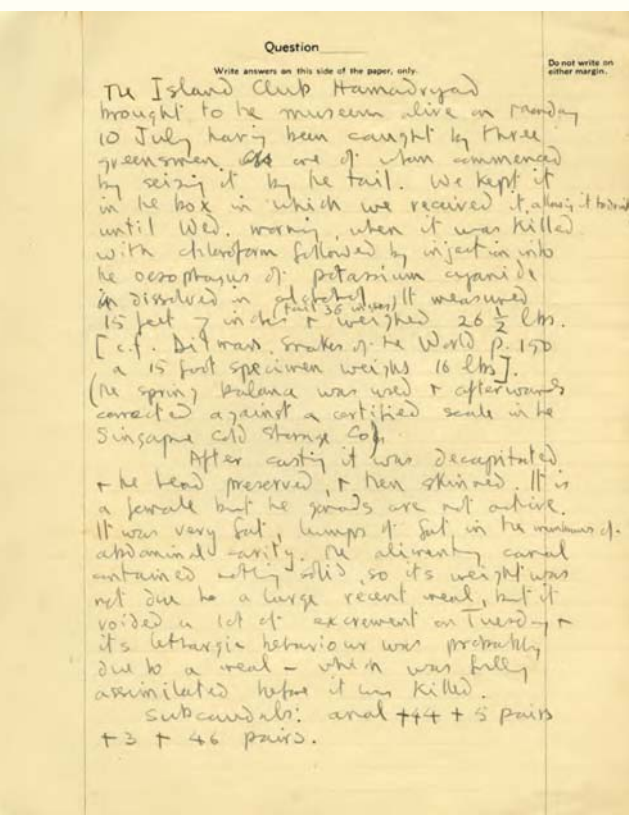
♣ 1950

1960

1980

2000

1950.2



1950.3



1950.3

The Hamadryad that is caught on 10 July 1950 and brought to the Raffles Museum. The anonymous note states that “[a]fter casting it was decapitated & the head preserved ...”. The whereabouts of the head are not known

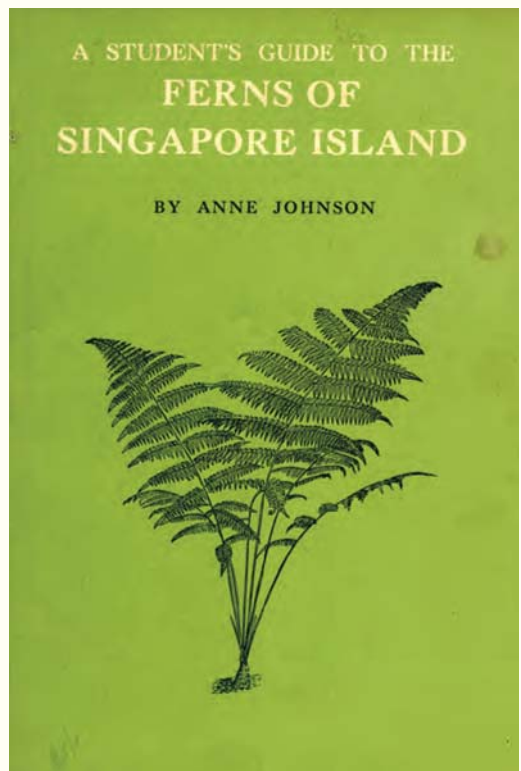
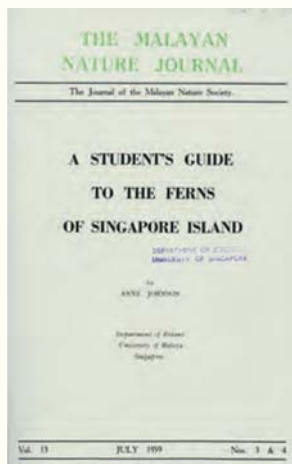
1959

100 moss specimens

Anne Johnson and the 'Ferns of Singapore Island'

“Once the museum was established, it also took over the Department of Botany’s plant collection—the Singapore University Herbarium (SINU), which had been established in 1955 ... This teaching and research collection focuses mainly on the vascular and bryophyte floras of Singapore and Malaysia. Important collections include 100 moss specimens collected by the late Anne Johnson ...” — Kevin Yew Lee Tan

1959.1

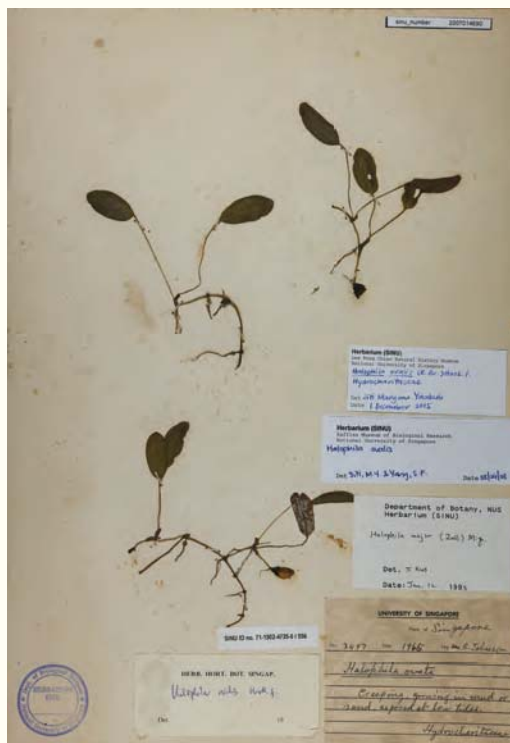


1959.1

The two covers of 'A Student's Guide to the Ferns of Singapore Island' by Anne Johnson. The text is first published in July 1959 in the 'Malayan Nature Journal'. The following year the text is reissued by the University of Malaya Press with a green cover

Anne Johnson, née Garrard (1928–2008) is a botanist and head of the biology department at Nanyang University. As honorary secretary of the Singapore branch of the Malayan Nature Society 🍀1954, Johnson is instrumental in saving the Museum's zoological collections. Johnson writes several books and one of them, 'A Student's Guide to the Ferns of Singapore Island', goes through several editions. This book first appears as an issue of the 'Malayan Nature Journal' in July 1959.

1959.2



1959.2

This Spoon Seagrass (*Halophila ovalis* (R. Brown) J.D. Hooker) specimen is collected by Johnson in 1965 from Singapore. This species of seagrass appears to be a preferred food source of the Dugong 🍀1820, 1863, 1999

1959.3

This Serrated Ribbon Seagrass (*Cymodocea serrulata* (R. Brown) Ascherson & Magnus) specimen is collected by Johnson in 1965 from Singapore

1959.3



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🍀 1959

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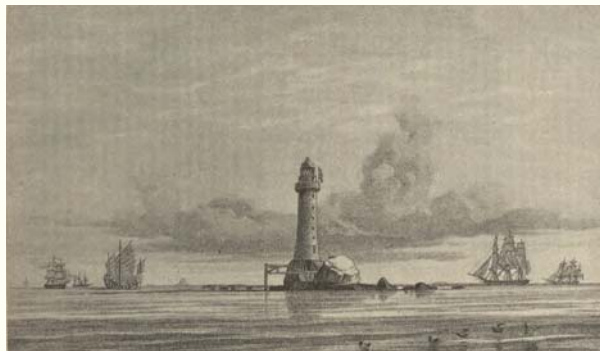
1980

Dung of the numerous sea-birds

Pedra Branca and “this first Pharos of the Eastern Seas”

“The rock on which the Government determined on placing the Horsburgh Testimonial ... is called Pedra Branca by Europeans and Batu Putih by the Malays, both terms signifying white rock. No term could have been more appropriate, as the rock prior to our operations on it presented an aspect of perfect whiteness, owing to its being covered by the dung of the numerous sea-birds, that frequented it as a resting place.” — **John Turnbull Thomson**

1980.1



1980.2

1980.1

These two engravings of Pedra Branca show the rocks before (April 1850) and after (October 1851) the construction of Horsburgh Lighthouse. They are published in 1852 in Thomson's 'Account of the Horsburgh light-house' in the 'Journal of the Indian Archipelago and Eastern Asia' 🍀1850



John Turnbull Thomson (1821–1884) is the government surveyor responsible for building Horsburgh Lighthouse on a hitherto barren outcrop of rocks some 50 kilometres east of Singapore. The lighthouse serves to guide ships toward the eastern approaches of the Singapore Straits and is called “this first Pharos of the Eastern Seas” by the ‘Singapore Free Press’ in allusion to one of the seven wonders of the ancient world. It is named after the hydrographer James Horsburgh (1762–1836) whose nautical charts and sailing directions guide countless ship safely between India and China. The lighthouse is completed in 1851 using granite from Pulau Ubin 🍀1850. During the first half of the twentieth century, collectors from the Museum visit the lighthouse regularly to collect specimens. It is therefore a surprise to Singapore, which inherits control of the lighthouse after independence, when Malaysia claims sovereignty of the rocks in 1979. In response, Singapore lodges an official protest to Malaysia over their claim on Valentine’s Day 1980.

1820

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1960

🍀 1980

2000

1980.3



1980.4



1980.2

These Turtle Limpet, *Cellana testudinaria* (Linnaeus, 1758), specimens are collected in April 1934 from Pedra Branca

1980.3

A Black-naped Tern (*Sterna sumatrana* Raffles, 1822) specimen that is collected on 11 October 1921 from Pedra Branca. The collector is Percy M. de Fontaine (“P. M. de F.” on the label) 🍀1937

1980.4

Pedra Branca and Horsburgh Lighthouse as they appear on 4 April 2017

Part 12

Part 12 Studying the Collections

The Museum and Research

One of the biggest boosts to research at the Museum is arguably the launch of the ‘Bulletin of the Raffles Museum’ ♣1928. The ‘Bulletin’ provides staff with an outlet for publishing their research, which is recognised as a motivation long before the term “publish-or-perish” is invented. Having a publication of its own to send to other institutions is also important in a research environment that is becoming increasingly international during this time. This growth in transnational collaboration is reflected by such international meetings as the Fourth Pacific Science Congress that curator Norman Smedley attends as a representative of the Straits Settlements ♣1929.

Today, the zoological collections at the Museum are officially and appropriately known as the Zoological Reference Collection (see Part 17). These collections are an invaluable source of reference material for researchers working at what is today the National University of Singapore. Scientists who use the collection include: Tham Ah Kow, one of the first Singaporean scientists and the Fisheries Biology Unit under him ♣1962; malacologist Lim Chuang Fong who studies cone shells ♣1992; and Pek Yeong Berry and John R. Hendrickson ♣1963, Dennis H. Murphy ♣1965 and Jon B. Sigurdsson ♣1991 all of whom describe new species from Singapore. The Collections are used by Lord Medway (later Earl of Cranbrook) for a book on mammals ♣1969, and together with David R. Wells for a book on birds ♣1976. Similarly, researchers associated with the Museum rediscover the Neptune’s Cup sponge that is thought to be extinct in Singapore ♣2011. Lastly and very naturally, staff of the Museum such as Eric R. Alfred ♣1966 and Yang Chang Man ♣2000 also utilise the zoological collections for their research.

12.1

Specimen labels like these and the data on them are an integral part of a specimen’s scientific value. As Kirk Wallace Johnson writes in ‘The Feather Thief’, even when a batch of stolen bird specimens is later recovered, the “[c]urators were dismayed to find that many of the specimens were missing their labels, without which they were of little to no scientific value.”

The Collections are also enriched by the research of others. The Singapore Marine Fisheries Research Department of the Southeast Asian Fisheries Development Centre (SEAFDEC) deposits some 2,000 specimens of fish 🌿**1983**. Although the Museum is not directly involved in research that is connected with the Severe Acute Respiratory Syndrome (SARS) outbreak 🌿**2003**, a later survey studying the prevalence of SARS and related viruses in rodents results in specimens being deposited at the Museum. This zoonotic outbreak is also a reminder of the interdependence of nature and humanity.

Research also takes place when material is sent out of the Museum to be studied by specialists elsewhere. The first fossils known from Singapore are sent to Richard B. Newton who studies them and names several new species 🌿**1906**. The Museum also sends primate brains to anthropologist and anatomist John L. Shellshear for his studies on comparative anatomy 🌿**1926**.

12.1

| Zool. Ref.
Collection | ZOOLOGY DEPARTMENT
UNIVERSITY OF SINGAPORE | Merulinidae
(COL. ANT.) |
|--------------------------|---|----------------------------|
| Cat. No. | ZRC.1980.3.20.104 | No. Spec. 1 |
| Species | <i>Merulina scabrivula</i> Dana, 1846
Merulina ampliata (ELLIS & SOLANDER) | |
| Locality | Pulau Hantu - Reef slope. Attached to coral rocks. | |
| Collector | L T Chan | Date 18/10/1979 |
| Det. by | L T Chan | Date 10/1979 |

| | | |
|--|--|-------------------|
| <i>Sterna sumatrana sumatrana</i> Raffles. | | Sex ? |
| Horsburgh Lighthouse, 33 Miles due East | | ○ |
| Loc. | of Singapore Island, Malay Peninsula. Alt. | |
| No. | Date 11. 10. 1921. | Coll. P. M. de F. |
| T.L. 325 | T. | W. Ts. Bfg. |

1906

The first fossils yet recorded

The early study of palaeontology in Singapore

“About two years ago Mr. J. B. Scrivenor, Geologist to the F.M.S., discovered some fossils in the silty clay of the quarry on Mt. Guthrie, near Tanjong Pagar, Singapore, and subsequently I obtained some additional specimens in the same locality. These two collections were figured and described by Mr. R. Bullen Newton ... These are apparently the first fossils yet recorded from Singapore.” — **Karl Richard Hanitsch**

1906.1

This letter is sent by Richard B. Newton to Richard Hanitsch and dated 20 November 1906. In the letter, Newton expresses his thanks for the fossils sent to him by Hanitsch. There is also the tantalising remark that Newton is sending “by parcel post some duplicate specimens from the Singapore material” to Hanitsch

1906.2

This plate shows the “Mesozoic Fossils from Singapore” and is published with Newton’s article on fossils from Singapore. In the article Newton names several new species which are also figured here: *Goniomya scrivenori* (figs. 1–3), *Gervillia hanitschi* (fig. 4), *Astarte guthrieensis* (figs. 9, 10), *Astarte scrivenori* (figs. 11), *Cuculaea scrivenori* (fig. 13)

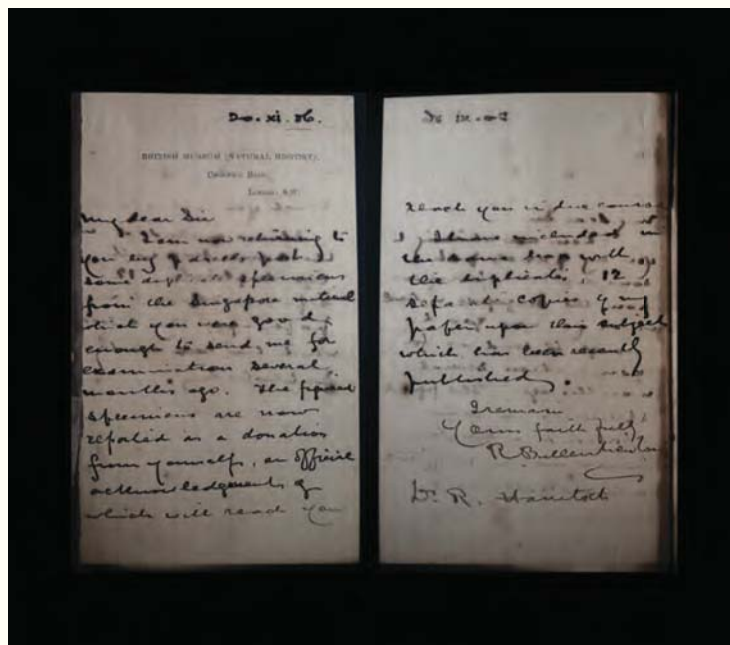
1906.3

This postcard from about 1892 shows the road near Tanjong Pagar with Mount Guthrie visible in the left background with a tree on its summit

1906.4

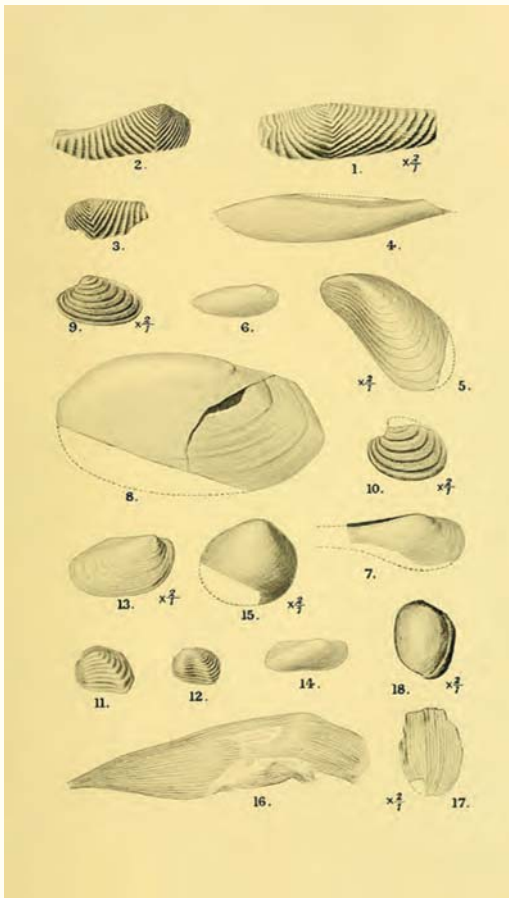
Richard Bullen Newton (1854–1926), British malacologist and palaeontologist

1906.1



In 1904, government geologist John Brooke Scrivenor (1876–1950) and Richard Hanitsch 🌿1919 discover fossils near Mount Guthrie. These are the first fossils found in Singapore. These fossil are sent to Richard Bullen Newton (1854–1926) who studies them and names several new species of fossil molluscs. Fossils are subsequently found in various parts of the Jurong Formation including Benoi, Jurong, Mount Faber, Pulau Ayer Chawan and Sembawang. All of these locations no longer exist or are no longer accessible. Mount Guthrie is levelled and no longer exists by 1923. Newton publishes his findings in the ‘Geological Magazine’ in November 1906.

1906.2



1906.3



1906.4



1926

Brains of the great majority

Raffles Museum contributions to
anthropology and medicines

“The brains of the great majority of the Primates that have passed through the taxidermist’s department during the year have been extracted and sent for study to Professor J. Shellshear of Hongkong University.”

— Cecil Boden Kloss

1926.1



The Museum's collections contribute to and benefit from other fields of research. For example, specimens that are used in medical research come to the Museum 🍀**1901, 2003**. Medicine and anthropology are also beneficiaries of the collection. In the 1920s, specimens of primate brains are sent to anthropologist John Lexden Shellshear (1885–1958) in Hong Kong for him to study. This results in several papers in which Shellshear analyses the anatomy of primate brains. These comparative studies help to inform various developmental and anatomical processes in both humans and other animals. The quotation from Cecil B. Kloss 🍀**1929** describes the forwarding of primate brains that takes place in 1926.

1926.1

The skulls of these macaques (*Macaca* spp.) show signs of being split open, possibly to extract the brains for research

1926.2

John Lexden Shellshear (1885–1958), anatomist and anthropologist. Shellshear is seated beside fellow anthropologist Raymond Arthur Dart (1893–1988)

1926.2



🍀 **1926**

1940

1960

1980

2000

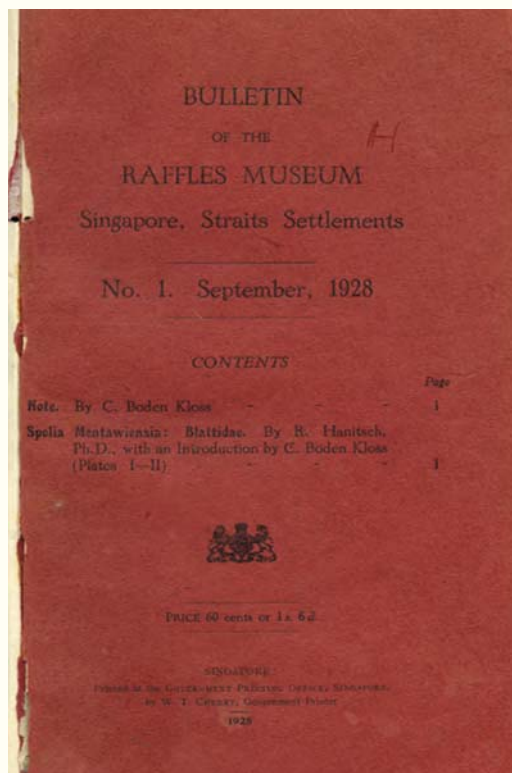
1928

No publication of its own

The birth of the 'Bulletin of the Raffles Museum'

“Hitherto the Raffles Museum has had no publication of its own ... without a means to make some return to the numerous Museums, Institutions and Societies which present it with their publications. Therefore, loth as I am to add one more to the many biological journals current, the ‘Bulletin of the Raffles Museum’ now comes into existence.” — **Cecil Boden Kloss**

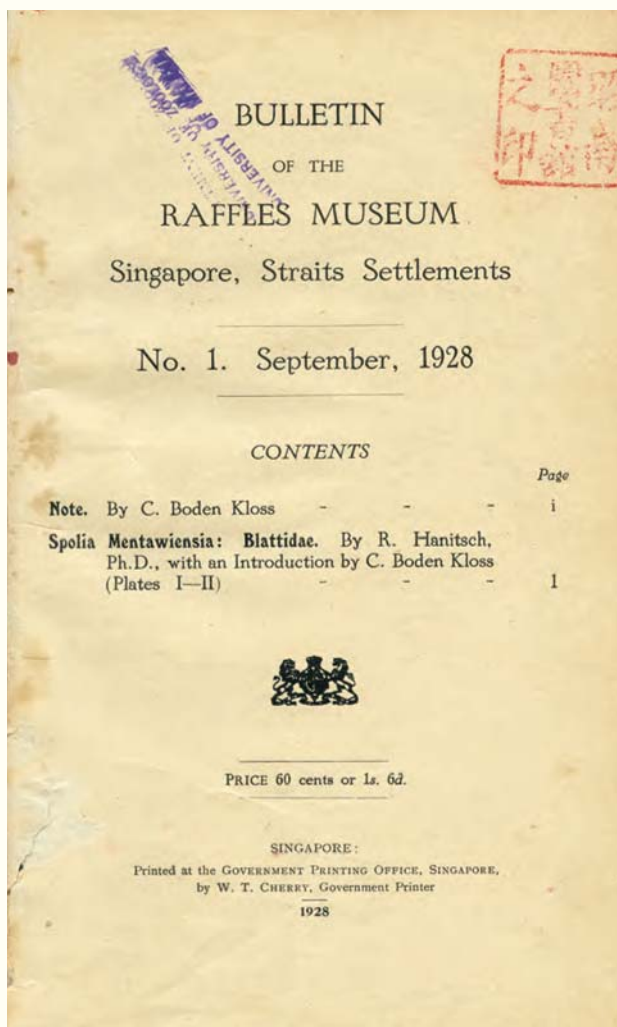
1928.1



1928.1

The cover and title-page of the inaugural volume of the 'Bulletin of the Raffles Museum' that is published in September 1928. The distinctive red cover is used for the lifetime of the 'Bulletin'. The red stamp on the upper right of title-page is evidence of the Japanese Occupation during World War II (see Part 14)

Moulton's emphasis on research ♣1923 and the Mentawai Expedition ♣1924 result in an increase in research output based on the Museum's collections that are in need of a venue for publication. Kloss also makes it clear that reciprocating the publications that are received from other institutions is an important factor. The original 'Bulletin' will cease after 1970 but is restarted in 1988 as the 'Raffles Bulletin of Zoology' which continues to the present day. The first paper in the 'Bulletin of the Raffles Museum' is fittingly on the cockroaches of the Mentawai Islands by Hanitsch ♣1919 and appears in September 1928.



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♣ 1928

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1929

Considerable organising ability

Norman Smedley at the Fourth Pacific Science Congress

“Norman Smedley, who died on Good Friday, 1980, was a man of wide interests, quiet enthusiasm and considerable organising ability. ... After taking a degree in biology at Queen’s College, Cambridge, he joined the staff of the Raffles Museum in Singapore, publishing the results of his research in various learned journals.” — **Elizabeth Owles**

1929.2



1929.1



Norman Smedley (1900–1980) joins the Raffles Museum on 24 May 1924 as an assistant curator. In a nod to his organisational skills, Smedley is involved with several of the Museum’s expeditions, including those to the Mentawai Islands 🍀1924 and Pulau Tioman 🍀1927. One of Smedley’s notable publications is on the “Ocean Sunfish” 🍀1932. Smedley is also given the distinction of representing the Straits Settlements at the Fourth Pacific Science Congress in Java, Indonesia. At the congress, Smedley participates in a discussion on freshwater eels at the same time that John L. Shellshear 🍀1926 is participating in a parallel discussion on anthropology. These sessions take place on 24 May 1929.

1929.1

This souvenir publication is from the Fourth Pacific Science Congress which Smedley attends as a representative of the Straits Settlements. The congress is held in May and June 1929 in Java, Indonesia. It is one of the items donated to the Museum by Norman Smedley’s son Derek in 2017. Additional items are also reproduced in this book 🍀1863, 1924, 1927, 1932

1929.2

These two photographs are taken by Smedley during an excursion to Krakatau (the infamous “Krakatoa”). The trip is organised for the participants of the Fourth Pacific Science Congress on 12–14 May 1929. Staff from the Museum sail past Krakatau eight decades later as part of the SJADES Expedition 🍀2018

1929.3

Norman Smedley (1900–1980), assistant curator at the Raffles Museum and later archaeologist and historian. The handwritten captions on the back read: “Pulau Aor, China Sea (P. Dayang in background).” and “P. Aor: 1927. Shows heavy boulders near shore. Island composed of huge granite boulders. There is a coral reef here”. This picture is taken during the Tioman expedition 🍀1927

1929.3



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🍀 1929

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1962

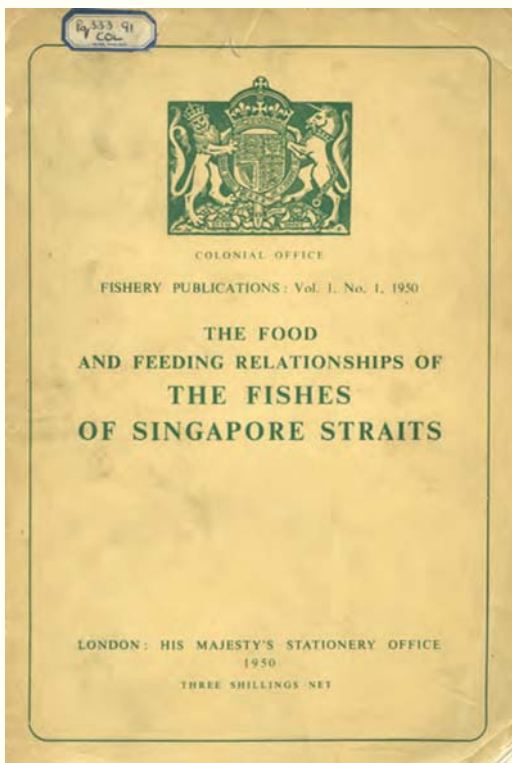
Born in Singapore

Fisheries expert Tham Ah Kow

“Tham Ah Kow (1913–87) was born in Singapore. He was a science graduate of Raffles College, which only granted diplomas at the time. He joined the Fisheries Department upon graduation and eventually obtained a BSc by external examination from the University of London and a PhD from the University of Sydney, where he studied with the well-known William John Dakin, Challis Professor of Zoology. In 1954, he was named Fisheries Officer and was acknowledged as Singapore’s leading fisheries expert.”

— Kevin Yew Lee Tan

1962.1



1962.1

This is the cover of the inaugural issue of ‘Colonial Office Fishery Publications’ series in which Tham’s paper ‘The food and feeding relationships of the fishes of the Singapore Straits’ is published. The focus of this publication is the analyses of the stomach contents of fishes collected in Singapore waters to determine their diet

1962.2

‘Riddle of the ‘thing’ that lurks in a lagoon’ by Francis Rozario. This article is published in the ‘Straits Times’ on 24 January 1957. Tham is pictured in the photograph the left while Michael W. F. Tweedie 🌿1946 is on the right. In this article, Tham, Tweedie and Alec Fraser-Brunner (1906–1986) discuss the possibility of giant octopuses in Singapore waters. At this time, Fraser-Brunner is curator at the Van Kleeef Aquarium 🌿1935

When fisheries adviser Dennis Norman Frederick Hall (1923–2005) hears news of the threat to the zoological collections of the Museum, it is likely that he hears it from Tham Ah Kow (1913–1987). Tham is instrumental in getting the university involved with the zoological collections, a role that is taken over by Chuang Shou-Hwa 1961. Tham is one of the first locally-born academics to gain recognition from the colonial authorities. The first issue in the 'Colonial Office Fishery Publications' series is authored by him, which is quite a distinction in 1950. Tham is also director of the Fisheries Biology Unit that is formed at the University of Singapore in 1962.

1962.2



DR. THAM AH KOW
...Largest octopus caught locally weighed three katis. It had 12-inch-long tentacles.

RIDDLE OF 'THING' THAT LOOKS IN A LAGOON

A kampong tale or a monster?

FISHERFOLK OF KAMPONG DAMAR LAUT, NEAR TANJONG BALAI, SINGAPORE INSIST THAT THEY HAVE SEEN A MONSTER, WHICH THEY DESCRIBE AS A GIANT OCTOPUS, IN THEIR "LAGOON OF FEAR."

Now experts' views on the subject pose a new riddle: What actually is the monster said to haunt that deep, abandoned wartime dock.

The story of the giant octopus reported in the Free Press Saturday Magazine, has drawn conflicting views from leading Singapore authorities on marine life.

The villagers living near the "Lagoon of Fear" claim that the octopus has eyes as big as an adult's fists, tentacles seven feet long and weighs an estimated 200 lb.

Though one official agreed that there was a possibility of an octopus living in the dock, another has flatly said that it was impossible while a third has refrained from forming a hard conclusion.

Mr. M. W. F. Tweedie, the Director of the Raffles Museum, said that the large octopuses were usually found on the coral reefs in the deep Pacific.

"The species found in the colony waters are comparatively small, and are harmless. It is likely that reports of this octopus are highly exaggerated. I can hardly credit it."

But the Curator of the Van Kleef Aquarium, Mr. A. Fraser-Brunner, agreed that it was possible for this giant species of octopus to be found in the disused dock, though they were usually found in deeper sea water, away from shore.

WHEN ASKED WHETHER HE THOUGHT IT WAS A MENACE TO THE PEOPLE, MR. FRASER-BRUNNER SAID HOPE A LARGE SPECIMEN COULD TRAP A MAN IN ITS TENTACLES AND VERY EASILY DROWN HIM.

Deep water

"But it will not swallow the man as some people think." Then he added that he would not mind caring for the octopus if someone caught it.

Dr. Tham Ah Kow, the Chief Fisheries Officer in the colony, refrained from making a definite statement.

"Although one hears stories of such monsters in the colony waters, I haven't seen any, nor have there been authenticated reports. Hence I prefer not to hazard a guess."



MR. M.W.F. TWEEDIE
...The reports are likely to be exaggerated. I can hardly credit it.

By FRANCIS ROZARIO

Dr. Tham went on to relate some of his experiences and reports of his fishermen.

"Large numbers of sharks infest in the colony outer roads, and they sometimes come in close to shore.

"As for the econdiles, though there are still quite many around Singapore, most of them have gone to the Johore side of the strait, where sea traffic is not heavy.

Sea snakes

"But I have seen and heard many reports of some very poisonous sea snakes in the nearby waters around the island. The most often seen is the species with the yellow and black bands. Most of them are about two-and-half feet long.

This type is also the most poisonous. It ejects venom from both fangs.

"But it will not bite unless it is trodden upon or hurt by some other means. I remember some time back I slept next to one, and found out only the next morning it was not hurt

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1963

Nocturnal and insectivorous The Black-eyed Litter Frog

“When disturbed, the black-eyed litter frog (*Leptobrachium nigrops*) usually crouches rather than attempts to flee. ... It is brown or grey with black blotches, and has a snout-vent length of 5 cm. This nocturnal and insectivorous frog walks about with out-stretched legs on the forest floor, and can also climb low shrubs.”

— Marcus Aik Hwee Chua and Kelvin Kok Peng Lim

1963.1



Pek Yeong Berry, née Goh (b. 1935) publishes several papers on frogs in the 1960s and 1970s. While looking for frogs, Berry also collects fish specimens which she donates to Eric R. Alfred 🍄1966, some of these are new species. John Roscoe Hendrickson (1921–2002) is a zoologist and lecturer. Hendrickson sends one of his students to the Raffles Museum with specimens to be identified and that student goes on to play a major role in the Museum's history. This student is Eric R. Alfred who becomes curator and later acting director of the Museum. Berry and Hendrickson collaborate to describe the Black-eyed Litter Frog from Singapore in a paper that is published in 'Copeia' that appears in December 1963.

1963.1

This photograph of a Black-eyed Litter Frog is published with the first description of this species by Berry and Hendrickson in 'Copeia'. Their representative (or type) specimen is collected by Berry on 20 January 1959 from Nee Soon, Singapore

1963.2

The Black-eyed Litter Frog,
Leptobrachium nigrops Berry &
Hendrickson, 1963

1963.2



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🍄 1963

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1965

King of the Mangroves

Dennis H. “Paddy” Murphy

“Singapore’s first, and longest-serving, zoologist has had over 100 species of animals named after him, local biologists estimate. The man himself, Professor Dennis H. Murphy, has lost count. Having a new discovery named after you is an honour bestowed on scientists who have made an enormous contribution to the field. Prof Murphy, 77, named none of the animals – ranging from sea slugs to insects and arthropods – himself. Other scientists did, after they discovered his finds were new. A British citizen who moved here in 1960, he never bothered to write a doctoral thesis. But his wealth of expertise led to him being made an associate professor in 1983 at the then-University of Malaya and later the National University of Singapore (NUS). He retired after 31 years in 1991. Recognised as one of the most outstanding insect taxonomists in the region ... For his work, Prof Murphy was last month affectionately conferred the title ‘King of the Mangroves’ by Singapore’s top zoologists, at the launch of the ‘Singapore Red Data Book’, a classification of endangered plants and animals on the island.” — **Anonymous**

1965.1



1965.1

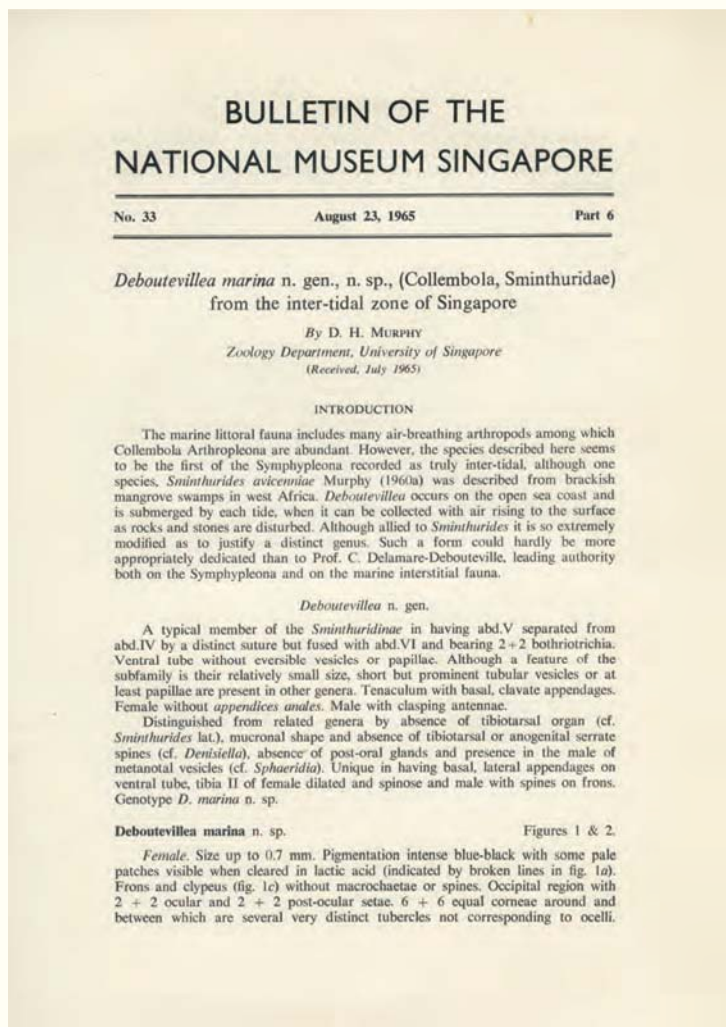
A highly-magnified female Intertidal Globular Springtail (*Debouttevillea marina* Murphy, 1965) specimen from Singapore

1965.2

The first page of Murphy’s paper in which *Debouttevillea marina* is described for the first time. This paper is published just two weeks after Singapore gains its independence on 9 August 1965. By this time, the ‘Bulletin of the Raffles Museum’ 🍀1928 is renamed the ‘Bulletin of the National Museum’ in line with the change in the name of the Museum 🍀1960

Mangrove specialist Dennis Hugh “Paddy” Murphy (b. 1931) does not just have species that are named after him. As “one of the most outstanding insect taxonomists in the region”, Murphy also names them. One of these is the very diminutive Intertidal Globular Springtail, which he names *Debouttevillea marina*. By coincidence, this species is first described in a paper that is published just two weeks after Singapore gains its independence on 23 August 1965.

1965.2



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🌿 1965

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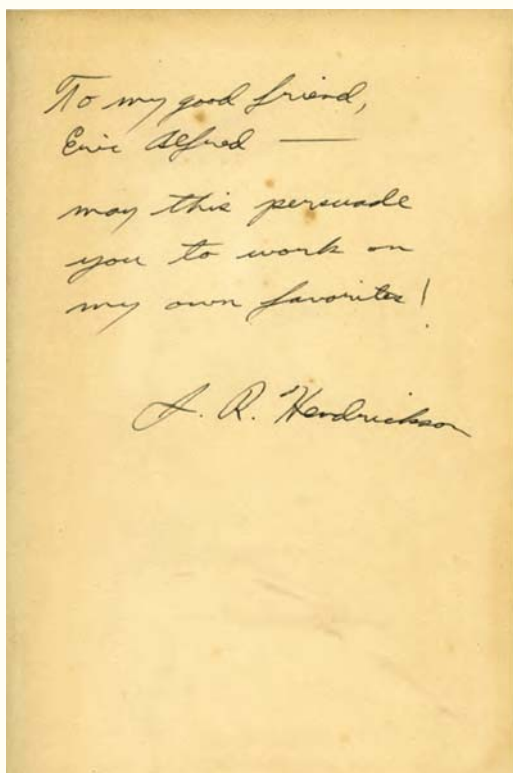
1966

A wonderful place to work

Eric R. Alfred and the Museum

“His first contact with the museum was during the course of his studies when his lecturer John Roscoe Hendrickson (1921–2002) sent him to the museum to have some species identified. There he met Tweedie, Gibson-Hill, and other staff whom he recalled as being extremely helpful. When he saw the marvellous library, his ‘eyes popped out.’ Leafing through the first edition of Pieter Bleeker’s ‘Atlas Ichthyologique’ (1862–77), with its stunning colour illustrations for the first time, he decided that the museum would be a wonderful place to work.” — Kevin Yew Lee Tan

1966.1



1966.1

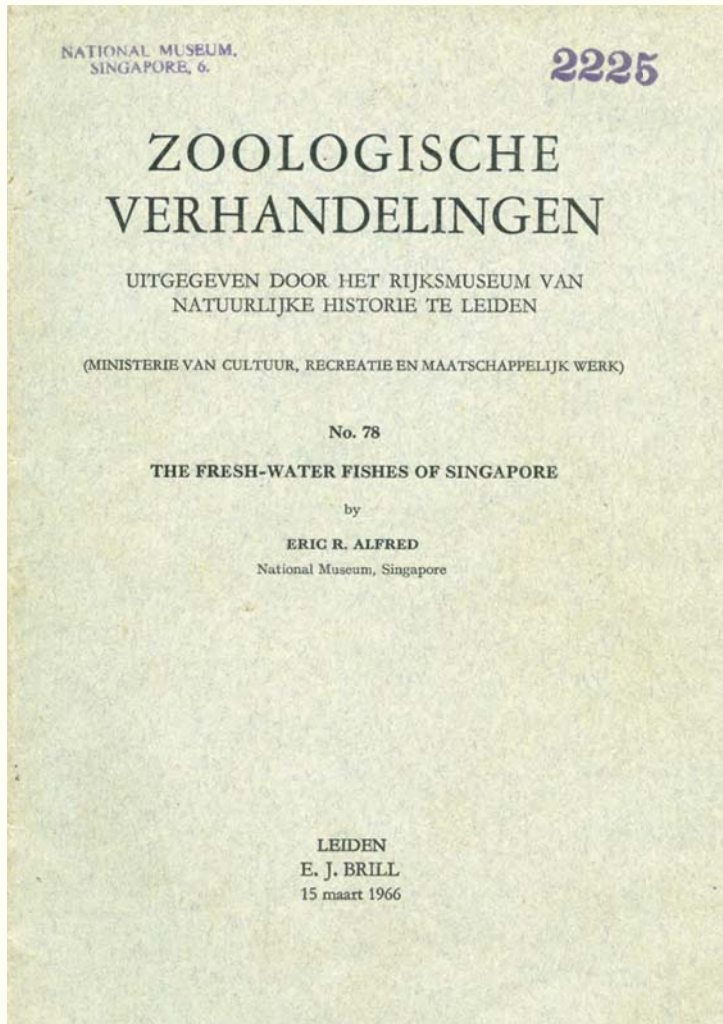
The inscription by John R. Hendrickson to his former student in Alfred's copy of 'The Biology of the Amphibia'. Hendrickson does not appear to be successful as Alfred instead becomes a notable ichthyologist

1966.2

The cover of 'Fresh-water fishes of Singapore' that is published in the journal 'Zoologische Verhandlungen'. This remains an important reference on the freshwater fishes of Singapore

Eric Ronald Alfred (1931–2019) becomes the first local curator at the Museum and later its first local director. A fish specialist, Alfred also makes many contributions to the natural history of Singapore and the region. He describes many new species of fish, including one that is named after his former lecturer. His work at the Museum sends him on some very interesting, and macabre, assignments 🌿1967. Sadly, Alfred passes away on 19 March 2019. One significant and enduring research publication is Alfred's 'Fresh-water fishes of Singapore' which is published on 15 March 1966.

1966.2



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🌿 1966

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1966.3



1966.3

Hendrickson's Catfish (*Akysis hendricksoni* Alfred, 1966). This specimen is collected in 1995 from Golok, Thailand. Alfred names this species after his former lecturer John R. Hendrickson 🌿1963

1963.4

Ogilvie's Lizard Loach (*Homaloptera ogilviei* Alfred, 1967). Charles Symon Ogilvie (b. 1896) is warden at the King George V National Park (later 'Taman Negara') 🌿1936. When he describes this species, Alfred writes that Ogilvie is "a keen amateur ichthyologist and an unfailing source of information, inspiration, and assistance during my expeditions into the National Park". This specimen is collected in 1991 from Sungai Keniam in Taman Negara, Pahang, Malaysia

1966.4



PERSONAL MEMORIES

“Ah — those kelongs! They were a phenomenon in my early days of marine biology research as a zoologist. So many of them standing out there on Changi and Bedok waters. Literally, you could see more kelongs than seas. I remember this Teluk Mata Ikan kelong that our MNS-Singapore Branch members used to visit, among others, with the then curator of Van Kleef Aquarium, Alec Fraser-Brunner, often arranging transport. I knew Alec well and had led fellow branch members on some special visits to the Aquarium, where he personally guided us around.

Now would you believe it — one day a shark, caught at a Teluk Mata Ikan kelong and delivered to the Beach Road Fish Market, was found to have a human leg inside it! Talk about ‘multi-tasking’ even way back ... a Dr. So-and-So friend handling the ‘forensic’ case asked me to go take a look at the leg as well as the shark species. Was the human being already dead or still alive when the leg got



eaten? Didn't realise that a zoologist needed to answer so many questions. I thought hard and said that the cut on the leg looked too clean to suggest a living person's wounds at the point of the bite. Later, as the curator of the Maritime Museum in Sentosa, under the care of PSA, I was engaged on a number of occasions to perform company duties completely unrelated to my job.”

Eric Alfred

1966

1966.5

Remembering Eric Ronald Alfred (1931–2019), ichthyologist, natural historian, first Singaporean curator and director of the Museum. This page is taken from the commemorative issue of ‘Nature Watch’ 1954 that documents the many people and events in Singapore’s natural history. And although he is no longer with us, Alfred stands tall amongst them all.

A shrill squeak, rarely uttered

'The Wild Mammals of Malaya'

“Habits: Lives more or less permanently underground, making burrows below the surface of the soil in search of earthworms, insect larvae, and other soil-dwelling arthropods on which it feeds. In very soft ground there may be no evidence of the activity of moles, but in more compacted soil such as lawns, mossy banks or grassy road verges, the light overburden is forced up into a distinct and characteristic ridge over the burrow. Apparently unable to penetrate extremely compact ground such as the trodden area between rows of tea bushes. In restricted plots of soft earth such as the vegetable beds in market gardens, a mole can sometimes be chased out of its run and will try to escape over the surface of the surrounding harder ground, when it can be caught. Malayan Short-tailed moles have also been trapped (dead) in the conventional British mole trap. Voice: A shrill squeak, rarely uttered.” — Lord Medway

1969.1



1969.1

A Malayan Short-tailed Mole or *Euroscaptor micrura* (Hodgson, that is collected in October 1940 in Cameron Highlands, Malaysia. The presence of a species of mole in Malaysia is first recorded by Michael W. F. Tweedie 🍀1946. The then-Lord Medway's research with his father (the fourth Earl of Cranbrook) shows that they are actually more common than is previously assumed

Lord Medway (b. 1933) describes a method of catching the Malayan Short-tailed Mole amongst the tea estates in Cameron Highlands, Malaysia. Lord Medway (now the fifth Earl of Cranbrook) is a prolific researcher who writes on a wide variety of topics that include natural history, zoology and archaeology. Together with David R. Wells, he completes the final volume of the 'Birds of the Malay Peninsula' 🌿1976. He is also well-known for his research on edible bird's nest and the swiftlets that produce them, including the first evidence that some of them are capable of echolocation. Lord Medway describes how to catch moles in 'The Wild Mammals of Malaya and Offshore Islands Including Singapore' which is published in 1969.



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🌿 1969

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1976

The struggle and pathos involved Birds of the Malay Peninsula

“The careful understatements in the preface only hint at the struggle and pathos involved in the development and completion of the 5 volume work first conceived by H. C. Robinson, and later continued by F. N. Chasen, and in an unpublished form, by E. Banks. All of the first 3 authors died before the set could be completed, and its publication extended over a period of 5 decades. The first 4 volumes were published in 1927, 1928, 1938, and 1939. When, in 1964, the plates for the final volume were discovered in the British Museum, David Wells told me that he and Lord Medway were contemplating completing the series both with enthusiasm and trepidation. ... The authors are to be highly commended for this authoritative and carefully prepared volume of great historical interest as well as value to the ornithology of Southeast Asia.

— Howe Elliott McClure

1976.1

1976.1

Four species of birds that are illustrated in the fifth and final volume of ‘The Birds of the Malay Peninsula’ by Lord Medway and David R. Wells (from left to right): the Scaly-breasted Munia, *Lonchura punctulata* (Linnaeus, 1758); the Yellow Wagtail, *Motacilla flava* Linnaeus, 1758; the Black Drongo, *Dicrurus macrocercus* Vieillot, 1817; the Blue Rock-Thrush, *Monticola solitarius* (Linnaeus, 1758)



Four of the five volumes that are planned for the ‘The Birds of the Malay Peninsula’ are published before World War II. The third and fourth volumes are the work of Frederick N. Chasen 🍀1940, but any notes that he has for the final volume are lost during the war. In 1964, a set of plates drawn by artist Henrik Grönvold (1858–1940) is discovered in the Bird Room of what is then called the British Museum (Natural History), London. These are the plates for the intended final volume of ‘The Birds of the Malay Peninsula’. At around this time, the unpublished manuscript of Edward H. Banks (1903–1988) is also deposited in London. With the plates, manuscript and “enthusiasm and trepidation”, Lord Medway 🍀1969 and David R. Wells set to work to complete the text for the final volume. The final volume of ‘The Birds of the Malay Peninsula’, with the subtitle ‘Conclusion, and Survey of Every Species’, is published in 1976.



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With sophisticated gadgets

Fish from the 'Changi'

“A \$1.76 million research vessel with sophisticated gadgets to locate rich fishing grounds in neighbouring seas – has joined the South-East Asian Fisheries Development Centre. It is the first of three ships being acquired by the centre. ... The 390-ton ship, 'Changi', was donated by the Japanese Government, a partner of the regional centre. 'Changi' sailed in on Wednesday from Japan with a crew of 17, five Japanese professionals and 12 local seamen flown there to man the vessel. It is capable of stern trawling, tuna long lining, and drift net fishing. It has two laboratories – a wet laboratory and a dry one – and cold rooms for 40 tons of fish.” — **Anonymous**

1983.1

These specimens of the Olive-tailed Flathead, *Rogadius asper* (Cuvier, 1829), are collected in October 1972 in the South China Sea by the 'Changi'. The cloth tags that are attached to the specimens are indicative of specimens from the Marine Fisheries Research Department

The Marine Fisheries Research Department (MFRD) is started in 1969 as a department of the Southeast Asian Fisheries Development Centre (SEAFDEC). Its aim is to conduct research to improve the ways in which fish and their products are used for human consumption. The 'Changi' arrives from Japan on 20 August 1969. The Museum is a beneficiary of the collection of fishes that the 'Changi' and other MFRD research vessels collect. The MFRD deposits some 2,000 specimens of fish in the Zoological Reference Collection in 1983.

1983.1



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1991

Careful planning to integrate all demands

Murphydoris singaporensis

“It is recognised that Singapore must maximise use of its limited land area, but that some effort to conserve its cultural and natural history is desirable and necessary, and to make this accessible to its citizens, their children and visitors. It needs careful planning to integrate all demands. ... Mangroves form a significant part of the cultural history of Singapore. They supported the earliest historically known indigenous population (Orang Seletar and Orang Biduanda Kallang, both now extinct) and were the main environment of other early settlements of sea-faring folk who settled at river estuaries. Mangrove molluscs formed almost 50% of the shells in the midden of a 14th century settlement recently discovered beneath Parliament House ...”

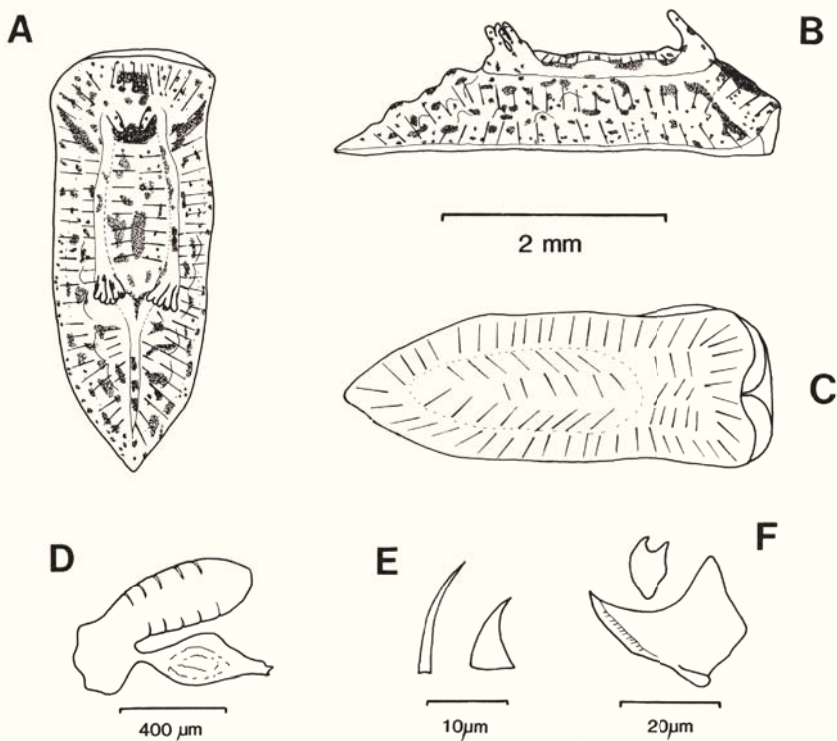
— Dennis Hugh Murphy and Jon Baldur Sigurdsson

1991.1

These drawings of *Murphydoris singaporensis* accompany the first description of this new genus and new species by Jon B. Sigurdsson

In 1990, Jon Baldur Sigurdsson (1937–2015) and Dennis Hugh Murphy 🍀1965 write about the importance of preserving mangrove habitats. That same year, Sungei Buloh is gazetted as a bird sanctuary. In the mangroves in Sungei Buloh and Kranji, Sigurdsson discovers a new seaslug (or nudibranch). He names the new genus after Murphy and the species after Singapore. Sigurdsson describes *Murphydoris singapo-rens* in a paper that is published in May 1991.

1991.1



1992

The fatal five

Lim Chuan Fong the cone collector

“The effects on humans of the stings from cones have frequently been exaggerated. However, there are numerous reports of ‘attacks’ by cones and death has resulted from the stings of five species. They are *C. aulicus*, *C. geographus*, *C. marmoreus*, *C. textile*, and *C. tulipa*. The ‘Fatal Five’ all occur in the Malaysian region. It is advisable that collectors be cautious in handling any live cone although the majority of them may only cause localised numbness or temporary ill-effects.” — **Lim Chuan Fong**

1992.1



Lim Chuan Fong (1936–2015) is a lecturer at the Department of Zoology at the University of Singapore. He is one of the people involved in the discussions on finding a new home for the zoological collections when the decision is made for their removal from Stamford Road 🍀1972. He is also a shell collector and, together with Victor T. H. Wee, he publishes a book on cone shells that becomes sought-after by shell collectors. After his passing, Lim's collection of cone shells and other molluscs is donated to the Museum. His cone shell book 'Southeast Asian Conus' that is co-authored with Wee is published in 1992.

1992.1

Cone shells from the Lim Chuan Fong Collection (from the largest to smallest in size): Beech Cone, *Conus betulinus* Linnaeus, 1758; Lettered Cone, *Conus litteratus* Linnaeus, 1758; General Cone, *Conus generalis* Linnaeus, 1767; Black-and-White Cone, *Conus ebraeus* Linnaeus, 1758; Jasper Cone, *Conasprella jaspidea* (Gmelin, 1791)

1992.2

Lim Chuan Fong (1936–2015), malacologist, lecturer and cone collector. Lim is also a railway enthusiast, as this picture of him at the old Tanjong Pagar Railway Station shows

1992.2



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2000

Modest demeanour hides a will of iron

Lathriovelgia rickmersi

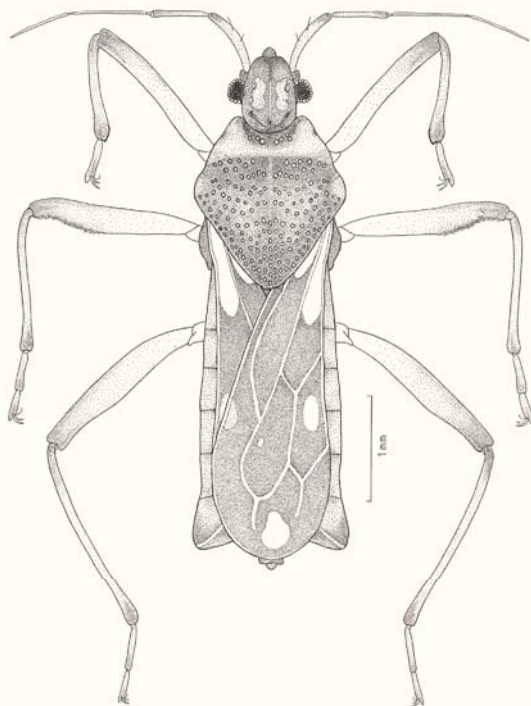
“It is a personal triumph for yourself that the collection has survived its many moves and different homes these past years. When first the material was turned out of the old Raffles Museum building, I was not alone in thinking it lost forever. Only your persistence and determination has saved it through this period. Your modest demeanour hides a will of iron! I am so glad that you have succeeded in your aim.” — **Earl of Cranbrook**

2000.1



As the Earl of Cranbrook states, Mrs Yang Chang Man plays a very important role in overseeing the setting up of the Zoological Reference Collection and of safeguarding the zoological collections. Yang is also an expert on aquatic insects. Together with Damir Kovac, she describes the new species *Lathriovelina rickmersi*. The species is named after Peter S. Rickmers and is described in a paper that is published on 30 June 2000.

2000.2



2000.1

These photographs shows a male (left) and a female (right) *Lathriovelina rickmersi* Kovac and Yang, 2000 at very high magnification

2000.2

This is one of the original drawings of *Lathriovelina rickmersi* Kovac & Yang, 2000 that is eventually published with the first description of this species. Before the advent of image editing software, scientists draw everything by hand and use correction fluid to rectify mistakes. This drawing is made on tracing paper that is about ISO A3 in size (420 × 297 millimetres). The drawing is then reduced considerably for publication. The same can be seen in Michael W. F. Tweedie's drawings of snakes 🐍1953

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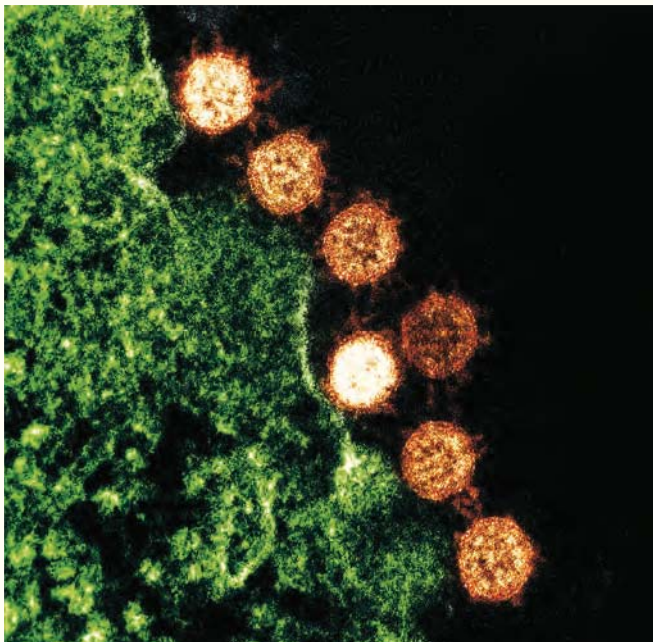
Originated from bats

SARS-CoV

“During the past two decades, three zoonotic coronaviruses have been identified as the cause of large-scale disease outbreaks—Severe Acute Respiratory Syndrome (SARS), Middle East Respiratory Syndrome (MERS), and Swine Acute Diarrhea Syndrome (SADS). SARS and MERS emerged in 2003 and 2012, respectively, and caused a worldwide pandemic that claimed thousands of human lives, while SADS struck the swine industry in 2017. They have common characteristics, such as they are all highly pathogenic to humans or livestock, their agents originated from bats ...”

— Yi Fan, Kai Zhao, Zheng-Li Shi and Peng Zhou

2003.1



2003.1

This transmission electron micrograph shows Severe Acute Respiratory Syndrome (SARS) virus particles (in orange) on the surface of an infected cell (in green). It is coloured after it is taken

2003.2

The extensive collections of small mammals at the Museum are an important reference for scientists who need to identify potential carriers of disease. Research also results in specimens being deposited at the Museum. This synergy is likely to become increasingly important as scientists predict an uptick in the incidence of animal-transmitted diseases outbreaks (zoonoses) due to climate change

Singapore is deeply affected by the outbreak of the Severe Acute Respiratory Syndrome (SARS). This disease is later shown to be a zoonosis entering the human population from animals. Researchers identify horseshoe bats (*Rhinolophus* spp.) as the reservoirs of the SARS-COV. From the bats, the virus spread to humans via intermediate hosts such as the civets (*Paguma* spp.). The Museum does have a history of involvement with infectious disease research, such as in the studies related to scrub typhus in the 1940s and 1950s. Although the Museum is not involved in SARS research, later surveys studying the prevalence of disease-causing agents that include SARS-COV result in specimens of mammals (negative for the virus) being donated to Museum. The SARS outbreak is also a reminder that animals and human beings do not exist independent of each other. The first case of SARS in Singapore is reported in February 2003.

2003.2



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🌿 2003

2011

Never-say-die

(Re)discovery of the Neptune's Cup

“Singapore’s coastal environment is simply amazing. Despite the immense changes in the last century which have transformed and expanded the southern coastline and southern islands, the inter-tidal and sub-tidal habitats are incredibly resilient. Pockets of high diversity continue to thrive in many areas. This ‘never-say-die’ characteristic of our natural heritage is exemplified by the Neptune’s Cup sponge. Scientifically known as *Cliona patera*, the Neptune’s Cup sponge was first seen in Singapore waters in 1822.”

— Karenne Tun and Eugene Goh

2011.1



Karenne Tun and Eugene Goh are two marine biologists conducting surveys in the Singapore Strait. They make an amazing (re)discovery. It is Singapore's 'first' animal, the Neptune's Cup sponge 🍄1819. In the years following its discovery in 1819, the Neptune's Cup becomes highly sought after by collectors and museums. It is thought to be extinct globally until specimens are found in Australia (in 1990) and Thailand (in 2000). This first specimen from the Singapore Straits is joined by another specimen that is found just 50 metres away. This is the first time in over a century that this species is found in Singapore waters. Singapore's sponge specialist, Lim Swee Cheng is quoted in the 'Straits Times' as saying that "[i]t was indescribable". Both specimens provide scientists with invaluable information as this is the first time that this species is studied alive in its natural habitat, and all previous information comes from museum specimens. The two Neptune's Cups are discovered just 50 metres from each other in March and August 2011



2011.1

These two photographs show one of the two living specimens of the Neptune's Cup sponge that are found in Singapore waters in 2011. This is the first time in over a century that this species is found in the island's waters. The diver closest to the sponge is sponge specialist, Lim Swee Cheng, who describes the (re)discovery as "indescribable"

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🍄 2011

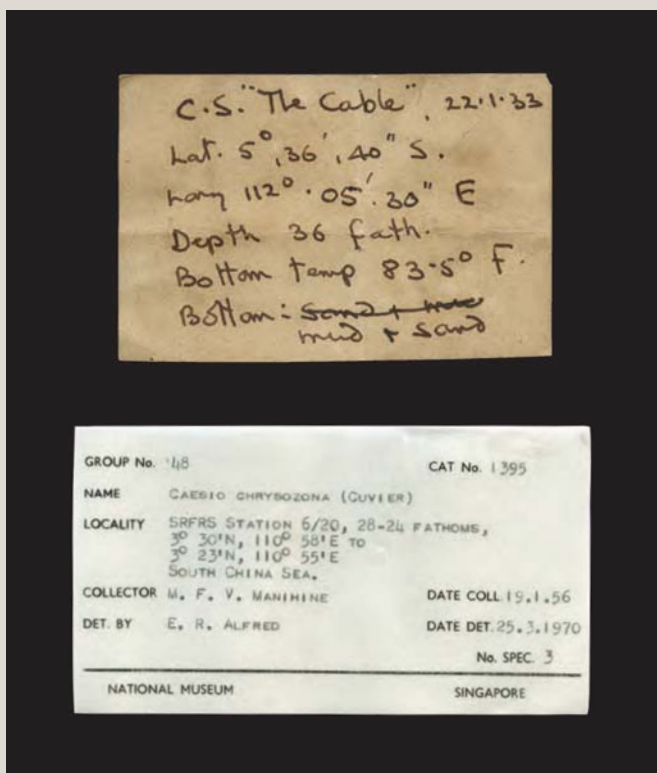
Part 13

Part 13 Going Places

A Century of Expeditions by the Museum

Expeditions are a major source of natural history materials for the Museum's collections. One of the first such expeditions is to the Mentawai Islands in Indonesia 🍀1924. This results in a large series of scientific papers that are published under the series title 'Spolia Mentawiensia'. Three years later, the first large-scale Pulau Tioman expedition takes place 🍀1927. The Museum visits this island several times during the century that follows. The current annual fieldwork module that is taught on Tioman thus has a link with the past. Amongst the participants of the early expeditions to the Mentawai Islands and Pulau Tioman are several Malay staff from the Botanic Gardens (see Part 3). In the years that follow, these men make important contributions to natural history 🍀1957.

13.1



13.1

These two labels are from specimens that are collected during two ship-based expeditions. The handwritten label is from a mollusc specimen that is collected by CS 'The Cable' 🍀1933. The type-written label is from fish specimens that are collected by MFV or FRV 'Manihine' 🍀1956

As with the Mentawai and Tioman expeditions, freshwater and terrestrial habitats are the focus of two later undertakings. These are to two areas in Peninsular Malaysia: Endau-Rompin 🌿1989 and Belum 🌿1993. These expeditions are organised by the Malayan (later Malaysian) Nature Society (see Part 9).

Islands continue to feature prominently in the areas visited by the Museum. The Cocos (Keeling) Islands 🌿1903 and Christmas Island 🌿1947 are also visited by staff from the Museum when these islands come under British and subsequently Singapore administration. Both localities are now Australian territories. In the decade to the present, the Museum organises a series of expeditions with Australian counterparts to these islands. Again, the present is linked to the past.

As in the earlier phases that are covered in this book (see Parts 4 and 5), ships play an important role in making observations and collecting material from the marine environment. This role continues to the present day. The cable-repair ship CS ‘The Cable’ that is owned by the Eastern Extension Australasia and China Telegraph Company makes collections of marine animals that it donates to the Museum 🌿1933. The Museum’s curator is even aboard ‘The Cable’ on two such trips. Fisheries research vessels, such as the ‘Changi’ (see Part 12), also make collections that increase both the knowledge and material known from the seas around Singapore. Another is FRV ‘Manihine’ which conducts fisheries research in the Straits of Malacca and South China Sea 🌿1956.

The Museum is part of two other ship-based expeditions that are organised specifically with biodiversity research as their objectives. One is a pair of expeditions that are organised by the Muséum national d’Histoire naturelle to Panglao in the Philippines in 2004 and 2005 🌿2004. The South Java Deep-Sea Expedition 2018 (SJADES) is the Museum’s major undertaking with the Indonesian Institute of Sciences (LIPI) 🌿2018.

The Comprehensive Marine Biodiversity Survey (CMBS) is a very large and very local biodiversity research enterprise that takes place over five years. It aims “to take stock of the state of marine biodiversity in Singapore waters”. The Museum and the National Parks Board (NParks) (see Part 9) are the co-organisers of this survey 🌿2010.

From the 1920s to the (almost) 2020s, the Museum now celebrates a century of expeditions and surveys.

1903

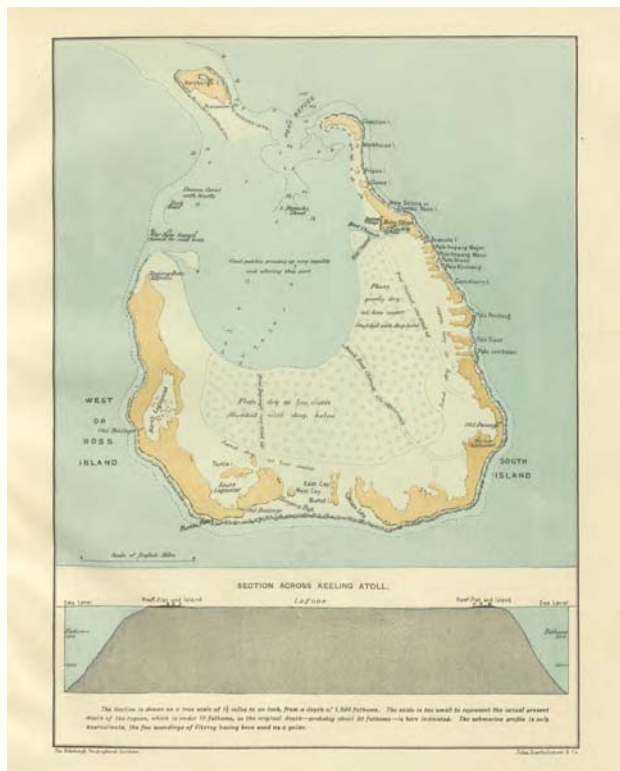
Conflict with Darwin's views

The Cocos (Keeling) Islands

“The Cocos (Keeling) Islands have held a special place in the literature on coral atolls because they represent the only atoll that Charles Darwin visited, and they played a central role in his discussion of his theory of coral reef development. The natural history of the islands was, in fact, uncharacteristically well-known by the turn of the century, because of the visits of a number of naturalists in addition to Darwin. It is interesting to note that rather than confirming Darwin's observations and interpretations of the atoll, many of the works of subsequent naturalists lead them into conflict with Darwin's views ...”

— Colin David Woodroffe and Patrick F. Berry

1903.1



1903.2



1903.1

A map of the Cocos (Keeling) Islands that is published in 1889 in the 'Scottish Geographical Magazine'

1903.2

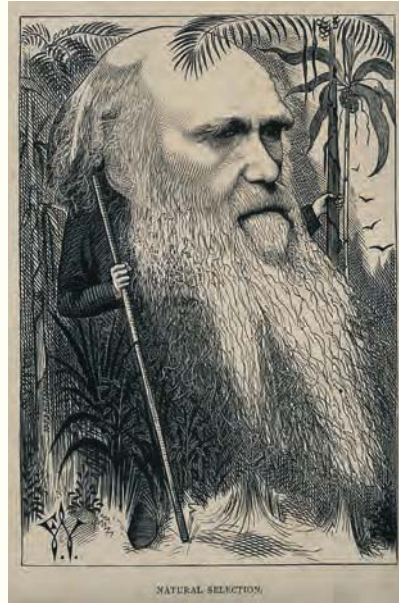
This Cocos-Keeling Shore Crab, *Parasesarma sigillatum* (Tweedie, 1950), specimen is collected in 2011 on West Island, Cocos (Keeling) Islands. This crab is collected when the Museum revisits the Cocos (Keeling) Islands and Christmas Island 🍀1947 in 2011. The species is first described in 1950 by Michael W. F. Tweedie 🍀1946

The Cocos (Keeling) Islands are first discovered in the 1600s by William Keeling. In April 1836, Charles Robert Darwin (1809–1882) visits the islands while sailing on HMS 'Beagle'. A century later, Carl Alexander Gibson-Hill (1911–1963), who later becomes director of the Raffles Museum, spends about a year on the islands as a resident medical officer and makes large natural history collections. Like Christmas Island 🌿1947, the Cocos (Keeling) Islands come under the government of Singapore before becoming administratively part of Australia in the 1950s. The Cocos (Keeling) Islands come under the jurisdiction of the Straits Settlements on 15 July 1903.

1903.3



1903.4



1903.3

Two photographs showing the corals reefs of Cocos (Keeling) Islands. The photographs are published in the Museum's annual report for 1950

1903.4

Charles Robert Darwin (1809–1882), naturalist, geologist and co-discoverer of the theory of evolution by natural selection

1924

Not very pleasant collecting grounds

The Mentawai Islands Expedition

“The Mentawi Islands are not very pleasant collecting grounds: they are largely swamp, out of which rise hills nowhere exceeding 1,500 feet in height, and generally difficult to get to, as they are surrounded by soft mud.”

— Cecil Boden Kloss

1924.1



1924.1

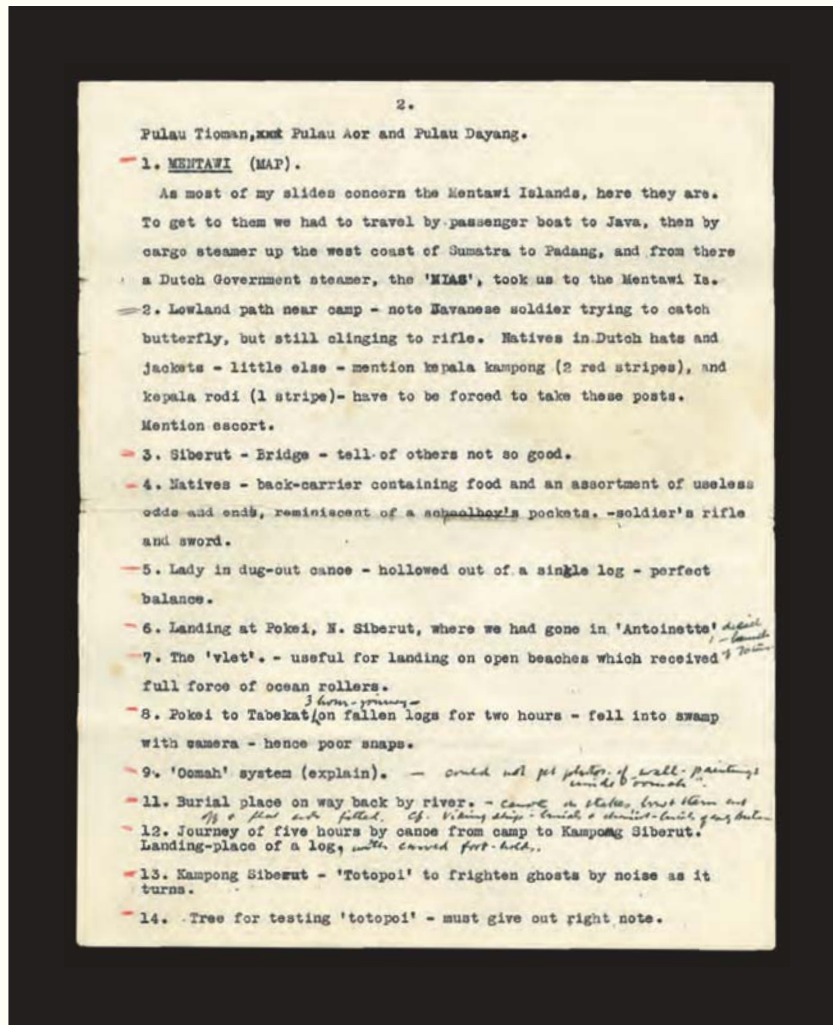
These two glass lantern slides are of photographs taken during the Mentawai Expedition. The slides are used to illustrate Smedley's lecture on the expedition. One of the pages of his notes from this lecture is also reproduced here. The descriptions of the slides are taken from this page of notes. The notes to the slide on the top are: “2. Lowland path near camp – note Javanese soldier trying to catch butterfly, but still clinging to rifle. Natives in Dutch hats and jackets – little else – mention kepala kampong (2 red stripes), and kepala rodi (1 stripe) – have to be forced to take these posts. Mention escort”. The notes to the slide on the bottom are: “4. Natives – back-carrier containing food and an assortment of useless odds and ends, reminiscent of a schoolboy's pockets, –soldier's rifle and sword”. These slides are from the Smedley Collection 🍀1929

1924.2

This page of notes is from a lecture that is given by Norman Smedley 🍀1929 on his various expeditions

That is how the destination of the Raffles Museum's first major expedition is described. To make matters worse, all but one member of the team contract malaria. Nonetheless, the expedition is a success and a series of papers appear under the heading 'Spolia Mentawiensia'. Numerous ethnographical objects are also collected and are now at the Asian Civilisations Museum in Singapore. Heading the expedition are director Cecil B. Kloss 🍀1940 and curator Norman Smedley 🍀1929. Also in the expedition are Austrian entomologist Heinrich H. Karny (1886–1937) and plant collector Kiah bin Mohamed Salleh 🍀1957. The expedition arrives in the Mentawai Islands in September 1924.

1924.2



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🍀 1924

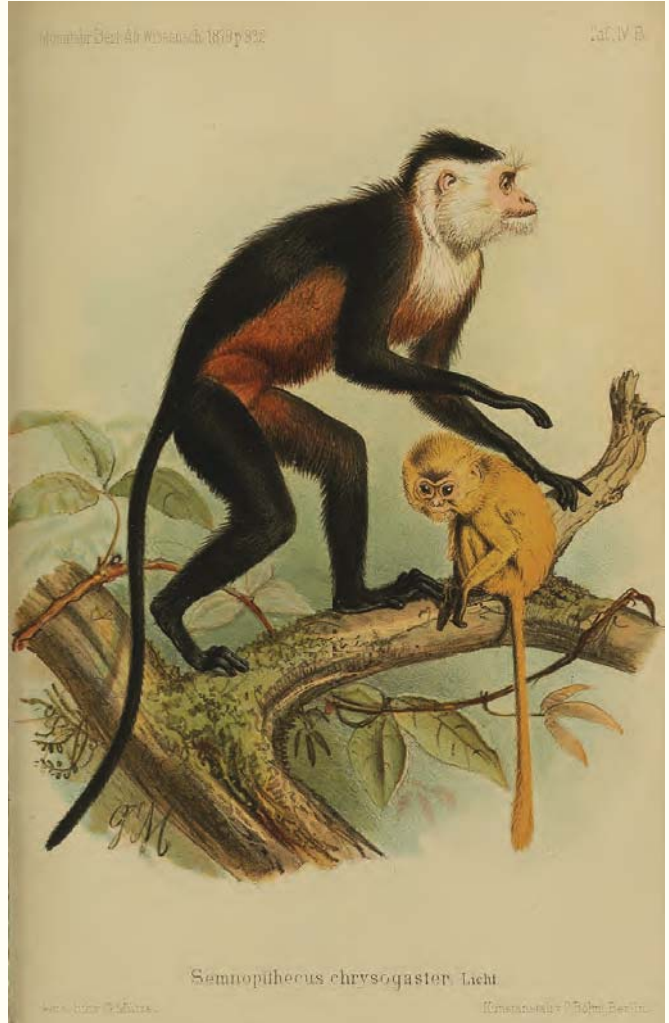
1940

1960

1980

2000

1924.3



1924.3

The species that is depicted in this painting is the Golden-bellied Mentawai Island Langur that is found in the Mentawai Islands. Many animals and plants are collected during the expedition including specimens of this species, which is known scientifically as *Presbytis potenziani potenziani* (Bonaparte, 1856). Kloss and Chasen 🍀1940 also collect and describe a new and closely-related subspecies that is only found on Siberut Island. This subspecies is called the Siberut Langur or *Presbytis potenziani siberu* (Chasen & Kloss, 1928)

1924.4

Cecil Boden Kloss (1877–1949),
British zoologist and director of the
Raffles Museum

1924.5

Heinrich Hugo Karny (1886–1937),
Austrian doctor and entomologist

1924.4



1924.5



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🍀 1924

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1927

One of the most beautiful islands

A large-scale expedition to Pulau Tioman

“Pulau Tioman is considered to be the one of the most beautiful islands in Southeast Asia, made famous as the film site of musical classic ‘South Pacific’. Pulau Tioman is a pear-shaped island about 22 km long and 11 km wide lying about 38 km east of Peninsular Malaysia.”

— Peter Kee Lin Ng, Yong Hoi Sen and Navjot S. Sodhi

1927.1



1927.1

An undated map of Pulau Tioman

1927.2

These three photographs are taken by Norman Smedley in 1929 during the Pulau Tioman Expedition from the Smedley Collection. The handwritten captions at the back of the photographs are: (left) “Pulau Tioman. River, Ayer Batang 1927. N. Smedley”; (top right) “Pulau Tioman. Boulder cleft by landslide. Tanah Runtuh 1927”; (bottom right) “Pulau Tioman, N.E. Coast Malaya, 3ft Turtle (*Ch. Mydas*, green turtle) Ayer Batang, 1927. That beach is sandy with a reef, submerged at high tide, coconut palms. River parallel to beach, more flats and then hills to 3,000 ft or more, pass at 1,000 ft to Juara Bay on E. Coast”

In April and May 1927 the first large-scale expedition to Pulau Tioman and adjacent islands is launched. In the party are curator Norman Smedley 🌿1929, botanist Murray Ross Henderson (1899–1983), Mohamed Nur bin Mohamed Ghous 🌿1957 and other collectors. Unlike the Mentawai Expedition 🌿1924, the collections from this expedition are not published in a systematic way but they nonetheless enlarge the Museum's collections. The Museum will continue to visit Tioman on multiple expeditions and today an annual fieldwork module is taught on the island. The first large-scale expedition to Pulau Tioman begins on 24 April 1927.

1927.2



1820

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🌿 1927

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1960

1980

2000

1933

Never be obtained by the Museum Marine collections from CS 'The Cable'

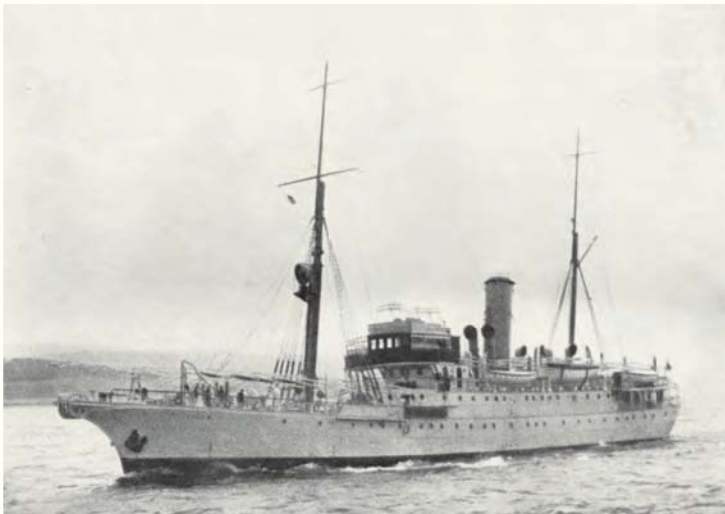
“Some of the most important work carried out in the province of marine biology was again made possible by the generosity and hospitality of the Eastern Extension Australasia and China Telegraph Company. On two occasions (Feb. 7–12 and Oct. 14–31) the officiating curator accompanied C.S. ‘The Cable’ on voyages in the South China Sea and the Malacca Straits. Large quantities of marine animals were collected, the great majority belonging to forms that could never be obtained by the Museum working entirely on its own resources.”

— Anonymous

1933.1

The cable-repair ship CS ‘The Cable’ in 1924, shortly after her completion by the shipbuilding firm Alexander Stephens and Company in Glasgow, Scotland. ‘The Cable’ is owned by the Eastern Extension Australasia and China Telegraph Company and continues to carry out cable repair work until she runs aground off Vietnam on 29 October 1935

1933.1

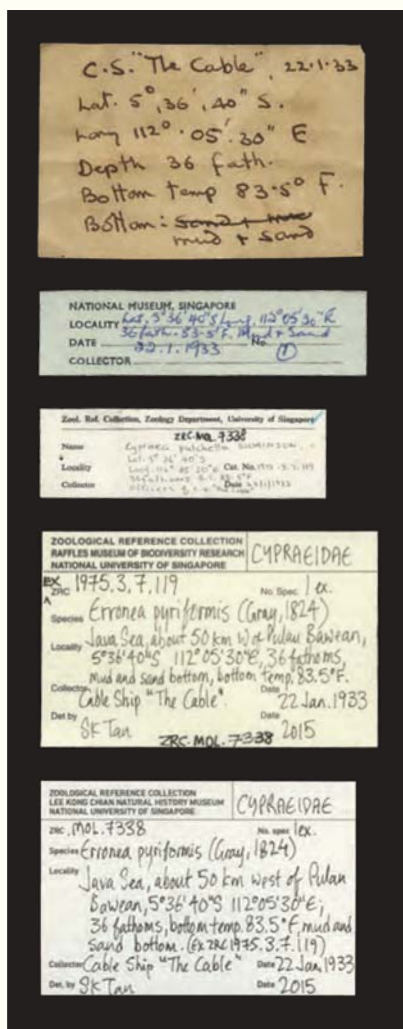


1933.2

A history of the Museum as told on labels. These are two of the marine invertebrate specimens that are collected by CS ‘The Cable’ and the labels that are associated with them. The specimen of a Pear-shaped Cowrie (left), *Erronea pyriformis* (J. E. Gray, 1824), is collected on 22 January 1933 from off Pulau Bawean in Indonesia. The specimen of a Lamarck’s Cowrie (right), *Naria lamarckii* (J. E. Gray, 1825), is collected on 21 October 1933 from off Lumut, Perak, Malaysia. The labels show that in addition to specimens, ‘The Cable’ collects large amounts of valuable data. The series of five labels that are associated with each of the specimens is also historically informative. They show the changes in the names that are used for the two species as taxonomic changes take place. The handwriting and the institution names on the labels also reflect the changes in staff and in the name of the institution in which they are held (see Parts 16–18)

Dedicated research ships such as FRV 'Manihine' ♣1956 and R/V 'Baruna Jaya VIII' ♣2018 play an important role in the collection of marine animals for the Museum. The collecting done by CS 'The Cable' is more incidental. Although undersea telegraph cables no longer use gutta percha ♣1851 by the 1930s, they still need regular maintenance. 'The Cable' is doing such maintenance when marine animals are collected and donated to the Museum. Michael W. F. Tweedie ♣1946 is the "officiating curator" whose first voyage aboard 'The Cable' begins on 7 February 1933.

1933.2



1820

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♣ 1933

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1980

2000

1947

Crabs never moved about after dusk

Christmas Island-Raffles Museum connection

“These crabs are equally active by day and night and, as a result of their inquisitive and foraging habits, may be a nuisance to people camping in the jungle. It is interesting to note that when Andrews first visited the island in 1897, and the rat *Mus macleari* was abundant, the crabs never moved about after dusk, except in strong moonlight or in the glow from a fire. At the time of his second stay, ten years later, when the rat was already much less common, the crabs had begun to wander more by night. On most other inhabited islands they are purely nocturnal.” — **Carl Alexander Gibson-Hill**

1947.1

“The Isl^d of Christmas” is published in 1718 in ‘A Voyage to and from the Island of Borneo’. It is the earliest surviving drawing of Christmas Island

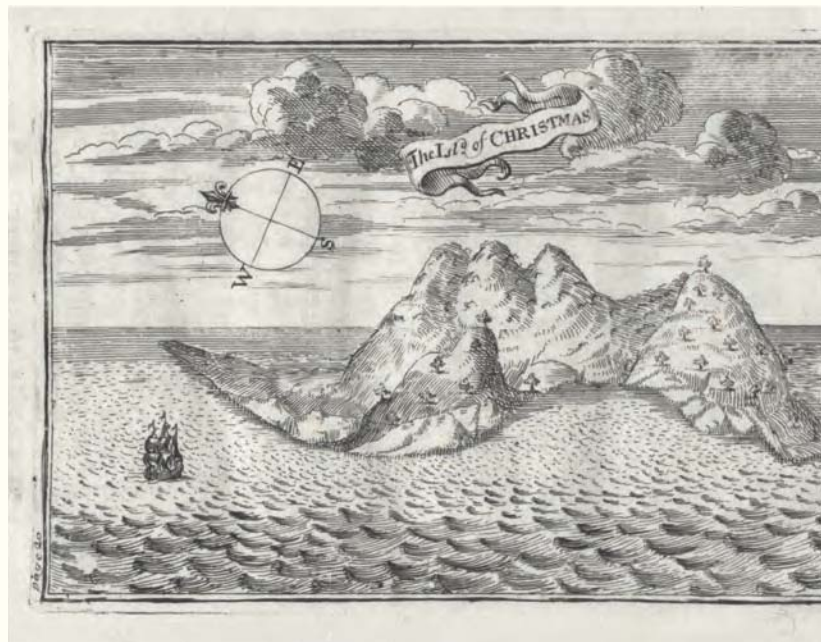
1947.2

This map of Christmas Island is published in 1887 based on sketches that are made by HMS ‘Egeria’ and HMS ‘Flying Fish’

1947.3

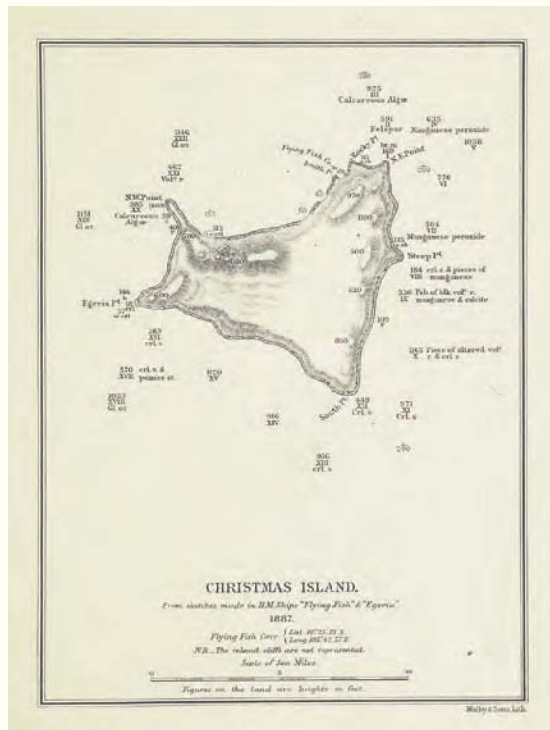
Flying Fish Cove is the first human settlement on Christmas Island. It is named after HMS ‘Flying Fish’. Her commander, John Fiot Lee Pearse Maclear (1838–1907) returns to Britain with natural history materials, including the first known specimens of Maclear’s Rat, *Rattus macleari* (Thomas, 1887), that is named after him. Maclear also brings back samples of phosphate. The last-mentioned of these samples have geopolitical ramifications

1947.1



Without having to fear the predations of Maclear's Rat, the Coconut (or Robber) Crab can move freely at night. This is the suggestion that Museum curator Carl Alexander Gibson-Hill (1911–1963) advances after spending two years on Christmas Island. Christmas Island and the Museum share a close connection, with virtually every director and curator visiting the island. This tradition continues even after Christmas Island becomes an Australian territory, with Museum staff visiting in 2010–2012 and 2017. Gibson-Hill advances his crab-rat hypothesis in a volume of the 'Bulletin of the Raffles Museum' ♣1928 that is dedicated to the fauna of Christmas Island that appears in print in October 1947.

1947.2



1947.3



1947.4



1947.4

A sample of phosphate from Christmas Island. The phosphate deposits on Christmas Island, which become known after Maclear's samples are brought back to Britain, are the main reason for the annexation of the island. The deposits are mined for fertiliser and other industrial applications. The island is administered as part of the Straits Settlements 🌿1826 and devolves to Singapore rule after World War II. Like the Cocos (Keeling) Islands 🌿1903, Christmas Island is transferred to Australia in the 1950s

1947.5

Two extinct species of rats from Christmas Island. On the left is Maclear's Rat, *Rattus macleari* (Thomas, 1887), which is named after the commander of HMS 'Flying Fish' who brings back the first known specimens. On the right is the Bulldog Rat, *Rattus nativitatis* (Thomas, 1888). Richard Hanitsch 🌿1919 is unable to find these rats when he visits in 1904, and they are declared extinct in 1909. Scientists believe that these rats go extinct because of pathogens that are spread by Black Rats, *Rattus rattus* (Linnaeus, 1758), that arrive aboard ships

1947.5



1947.6



1947.7



1947.6

The Coconut (or Robber) Crab, *Birgus latro* (Linnaeus, 1767). Gibson-Hill suggests that Maclear's Rat is a predator of this species. The absence of the rat allows the crab to move freely at night

1947.7

The Christmas Island Red Crab, *Gecarcoidea natalis* Pocock, 1888, is found only on Christmas Island. Maclear's Rat is also thought to prey upon this species of crab. The lack of a predator allows the population of this crab to explode and results in the iconic migration that becomes widely known when it is featured in the documentary the 'Kingdom of the Crabs' by David Attenborough 🍀2008

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🍀 1947

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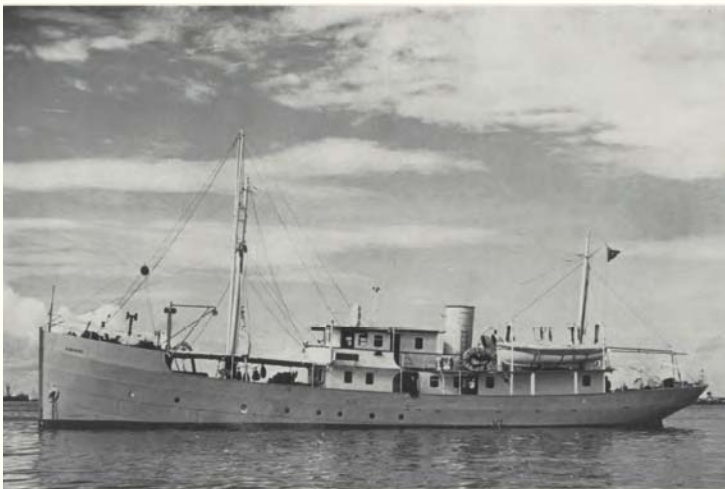
1956

Old gods looked down

Francis D. Ommanney and the ‘Manihine’

“From their high thrones among the clouds old gods looked down upon the ‘Manihine’ as she moved slowly, like an insect, upon the disc of the South China Sea. ... There were more different species than we could find room for on the cramped deck, and, if the ship rolled, the heaps got muddled up together. Sting-rays made slimy heaps, crevallies made heaps that gleamed like piles of silver coins. Boxfish, cowfish and porcupine-fish, the trash and rubbish of the haul, made prickly, spiny heaps that wounded toes and fingers. ... On one occasion the wind blew all my notes over the side, and I raved and swore. The young assistant looked at me in mild astonishment, obviously thinking I had gone out of my mind.” — **Francis Downes Ommanney**

1956.1



1956.1

FRV ‘Manihine’. In her previous lives, she is variously named the ‘Coot’ and the ‘Dorade II’. Prior to Singapore, the ‘Manihine’ has the starring role in the Gulf of Aqaba and Red Sea Expedition in 1948–1949. This is the first scientific expedition in the Gulf of Aqaba. Following the termination of the work in Singapore, the ‘Manihine’ is transferred to the East African Marine Fisheries Research Organization and the surveys in that area yield many new species, several of which have the species names “*manihine*” or “*manihinei*”. Only one new species is known to be collected by the ‘Manihine’ during her Singapore career

Fisheries Research Vessel 'Manihine' arrives in Singapore on 12 August 1955 to begin a series of experimental fishing cruises. Marine biologist Francis Downes Ommanney (1903–1980) is director of the Singapore Regional Fisheries Research Station (SRFRS) and is responsible for the work on the 'Manihine'. The objective of the work is to determine the best fishing areas by determining the species and their abundance found at each locality. This invaluable data is compiled by sorting through 35 tonnes of fish and their stomach contents. Sadly the work is cut short. As Isabella Gordon 🍀1985 writes: "A vivid account of the misfortunes that befell the Singapore Regional Fisheries Research Station during its brief life-span is given by the director, Dr F D Ommanney, in his book 'Eastern Windows' ...". Amongst a litany of problems is the issue of funding and the 'Manihine' programme is terminated when her captain suffers a heart attack on her twelfth (and final) cruise on 22 August 1956.

1956.2



1956.2

Megokris manihine Shinomiya & Sakai, 2006 is the only new species known from the Singapore collections of the 'Manihine'. The live appearance of this species is unknown as all specimens thus far are decades-old and in bottles of preservative. This photograph of *Megokris sedili* (Hall, 1961) may provide an idea of what a live *Megokris manihine* looks like

1956.3

More history on a label. These specimens of the Goldband Fusilier, currently known as *Pterocaesio chrysozona* (Cuvier, 1830), are collected by the 'Manihine' in the South China Sea on 19 January 1956. The fish are identified by Eric R. Alfred 🍀1967

1956.3



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🍀 1956

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1957

Perspicacity for botanical taxonomy

“Plant Collector” does not do justice

“For the herbarium to be at all usable it had to be got into order. The cabinets were of miscellaneous sizes and did not block nicely, but by sorting them out the best use of space was achieved. This led of course to worse confusion in the sequence of families. ... it was left to Mohamed Nur to rearrange them. Commenting on the ability he displayed in doing this, Burkill has said: ‘Nur means Light, and this is where he shone it’. ... As Mohamed Nur was to give his life-work to the herbarium, and developed an innate perspicacity for botanical taxonomy, how appropriated was he named!”

— **Humphrey Morrison Burkill**

1957.1



1957.2



When botanist Humphrey Morrison Burkill (1914–2006) eulogises Mohamed Nur in the 1950s, “Plant Collector” (as capitalised) is a formal appointment. This label does not do justice to these men. As historian Jeyamalar Kathirithamby-Wells writes, they also have an international impact: “Nur Mohamed Gosh [sic], another outstanding Malayan employed by the Singapore Botanic Gardens, collected extensively, partly on behalf of Dr E. D. Merrill of Harvard University ... His protégé Kiah bin Haji Mohamed Salleh worked with eminent international botanists during his long service (1920–57) that spanned the formative years of ethno-botany in the Peninsula”. All three men are closely linked to the Museum and its staff. Mohamed Nur bin Mohamed Ghous (1898–1958) accompanies the Tioman expedition 🌿1927. Kiah bin Mohamed Salleh (1902–1982) accompanies the Mentawai expedition 🌿1924. Ngadiman bin Ismail works with Edred J. H. Corner 🌿1941 on the botanical monkey project. Sadly, the Botanic Gardens loses all three men in two short years, Mohamed Nur and Ngadiman pass away in 1958, while Kiah retires in 1957.

1957.3



1957.1

Mohamed Nur bin Mohamed Ghous (1898–1958), plant collector, taxonomist and an expert on local botanical knowledge. Mohamed Nur’s knowledge of plants goes beyond organising and classifying them. An entry in ‘A Dictionary of the Economic Products of the Malay Peninsula’ is an example. Mohamed Nur is attributed as being the source of the following information on the ‘Akar Dama-dama’ (*Kadsura scandens* (Blume) Blume): “A decoction of the roots is used for rheumatism, apparently as a lotion”

1957.2

Kiah bin Mohamed Salleh (1902–1982), plant collector and protégé of Mohamed Nur. The caption that accompanies this photograph reads: “On Mt Kinabalu at 11,000 ft altitude, November 1931”

1957.3

Ngadiman bin Ismail (1904–1958), plant collector and collaborator on the botanical-monkey project. Ngadiman works with Edred J. H. Corner 🌿1941 in training monkeys to collect botanical specimens. These monkeys are brought from Kelantan where they are trained to respond to Kelantanese commands. Ngadiman learns this dialect in order to oversee the monkeys

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🌿 1957

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1989

To explore the hidden treasures The Malaysian Heritage and Scientific Expedition to Endau-Rompin

“In June 1985 I was able to flag off the first group of scientists on their way to Endau-Rompin. The expedition which thus began was a Malaysian effort to explore the hidden treasures of a little known but biologically important part of our beautiful country.” — **Tunku Abdul Rahman Putra Al-Haj ibni Almarhum Sultan Abdul Hamid Halim Shah**

1989.1



1989.2



Tunku Abdul Rahman Putra Al-Haj ibni Almarhum Sultan Abdul Hamid Halim Shah (1903–1990) is formerly the first Prime Minister of Malaysia and the patron of the Malaysian Heritage and Scientific Expedition to Endau-Rompin. Endau and Rompin are, respectively, two adjacent areas in the states of Pahang and Johor. The expedition is organised by the Malayan (now Malaysian) Nature Society 🌿1954. Shortly after it opens, staff from the Zoological Reference Collection (ZRC) 🌿1988 participate in the Ulu Kinchin phase of the Endau-Rompin expedition. The team's research focuses on fishes and several papers are published based on the data and materials that are collected. The series of Endau-Rompin expeditions aims to raise awareness of the importance of this area that is rich in biodiversity. The results of the expedition are one of the reasons that this area is gazetted as a national park in 1993. The ZRC team is in Endau-Rompin for a total of ten days in June and July 1989.

1989.1

These two photographs are taken by a member of the Zoological Reference Collection team that participates in the Ulu Kinchin phase of the Endau-Rompin expedition

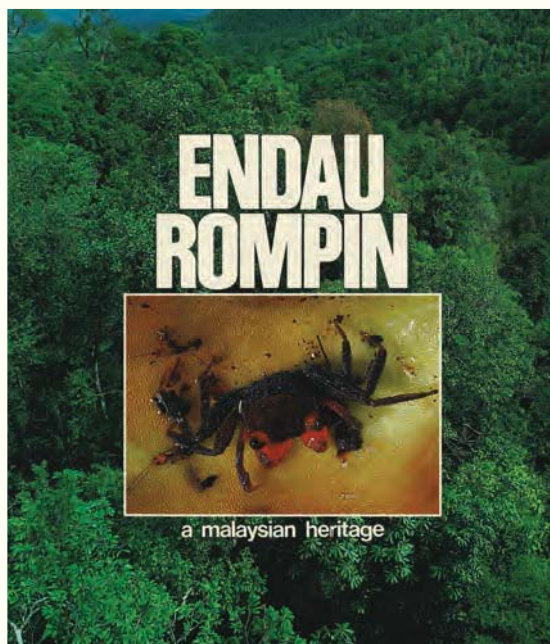
1989.2

Endau-Rompin today. This photograph is taken in September 2017

1989.3

The cover of 'Endau-Rompin: A Malaysian Heritage' by Geoffrey W. H. Davison 🌿1993. From the front flap: "In 1985 the Malayan Nature Society took a major step forward in conservation and nature education. An expedition was launched to study the plants and animals, soils and water of Endau-Rompin. ... Here is the story."

1989.3



1993

Have you been to Belum?

A second Malaysian Heritage and Scientific Expedition

“The very name Belum makes Malaysians smile. Literally meaning ‘not yet’, the name is the butt of jokes, generally based on the theme of ‘Have you been to Belum?’ ‘Not yet!’ But Belum is a place to be taken seriously indeed, for it is an area with a complex history, a rich natural heritage, and a future that may take it in any one of several directions. Which direction it takes is very much up to us. Will it be cleared for agriculture? Will it be a continuing source of timber? Will mining or other activities there affect Belum’s current importance as a source of hydro-electric power? Will the abundant and fascinating plants and animals continue to survive, and how will they fit in to the country’s development framework? These questions are vitally important, because Belum forms a major catchment area providing the country with power and water. They are of special urgency, because the biology of the area has till now been so little known. The unusual history of Belum has meant that it has been bypassed by the mainstream of science.” — **Geoffrey W. H. Davison**

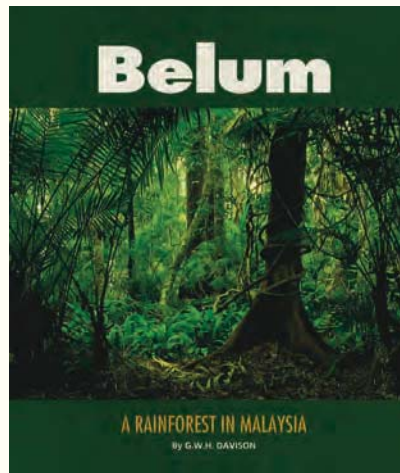
1993.1



These are the questions that scientist and conservationist Geoffrey W. H. Davison raises in the book ‘Belum: A Rainforest in Malaysia’. It presents the results of a second Malaysian Heritage and Scientific Expedition, this time to Belum, a region in the north of the state of Perak. Like the earlier Endau-Rompin expedition 🍃1989, this undertaking is also organised by the Malaysian (formerly Malayan) Nature Society 🍃1954. As with the Endau-Rompin expedition, a team from the Zoological Reference Collection 🍃1988 also participates in the Belum expedition. As a result of this expedition and through the immense efforts of a plethora of stakeholders over many years, the area is gazetted as the Royal Belum State Park on 3 May 2007. The expedition that helps to fill in some of the gaps of an area “bypassed by the main-stream of science” is launched on 24 May 1993.



1993.2



1993.1

Photographs from the Malaysian Heritage and Scientific Expedition to Belum. These six images are captured by a Zoological Reference Collection staff member who participates in the expedition

1993.2

The cover of ‘Belum: A Rainforest in Malaysia’. Like the ‘Endau-Rompin’ book 🍃1989, this book is also written by Geoffrey W. H. Davison: “Have you been to Belum?”

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🍃 1993

2000

2004

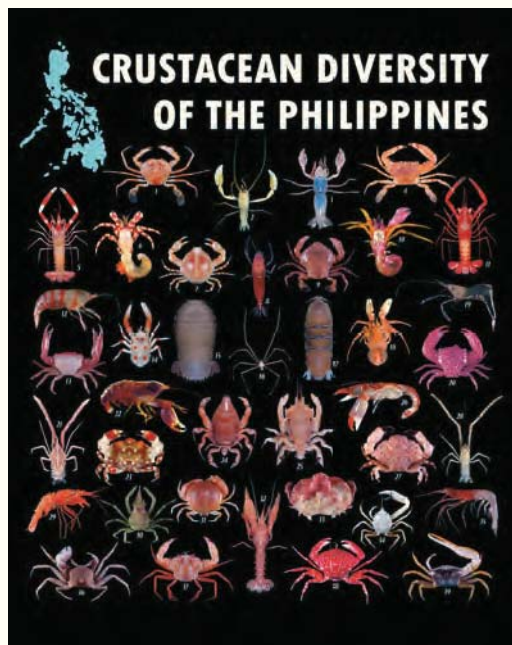
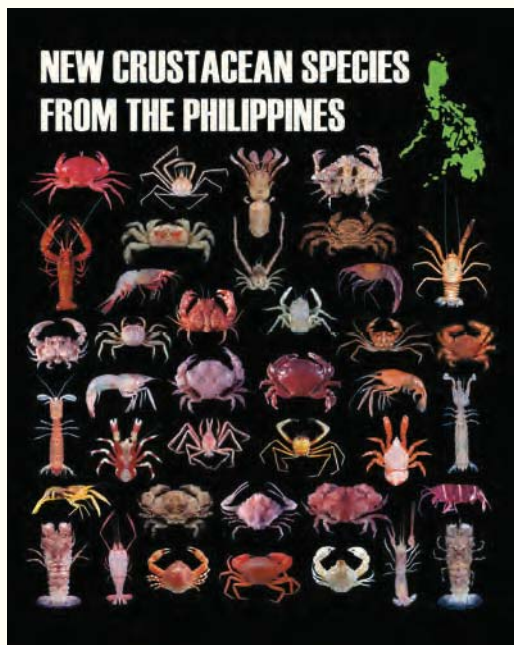
A benchmark expedition for tropical marine invertebrates

The Panglao Marine Biodiversity Project

“The island of Panglao in the Visayas region was chosen as the staging ground for the first of several Philippines expeditions. ... Altogether, the study area includes some coastal area of 15,000 hectares (150 km²) and a deep offshore basin reaching 2,000 m deep within 20 km from the coast ... after the expedition Filipino scientists have been involved in further taxonomic and curatorial activities in France and Singapore. This phase, commonly referred to as the ‘PANGLAO 2004’ expedition, is probably one of the most comprehensive survey of coastal benthic molluscs and decapod crustaceans conducted anywhere in the tropics, and a benchmark expedition for tropical marine invertebrates.”

— Philippe Bouchet, Peter Kee Lin Ng, Danilo Largo and Tan Swee Hee

2004.1



The Museum, together with the Muséum national d'Histoire naturelle in Paris, and other collaborators visit the island of Panglao in the Philippines as part of the Panglao Marine Biodiversity Project, PANGLAO 2004. One of the aims of the project is to study the gradient in marine biodiversity that exists in the Pacific Ocean—between the rich western “heart” and the depauperate eastern “cold spot”. Researchers describe many new species of crustaceans and molluscs in the coming years from these collections. The success of PANGLAO 2004 results in the follow-up PANGLAO 2005 expedition to survey and sample the Bohol and Sulu Seas. The sampling phase of PANGLAO 2004 begins on 29 May 2004.

2004.2



2004.3



2004.1

These two posters show a tiny fraction of the hundreds of species of decapod crustaceans that are collected during the PANGLAO 2004 and PANGLAO 2005 expeditions

2004.2

M/V 'DA-BEAR' is part of the PANGLAO 2005 expedition

2004.3

These are just some of the many species that are brought aboard M/V 'DA-BEAR' during the PANGLAO 2005 expedition



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🌿 2004

A national initiative to take stock

The Comprehensive Marine Biodiversity Survey

“The Comprehensive Marine Biodiversity Survey (CMBS) was launched in November 2010 as a national initiative to take stock of the state of marine biodiversity in Singapore waters. The five-year survey, led by the National Parks Board (NParks) and the National University of Singapore (NUS) that involved many non-governmental organisations, some 500 volunteers and scientists from 14 countries, was carried out in three overlapping phases between 2010 and 2015. The three phases involved sampling of three habitats: intertidal mudflats, subtidal soft-bottom benthos, and coral reefs. Specimen records were obtained from all accessible marine ecosystems as far as possible by systematic sampling. NParks and NUS also organised two international workshops as part of these efforts.” — **Tan Koh Siang, Koh Kwan Siong, Ng Juat Ying and Linda Goh**

2010.1



2010.1

Belcher's Lancelet, *Branchiostoma belcheri* (Gray, 1847). This species is first reported in 1900 by Francis P. Bedford 🌿**1898**. Since then this species is only found in Singapore waters on two other occasions. Once in 1953 and not again until these specimens are collected and photographed during the Comprehensive Marine Biodiversity Survey (CMBS). Similarly, Lanchester's Rubble Crab 🌿**1898** is also collected during the survey. These are just two of the many interesting findings made during the CMBS

2010.2

Members of the Comprehensive Marine Biodiversity Survey (CMBS) sampling a variety of habitats across Singapore. Clockwise from top left: Labrador; Punggol; Pulau Salu; Terumbu Pempang Laut; Pulau Senang; Pulau Semakau

The Comprehensive Marine Biodiversity Survey (CMBS) is jointly led by the National Parks Board (NParks) 🍀1996 and the National University of Singapore (NUS) as represented by the Museum and the Tropical Marine Science Institute (TMSI). This survey is quite possibly the largest local undertaking that the Museum is involved in. Dozens of scientific publications result from the material that is collected during CMBS, and many more are likely to result. Singapore's very large and very local Comprehensive Marine Biodiversity Survey begins in November 2010.

2010.2



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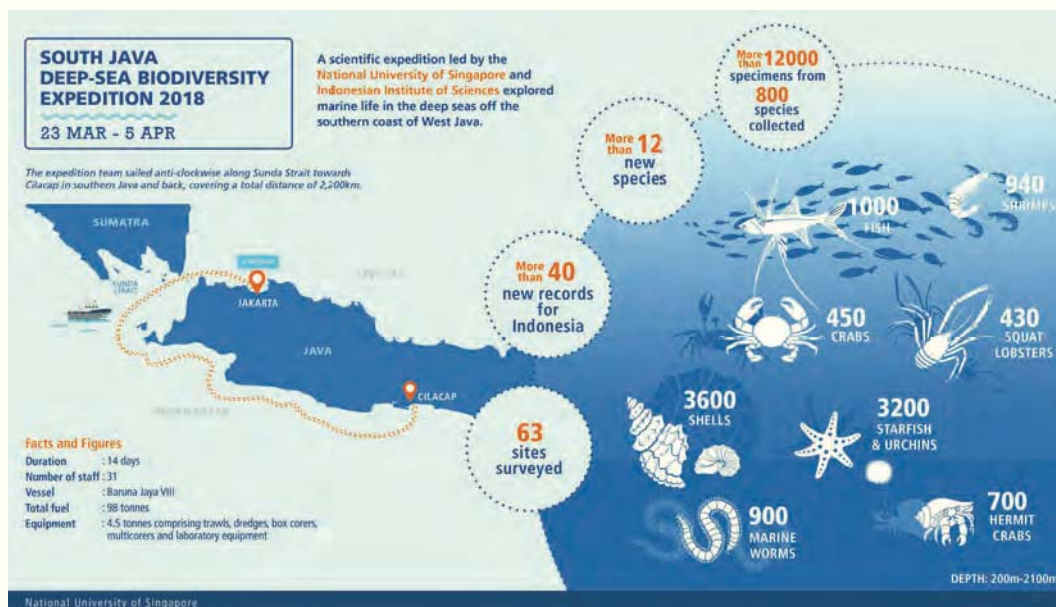
🍀 2010

2018 Not been seen for some 10 million years

SJADES 2018

“Hidden over 1,000m underwater along the Sunda Strait off the coast of Jakarta is a peculiar spider crab with plates resembling ears that actually protect its eyes. It had not been seen for some 10 million years, until researchers from Singapore and Indonesia discovered it while trawling the depths of the sea last month. Researchers believe the 6cm-wide crab, dubbed ‘Big Ears’, is from the *Rochinia* genus. More than a dozen new species of crustaceans were discovered on the pioneering expedition into the deep waters off the southern coast of West Java. ... In total, some 800 species from more than 200 families of sponges, jellyfish, molluscs, starfish, urchins, worms, crabs, prawns and fish were discovered, accounting for more than 12,000 individual animals.” — **Samantha Boh**

2018.1



The South Java Deep-Sea Expedition 2018 (SJADES) is a collaboration between the National University of Singapore (NUS) as represented by the Museum and the Tropical Marine Science Institute (TMSI), and counterparts at the Indonesian Institute of Sciences (LIPI). Over the course of two weeks, 31 researchers and survey staff sample 63 stations. The results of SJADES are only just beginning to be submitted for publication. The SJADES 2018 expedition begins on 23 March 2018.

2018.2



2018.3



2018.1

An infographic on the SJADES 2018 expedition

2018.2

R/V 'Baruna Jaya VIII' in waters

off Krakatau during SJADES 2018.

Sampling is underway and the wire that is linked to the trawl can be seen at the top of the A-frame at the rear of the ship

2018.3

This photograph shows a trawl being retrieved from the depths of the sea.

The samples collected are in the cod-end that is held by the two crew members on the left

2018.4



2018.4

This is 'Big Ears', a new species of *Rochinia* spider crab that has "not been seen for some 10 million years". This and dozens of other species new to science are now being studied with the view of publishing the results in the months ahead



**2018.5**

The island of Krakatau (the infamous “Krakatoa”). R/V “Baruna Jaya VIII” sails close to the island during the SJADES 2018 expedition. Eight decades earlier curator Norman Smedley visits Krakatau during the Fourth Pacific Science Congress 🍀 **1929**

2018.6

A high-pressure environment. Two empty polystyrene foam containers are securely fastened to the trawl when it is lowered. The water pressure at such great depths shrinks the containers to less than a third of their original size

1820

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🍀 **2018**

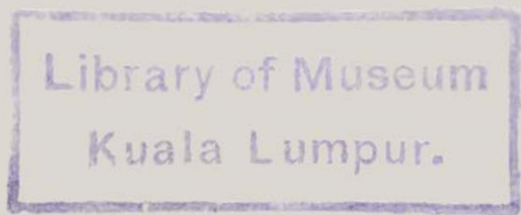
Part 14

Part 14 Between the Years of Peace

The Museum in the Midst of War

Singapore is deeply affected by World War II. Like the nation itself, the Museum and its staff experience unprecedented upheaval. Before the start of the war, director Frederick N. Chasen is concerned about the effect of the tropical climate on the zoological collections. He draws up plans to send the most valuable specimens to Britain. These plans are shelved when Germany invades Poland. As it becomes clear that the same may happen to Singapore, some material is sent overseas for safekeeping. Ironically, it is the parts of the collections that stay in Singapore that survive the war ♣1939. When war does come to Singapore, Chasen is thought to have some very important specimens in his possession as he evacuates the island. If this is indeed the case, then these specimens are lost when Chasen's life is cut tragically short by the sinking of HMS 'Giang Bee' ♣1940.

14.1



Another collection that is lost during the war is that of the majority of insects that are collected from Christmas Island (see Part 13). Though at the Selangor Museum, this material is not sent there for safekeeping. Rather, they are already there awaiting dispatch to specialists for study when war intervenes. Just before the war's end, pilot error causes the destruction of the natural history collections in the Selangor Museum ♣1945.

That the collections of the Raffles Library and Museum survive the war largely unharmed is due to efforts of several individuals from both sides of the opposing alliances. Botanist Edred J. H. Corner ♣1941 and director of fisheries William Birtwistle ♣1944 maintain and care for the collections even while living as “enemy aliens”. On the other side, Japanese administrators and scientists who are assigned to the Museum prevent looting and damage. One such person is Yata Haneda ♣1943. Birtwistle, Corner and Haneda conduct research together, and Haneda discovers the first example of bioluminescence in a land snail in Singapore. Even in these difficult times, research takes place.

A tree is an overlooked victim of the conflagration. Called the Changi Tree, it is a landmark in the literal sense, appearing on maps from before the war. Fearing its use as a ranging target, the British bring it down with high explosives ♣1942. Before the war, it is said that this tree is to an empire what ravens in a certain tower are to a crown. The superstitious cannot be blamed for feeling vindicated by the events of the years to come.

14.1

Two book stamps from the World War II period. The red stamp is in use during the time of the Syonan Hakubutsu Kan, as the Raffles Library and Museum are renamed during the Japanese Occupation. The blue stamp is in use during the time of the Selangor Museum, which is destroyed just before the end of the war ♣1945. Following the destruction of that building, the name Muzium Negara is used for both the temporary structure and the permanent building that are built on the site of the former Selangor Museum

1939

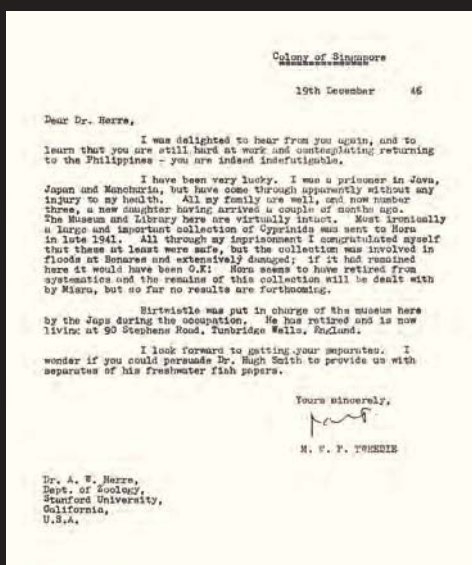
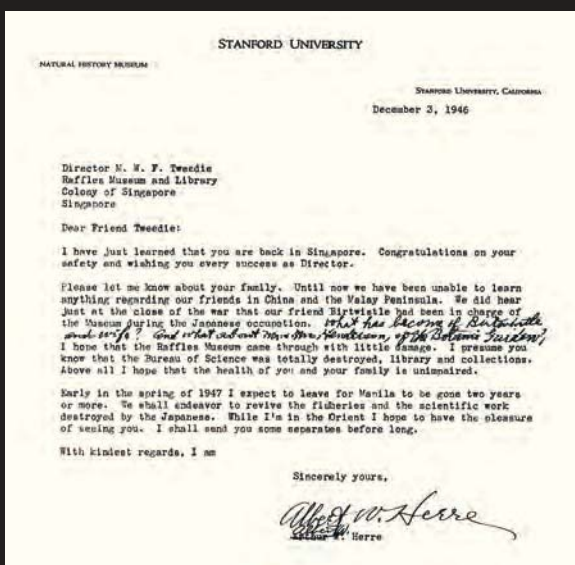
The risk of loss at sea

The Collections and World War II

“Shortly before the recent war the late F. N. Chasen, then Director of the Raffles Museum, arranged for the permanent transfer of the bird and mammal type specimens in the Museum collection to the British Museum of Natural History, in London. ... The specimens had not left Singapore when war broke out in Europe in September, 1939. In view of the risk of loss at sea through enemy action the project of moving them was then abandoned temporarily. When the Japanese attacked Malaya in December, 1941, the majority were taken to the herbarium at the Botanic Gardens, as the Museum's proximity to the military headquarters on Fort Canning made it a likely target. The specimens remained in the Botanic Gardens until after the capitulation of the British troops early in 1942.” — **Carl Alexander Gibson-Hill**

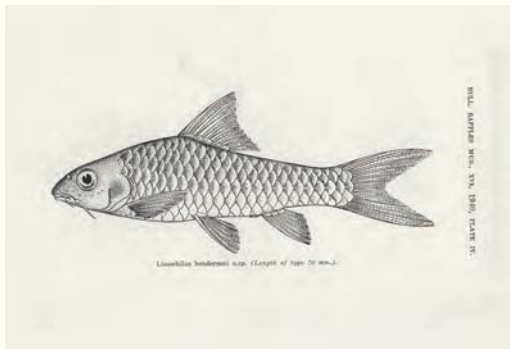
1939.1

1939.2



The coming of World War II raises fears of the safety of the collection. Those in charge try their best to safeguard it. Some work with the Japanese administration to protect the material ♣1941, 1944. Others move the material to locations perceived to be safer. But as the correspondence between ichthyologist Albert William Christian Theodore Herre (1868–1962) and Michael W. F. Tweedie ♣1946 show, sometimes transfers achieve the opposite. This also happens with material thought to be with Frederick N. Chasen ♣1940 when he evacuates Singapore. World War II begins with the German invasion of Poland on 1 September 1939.

1939.3



1939.1

Letter from Albert W. C. T. Herre to Michael W. F. Tweedie that is dated 3 December 1946 and sent from Stanford University. Herre wonders how Singapore fares during the war and enquires after Murray R. Henderson ♣1927, William Birtwistle ♣1944 and, of course, the Museum. Herre also describes the destruction wreaked on the Bureau of Science in the Philippines

1939.2

Letter from Michael W. F. Tweedie to Albert W. C. T. Herre that is dated 19 December 1946 and sent from Singapore. Michael W. F. Tweedie ♣1946 informs Herre that the collection is mostly intact and that ironically, it is the material that is sent away that is not “O.K!”. Tweedie also very briefly recounts his experience during the war

1939.3

Before the war, Herre names new species of fish after all three persons that are mentioned by name in his letter to Tweedie. Two of these are *Homalopteroideus tweediei* (Herre, 1940) (top) and *Neolissochilus hendersoni* (Herre, 1940) (bottom). The species that is named after Tweedie (1946) is first collected in Mawai, Johor, Malaysia. The species that is named after Henderson ♣1927 is first collected in Penang, Malaysia. These drawings are from the paper in which the species are first described. It is published in the ‘Bulletin of the Raffles Museum’ ♣1928. Herre also names a species that is currently known as *Gobiopterus birtwistlei* (Herre, 1935) after Birtwistle ♣1944

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♣ 1939

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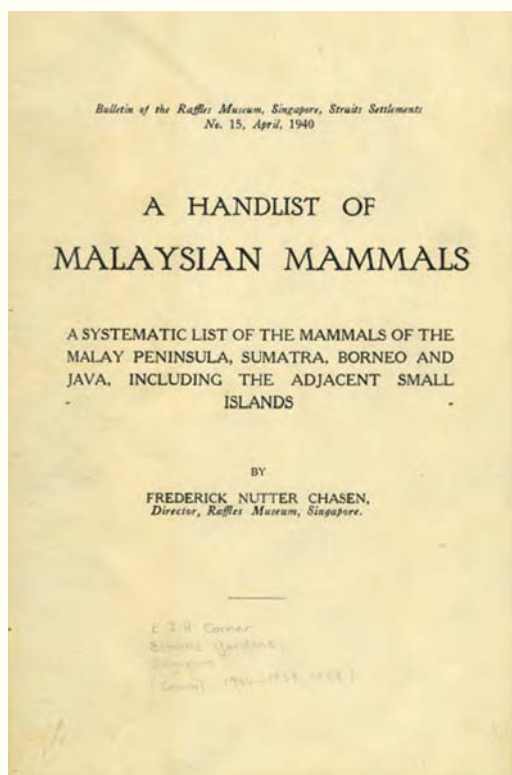
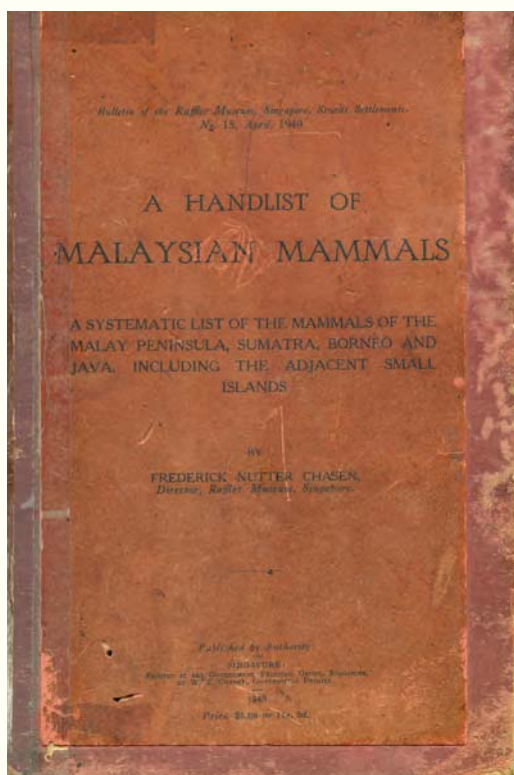
1940

A bare list of Malaysian mammals

Frederick N. Chasen and his 'Handlist'

“Every animal in the jungles of Malaysia is listed in a book which has just been published in Singapore, and there are denizens of Malaysian seas in it as well. This book is ‘A Handlist of Malaysian Mammals,’ by Mr. F. N. Chasen, Director of Raffles Museum, published by the Government Printing Office at \$5. ... Curiously enough, there has hitherto been no book in which even a bare list of Malaysian mammals could be found, and now we have a complete list, with detailed distribution of all the mammals known from the Malay Peninsula, Sumatra, Borneo, Java and adjacent islands.” — **Anonymous**

1940.1



Frederick Nutter Chasen (1896–1942) is director of the Museum when war breaks out 🍀1939. His publications on mammals and birds are extensive, and include two volumes of the ‘Birds of the Malay Peninsula’ 🍀1976. Chasen evacuates Singapore aboard HMS ‘Giang Bee’ on 12 February 1942, possibly taking with him a number of valuable bird and mammal specimens. The next day a Japanese destroyer sinks the ‘Giang Bee’ in the Banka Strait, taking Chasen and his specimens (if any) with it. The ‘Handlist’ is Chasen’s last major publication and is published in April 1940.

1940.2



1940.1

The cover and title-page of ‘A handlist of Malaysian mammals’ by Frederick N. Chasen. It comprises the entire fifteenth volume of the ‘Bulletin of the Raffles Museum’ 🍀1928. The wear and repairs to this copy reflect the decades of use by generations of researchers at the Museum

1940.2

This stamp is from another copy of the ‘Handlist’ that is also in the Museum’s collections and may be Chasen’s official stamp

1940.3

Skulls from two of the species in Chasen’s ‘Handlist’. The one at the top is from a Red Giant Flying Squirrel, *Petaurista petaurista batuana* Miller, 1903, that is collected in 1916 from Sumatra, Indonesia. The one on the bottom is from an Asian House Shrew, *Suncus murinus* (Linnaeus, 1766), that is collected in 1922 from Singapore

1940.3



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1941

I may owe my life to the monkey which I shot

Edred J. H. Corner and 'Puteh'

“This ‘berok’, Puteh, had bitten me and others and, if I liberated him, he would bite me again and attack the children in the labourers’ quarters, which were close at hand. I shot him; as he peered inquisitively into the barrel of the small revolver, just as he used to peer into the holes of tree trunks, I pulled the trigger; death was instantaneous. ... Puteh’s bite in 1941 invalidated me out of the Singapore Volunteers. For months I could not use my right arm. Thus I was a civilian at the time of the Surrender and could declare that I was not a Volunteer. When I came to look in my suitcase in 1944 for another pair of shorts, I found one with my name and number in the Volunteers written clearly on the lining, which I promptly destroyed. But I think I may owe my life to the monkey which I shot.” — **Edred John Henry Corner**

1941.1



1941.2



Botanist Edred John Henry Corner (1906–1996) and William Birtwistle ♣1944 are instrumental in saving the collections during the war ♣1939. Corner is labelled a collaborator, especially after he published a book on war-time events and the Marquis ♣1944. Before the war, Corner is known for the macaques that he trains to collect botanical specimens. As Corner remarks: “A Dutch friend had written that they were the first apes in government service”. A bite from ‘Puteh’ invalidates Corner from volunteer service and prevents him from being imprisoned. ‘Puteh’ therefore saves the man who rescues the Museum’s collections by biting Corner on or around 21 November 1941.

1941.1

The dust-jacket from the ‘Wayside Trees of Malaya’, arguably Corner’s best-known and -selling book. The book opens with the couplet: “Malayan trees who cares to know, Upon his shoulders sits a berok”. As John Dransfield writes in his review of Corner’s book, this couplet “must have baffled many non-Malay speaking readers as they opened Corner’s ‘Wayside trees of Malaya’. The ‘berok’ (pronounced to rhyme with ‘know’ and with a scarcely audible ‘k’) is the pig-tailed macaque, used in the past, and still in a few places today, by people in Southeast Asia to help harvest coconuts. Corner’s use of macaques in collecting herbarium specimens from tall trees in Singapore and the area which is now West Malaysia, is almost legendary. After the publication of the first edition of ‘Wayside Trees’ in 1940, the ‘pantun’ or rhyming couplet must have seemed redundant. Here was the very book to guide one into the world of trees in Malaya”. Corner identifies the Changi Tree ♣1942 as *Sindora wallichii* Benth. in this book

1941.2

This photograph is appropriately captioned: “Coconut-Monkey Climbing Tree”. The species that Corner employs is the Berok (or Beruk) or Southern Pig-tailed Macaque, or *Macaca nemestrina* (Linnaeus, 1766). Corner’s monkeys come from Kelantan and are trained to respond to Kelantanese commands. Working with Corner, Ngadiman bin Ismail ♣1957 learns Kelantanese in order to supervise “the first apes in government service”

1941.3

Edred John Henry Corner (1906–1996), British botanist, author and botanical-collecting monkey pioneer

1941.3



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♣ 1941

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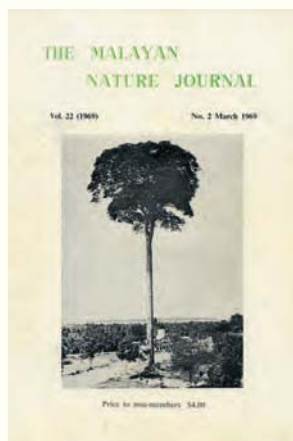
If that tree is ever cut down

Destruction of the Changi Tree

“You see that tree over there ... If war comes ... the first thing that happens is that tree gets chopped down. It’s too good a landmark. I don’t know what kind of tree it is. It is just called the Changi tree, the favourite of everyone in Singapore. The Malays say if that tree is ever cut down, British rule in this country comes to an end. It is a Malay legend. Nonsense, of course.”

— Frank Keith Simmons

1942.1



1942.2



1942.1

The cover of the ‘Malayan Nature Journal’ from March 1969. The photograph of the Changi Tree on the cover is taken by George Thomas Benjamin Crouch (1899–1987), a photographer with the Royal Navy. Crouch also writes a short note to accompany the photograph. The ‘Malayan Nature Journal’ is published by the Malayan (later Malaysian) Nature Society in 1954 and remains an important regional publication on natural history



There is a tragic irony to the words of Frank Keith Simmons (1888–1952), commander of Fortress Singapore. The tree is cut down and British rule in Singapore ends, but it is the British who do the cutting. Edred J. H. Corner 🌿1941 identifies the tree as the Sepetir or *Sindora wallichii* Benth. When a photograph of the tree appears in the ‘Malayan Nature Journal’ in 1969, a series of firsthand accounts of the tree’s fate appear. Due to its prominence and it being clearly marked on maps, concerns arise that the Japanese may use this tree as a ranging target. To allay these concerns, British army engineers destroy the Changi Tree with explosives in February 1942.



1942.2

History in a Heritage Tree. The name “Changi Tree” is confusing. The place name “Changi” is thought to come either from the Chengal (*Neobalanocarpus heimii* (King) P.S. Ashton) or Chengal Pasir (*Hopea sangal* Korth.). The “Changi Tree” is actually a Sepetir tree that is probably given the name due to its prominence and association with the place. This large tree that is today located at Cranwell Road in Changi is a Sepetir that is registered as HT 2003-115 under the Heritage Tree programme that comes under the Parks and Trees Act 🌿1975. In response to Crouch’s photograph and letter, John Alexander Reid (1915–1988) and Walter Thorold Quaife (b. 1882) write that “[w]e remember finding the characteristic rounded, flattened, spiny seed pods ... at the foot of the ruined tree. There were also a few seedlings which we tried to encourage by clearing and fencing round them, but whether any survived we do not know”. These characteristic seedpods can be found under HT 2003-115 today. Perhaps Sepetir HT 2003-115 may be one of those seedlings that Reid and Quaife “tried to encourage” during those dark days. Today, HT 2003-115 is producing seedlings of its own

1820

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🌿 1942

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1943

Lawn of the Good Wood Park Hotel

Discovery of the only bioluminescent land snail

“One night in September, 1943, when Mr. Kumazawa, entomologist, was collecting luminous larvae of fireflies on the lawn of the Good Wood Park Hotel, Scot Road, Singapore, he saw a weak light from a small land snail and informed me of the possibility of luminescence in land snails. The next evening we went to the place and were astonished to observe a true luminescence in this animal. The snail, about 10 to 15 mm in diameter, lives on grass or lawns in Singapore.” — Yata Haneda

1943.1



1943.1

“Teutonia Club”, a postcard from the 1900s. The Teutonia Club is seized as enemy property in World War I and sold to the Manassah brothers who rebrand it as the Goodwood Park Hotel in April 1929. The building is used as a headquarters by the Japanese during World War II

1943.2

The Striated Quantula, or *Quantula striata* (J. E. Gray, 1834), is still the only known bioluminescent land snail. A century before Haneda co-discovers this light-producing ability, specimens are collected from Singapore by the ‘L’Astrolabe’ and ‘La Zélée’ and are described as *Helix isabella* 🌿1839. Alfred R. Wallace 🌿1854 also collects specimens of this snail from Singapore

Yata Haneda (1907–1995) is a doctor who is appointed assistant director of the Museum by the Marquis ♣1944. Haneda gets along well with Edred J. H. Corner ♣1941 and William Birtwistle ♣1944, with the three men doing research together. Haneda is interested in bioluminescence prior to the war and in Singapore he co-discovers the only known bioluminescent land snail, the Striated Quantula or *Quantula striata* (J. E. Gray, 1834). This discovery takes place at the Goodwood Park that is used by the occupying Japanese forces as a headquarters. After the war and after spending a year as a prisoner-of-war, Haneda resumes his research and becomes a world authority on bioluminescence. Haneda encounters glowing snails at the Goodwood Park Hotel “[o]ne night in September, 1943”.

1943.2



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♣ 1943

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“In August 1943 the Marquis decided to publish some booklets in Japanese on edible plants and animals. He asked his personal secretary, Miss Ohmori, Mr Birt and myself to prepare them. Mr Birt did the animals and I the plants. Illustrated with rather clumsy drawings, for there was no means of reproducing ‘fine art’, they were issued from the Museum. Copies were deposited in the libraries at the Museum and Gardens, and I have a copy in my possession, but whether others have survived I do not know.” — **Edred John Henry Corner**

1944.1



William Birtwistle (1890?–1953), or “Mr Birt” as Edred J. H. Corner 🍀1941 refers to the director of fisheries, plays a key role in securing the Museum’s collections when World War II comes to Singapore 🍀1939. Both men are supervised by the “Marquis” (Yoshichika Tokugawa, 1886–1976) who is in charge of the Raffles Museum and Botanic Gardens. Birtwistle is instrumental in salvaging East India Company documents at the Fullerton Building (now Hotel). Birtwistle and Corner also make drawings for a series of publications on edible plants and animals that are published at the Marquis’ direction. One of these is ‘Shokuyō yasei dōshokubutsu’ that is published in January 1944.

1944.2



1944.1

Pages from the ‘Shokuyō yasei dōshokubutsu’ (‘Edible Wild Animals and Plants’) that is written by the Marai Gunsei Kanbu (Malay Military Administration) and is published in 1944. This book is a guide to edible animals and plants in the Southeast Asian tropics, possibly for the use of Japanese soldiers. It is not known with certainty, but these may be the “rather clumsy drawings” made by Birtwistle and Corner

1944.2

Birtwistle’s Goby. Albert W. C. T. Herre 🍀1939 names this species *Gobiella birtwistlei* after Birtwistle. Herre writes in his original description that “[t]his tiny goby is abundant in brackish water tidal creeks on the island of Singapore”. Herre’s description is published in the ‘Bulletin of the Raffles Museum’ 🍀1928. This species is currently known as *Gobiopterus birtwistlei* (Herre, 1935)

1945 There would be no Muzium Negara today

The Selangor Museum and American bombs

“If the B.29 Bomb-Aimer had aimed his bomb sights more accurately in March 1945, there would be no Muzium Negara today, and the capital of Malaysia might have suffered for years to come from the Flemish style of architecture and the Victorian type of display which were the legacy of the old Selangor Museum.” — **Abdul Mubin Sheppard**

1945.1



1945.1

The caption on this postcard from around 1935 reads: “F.M.S. Museum, Kuala Lumpur”. Officially known as the Selangor Museum, this building is mistakenly bombed by American forces. The intended targets are railway buildings also designed by Arthur B. Hubback. The handwriting at the back reads: “10-11/10/35 Mainly natural history & Handicrafts of Malay States & archipelago”

1945.2

This is one of the two murals at the front of the Muzium Negara that is donated by philanthropist Lee Kong Chian. This is the mural on the right when facing the museum from Jalan Damansara, one of the oldest roads in Kuala Lumpur

1945.2



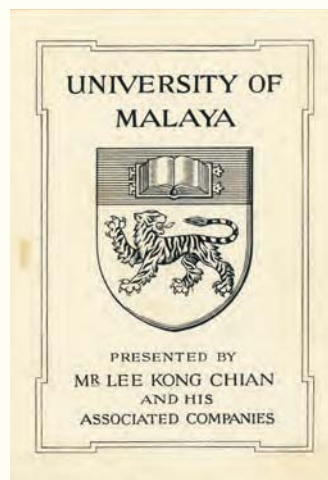
The Selangor Museum is designed by architect Arthur Benison Hubback (1871–1948), brother of Theodore R. Hubback ♣1936. Just six months before the Japanese surrender, American bombs destroy the east wing of the museum. Much of the natural history collections housed in that wing are destroyed, including “the majority of the insects” from Christmas Island ♣1947. This is made all the more tragic because just six months later the Instrument of Surrender is signed by Louis Mountbatten and Seishirō Itagaki. The remains of the Selangor Museum are demolished and a temporary museum is built, with Peter D. R. Williams-Hunt ♣1948 as its director. Following Williams-Hunt’s death, historian and civil servant Abdul Mubin Sheppard (1905–1994) oversees the completion of the Muzium Negara that is built on the site of the Selangor Museum. The Muzium Negara opens on 31 August 1963 and features two murals at the front that are a gift from philanthropist Tan Sri Dato’ Dr Lee Kong Chian. Sheppard suggests that the Muzium Negara is the result of misguided munitions from an American B-29 bomber that destroys the Selangor Museum on 10 March 1945.

1945.3

Philanthropy beyond murals.
Innumerable books at the National University of Singapore Libraries bear a presentation bookplate like this one. In the years to come, the foundation that bears Tan Sri Dato’ Dr Lee Kong Chian’s name is pivotal in the Museum’s story ♣2015



1945.3



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♣ 1945

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Part 15

Part 15 Tweedie's Peace

A Post-war Flowering of Natural History

On 20 June 1946, Michael W. F. Tweedie arrives in Singapore to take up the directorship of the Raffles Museum 🍀1946. Tweedie is a polymath and a natural historian in the best sense of the phrase. Before World War II, he is a curator at the Museum. Despite his experiences as a prisoner-of-war, Tweedie does not become bitter and as he reports to a correspondent after the war, he comes “through apparently without any injury to my health” (see Part 14). Tweedie's years as director at the Museum see a brief but remarkable flowering of natural history taking place in the years after the war.

15.1

RAFFLES MUSEUM



SINGAPORE



COLONY OF SINGAPORE

REPORT OF THE RAFFLES MUSEUM AND LIBRARY FOR THE YEAR 1950

BY

M. W. F. TWEEDIE,
*Director,
Raffles Museum and Library,
Singapore*

PRINTED AT THE GOVERNMENT PRINTING OFFICE, SINGAPORE.
BY V. C. H. GAYLARD, GOVERNMENT PRINTER

1951

This post-war period is marked by the visits of several well-known researchers in a variety of fields. In December 1950, anthropologist and archaeologist Peter D. R. Williams-Hunt comes to visit the Museum 🌿1948. As Tweedie is also interested in archaeology, it is likely that the time they spend together is productive. Tweedie also hosts the leader of the ‘Galathea’ expedition when the ship calls at Singapore. Also part of the ‘Galathea’, Grace E. Pickford visits the Raffles Museum and studies the octopuses in the collections 🌿1951. Given Tweedie’s passion for crabs and for making observations of them in the field (see Part 4), the visit of Jocelyn Crane must be a thoroughly enjoyable one 🌿1955.

Tweedie is a prolific author and it is during this time that he produces his best-selling ‘The Snakes of Malaya’ 🌿1953. It is also during this period that Singapore’s first university is being mooted 🌿1949. Tweedie offers his suggestions for “[t]he relation of a proposed Malayan University to the Raffles Museum and Library”.

Tweedie thus has the foresight to see the remarkable synergistic potential that the Museum in collaboration with the university can have. The trajectory of natural history at the Museum appears to be favourable. The years that follow Tweedie’s retirement in 1957 change everything. In the coming decade, natural history is no longer even part of Stamford Road (see Part 16).

It is over four decades later that the potential Tweedie sees between the Museum and a university is realised (see Part 17). And in a twist of fate, the university becomes the “headquarters” with the Museum a part of the education institution. But all this is very far off into the future. From 1946 to 1957, a post-war flowering of natural history takes place—Tweedie’s peace.



15.1

Tweedie’s peace. The Raffles Museum book stamp appears to be the one in use during Tweedie’s time as director. The Museum’s annual reports during this period are written by Tweedie. This particular report (for 1950) contains several items of interest. There is the Island Golf Club King Cobra 🌿1950, the donation of a specimen of Alfred Russel Wallace’s signature 🌿1854 and photographs of the coral reefs at the Cocos (Keeling) Islands 🌿1903

1946

Encouraging the layman

Michael W. F. Tweedie returns
to Singapore

“Tweedie, as a professional zoologist, also recognised the importance in involving and encouraging the layman in natural history, an aspect many practicing taxonomists of today do not seem to realise or promote. In his years in the Raffles Museum, he published numerous ‘lighter’ articles on a variety of animals as well as some on conservation.”

— Peter Kee Lin Ng and Yang Chang Man

1946.1



1946.1

This plate of drawings of artefacts is published in the Museum’s annual report for 1949. That year, Tweedie attends the Seventh Pacific Science Congress, just as Normal Smedley 🍀1929 attends the fourth congress twenty years earlier. At the congress, Tweedie presents a paper that is entitled “The Malayan Neolithic”, which is probably the reason for making the drawings

1946.2

In April and May 1954, the Museum with counterparts from Malaysia excavate a rock shelter at Gua Cha in Kelantan, Malaysia

1946.3

Michael Willmer Forbes Tweedie (1907–1993), zoologist, radio show presenter, archaeologist, and natural historian

Michael Willmer Forbes Tweedie (1907–1993) is a true polymath and an extraordinary natural historian. Although he writes ‘scientific’ papers on topics as varied as archaeology, birds, insects, crustaceans, fishes, mammals, molluscs and snakes ♣1953, it is his “lighter” writings that reach the largest audiences. Tweedie even presents his own natural history radio show! Tweedie spends the war imprisoned in China, Indonesia and Japan. He also spends time aboard the ‘Kamakura Maru’, a Japanese ‘hell ship’. These are used to transport prisoners-of-war and are so-named for their terrible living conditions. Happily, war does not dim Tweedie’s spark for natural history and he “is recorded as listing all the butterflies he saw on his first walk outside the camp gates when released”. After the war, Tweedie returns to take up directorship of the Museum, arriving in Singapore aboard the ‘Empress of Australia’ on 20 June 1946.

1946.2



1946.3



1820

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♣ 1946

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1948

The only practicable means of amplifying the map

Peter D. R. Williams-Hunt and
“air-photographs”

“Since beaches are inclined to change their outline it follows that it is of some importance to determine which are modern or undergoing change and which appear ancient and static. Furthermore many Malayan beaches are fronted with mangrove—a species of saltwater tree which, under favourable conditions, tends to advance the coastline, leaving the ancient beach behind. But by no means every mangrove swamp is backed with an ancient beach and even where it is the beach does not appear on the one inch or larger map series. In this instance air-photographs provide the only practicable means of amplifying the map.” — **Peter Darrell Rider Williams-Hunt**

1948.1



1948.1

The original caption to this “air-photograph” is as follows: “Pulau Brani, Singapore. A typical compact fishing village occupied by descendants of the Orang Laut. This photograph was taken at low tide and the mud flat on which the village is built is uncovered. At high tide all the houses are over water. May, 1948. Scale, 1 : 5,000”. This image and its caption are from another article by Williams-Hunt on the use of aerial photographs for non-military research that is published in the ‘Bulletin of the Raffles Museum’ 🌿1928

Peter Darrell Rider Williams-Hunt (1919–1953) takes almost 3,000 aerial photographs (or as he calls them “air-photographs”) over Singapore and Malaysia as part of his military reconnaissance duties. These images are an invaluable archive of the landscape of both countries at that time. An anthropologist by training, Williams-Hunt also conducts archaeological surveys, including one on Pulau Ubin with Dennis Collings 🍀1934. Following the destruction of the Selangor Museum 🍀1945, he is appointed acting director of the temporary museum. Williams-Hunt also visits the Museum and Michael W. F. Tweedie 🍀1946 in December 1950. Tweedie describes in the Museum’s annual report how Williams-Hunt “examined and catalogued a large part of the collection of Malayan aboriginal ethnographica and also some items of the prehistory collection of which he had personal knowledge”. Williams-Hunt is also at around this time advisor to the aborigines in Malaya (now Malaysia). In the years after the war, Williams-Hunt sees peaceful uses for these “air-photographs” in archaeological and anthropological research, as he discusses here in his paper that is published in ‘Antiquity’ in June 1948.

1948.2



1948.2

These Swollen Alycaeus, *Alycaeus gibbosulus* Stoliczka, 1872, specimens are collected in November 1950 from Batu Kurau in Perak, Malaysia. The specimens are collected by Williams-Hunt and game warden James Alexander Hislop (1912–1992). Williams-Hunt visits the Museum and Tweedie in December 1950. It is likely that these specimens (and those of the Jousseau’s *Alycaeus*) are deposited here during this visit

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🍀 1948

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1948.3



1948.3

This specimen of Jousseume's *Alycaeus*, *Alycaeus jousseumei* De Morgan, 1885, is also collected by Williams-Hunt in November 1950. It originates from Gunung Kanthan, Perak, Malaysia. Like those of the Swollen *Alycaeus*, this specimens is likely to be deposited in the Museum during Williams-Hunt's visit in December 1950

1948.4

Peter Darrell Rider Williams-Hunt (1919–1953), anthropologist, archaeologist, advisor to the aborigines in Malaya, military pilot and aerial photographer

1948.5

A photograph of Gunung Kanthan in Perak, Malaysia, that is taken on 17 March 2017. Since Williams-Hunt's visit in 1950, this hill is quarried extensively, although part of it containing a cave is protected. Several species are endemic to the locality, including the snail *Charopa lafargei* Vermeulen & Marzuki, 2014. This species is named by its authors after the company quarrying the area because "the decisions the company makes regarding Gunung Kanthan will determine the future existence of this snail"

1948.4



1948.5



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🌿 1948

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2000



1949

Singapore is singularly well situated for the purpose

The Museum and the University of Malaya

“The value of the facilities described above, and of close association with the permanent museum staff, to research workers attached to the University is so obvious that it need not be further enlarged upon. It only remains to say that opportunities for zoological research in Malaya are boundless and expediency sets the only legitimate limit to the number of workers so engaged. Singapore is singularly well situated for the purpose, as a variety of marine environments is as readily accessible as is that of the rain forest. Both marine and terrestrial faunas have received attention from the museum staff, and the systematic zoology of some groups of animals has been brought to an advanced state, but ample opportunity for purely systematic work remains, and biological studies can hardly be said to have begun.” — **Michael Willmer Forbes Tweedie**

1949.1

The University of Malaya is established in 1949. As Malaysia and Singapore become separate political entities, the University of Malaya is split into two divisions in 1959. The Singapore division becomes the University of Singapore in 1962. This photograph shows the University of Singapore campus at Bukit Timah Road in March 1966

Michael W. F. Tweedie 🌿1946 envisions the Museum working closely with Singapore’s first university. By late-1948, that university is becoming a reality. The Museum will be a “headquarters” for regional zoological research. Even though the University of Malaya is formed the following year, it will be many years before Tweedie’s vision is realised. First, a change of name and focus occurs at the Museum 🌿1960. Then its zoological collections are removed 🌿1970, 1971, 1972. And in a twist of fate, it will be the university that ends up assuming the role of “headquarters” for zoological research. That university, now the National University of Singapore, is formed on 8 October 1949.

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1949.1



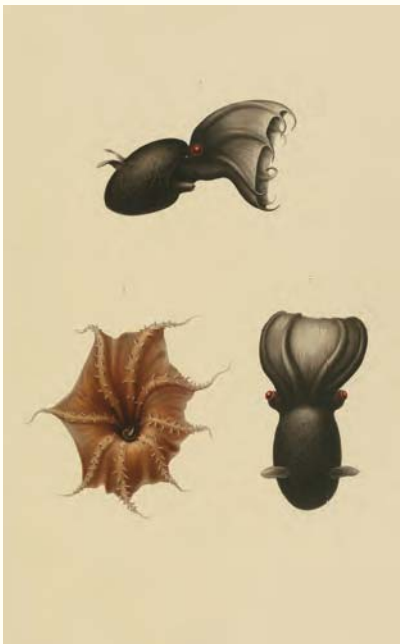
1951

Large, angry octopuses

Grace E. Pickford visits the Raffles Museum

“Repairs to our large winch at Singapore took some little time and like the rest of us Dr. Pickford longed to get back to work in the South China Sea. In the meantime, she gained access to the extensive collection of unstudied octopuses in the Raffles Museum ... She also organized an extensive collection of octopuses from native traps along the coast and would go buying them up in fish-markets and hunting for them on coral reefs, where she impressed us all by her fearlessness in thrusting her hands into all the holes and crevices, occasionally hauling out large, angry octopuses and having the greatest difficulty in persuading them to let go of her arm before she could lever them into the collecting jars.” — **Torben Wolff**

1951.1



1951.2



1951.1

The Vampire Squid, *Vampyroteuthis infernalis* Chun, 1903. Like the “Flying Lemur”, this species is neither a vampire nor a squid. It is the only living representative of the order Vampyromorpha that is classified by scientists as being somewhere between octopuses and squids. Pickford is invited to join the ‘Galathea’ expedition in order to examine live specimens of this species

1951.2

This Marbled Octopus, *Amphioctopus aegina* (J. E. Gray, 1849), is obtained in 1934 from a Singapore fish market. The species identification of this specimen is made by Pickford during her 1951 visit to the Raffles Museum. The identification remarks on the white label are possibly written by her. This species is now known as *Amphioctopus* (rather than *Octopus*) *aegina*

Grace Evelyn Pickford (1902–1986) is an authority on octopuses and squids. She discovers that the Vampire Squid belongs to neither group. Known scientifically as *Vampyroteuthis infernalis* Chun, 1903, this deep-sea creature is in a group all of its own. Pickford is invited to join the ‘Galathea’ on its circumnavigational voyage in order to study specimens of Vampire Squid that are taken alive from the ocean’s depths. When the ‘Galathea’ docks in Singapore, the expedition’s leader, Anton Frederik Bruun (1901–1961) visits the Museum with Pickford, where they meet Michael W. F. Tweedie 🍀1946. Pickford spends the time at Singapore obtaining and studying octopus specimens. The ‘Galathea’ visits Singapore in May 1951.

1951.3



1951.4

1951.3

Two photographs of the ‘Galathea’ during her 1950–1952 circumnavigation. Sometimes called the ‘Galathea II’, the expedition is intended to commemorate the centenary of the first ‘Galathea’ circumnavigation in 1845 but World War II delays this. Originally a British naval ship, HMS ‘Leith’, she is purchased by the Danish Expedition Foundation and is renamed HDMS ‘Galathea’. A ‘Galathea 3’ expedition is being planned

1951.4

Grace Evelyn Pickford (1902–1986), American marine biologist and ichthyologist. The original caption reads: “Dr. Grace Pickford in the Galathea’s laboratory with one of her prized ‘Vamps’”. The “Vamps” are specimens of Pickford’s beloved Vampire Squid



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🍀 1951

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2000

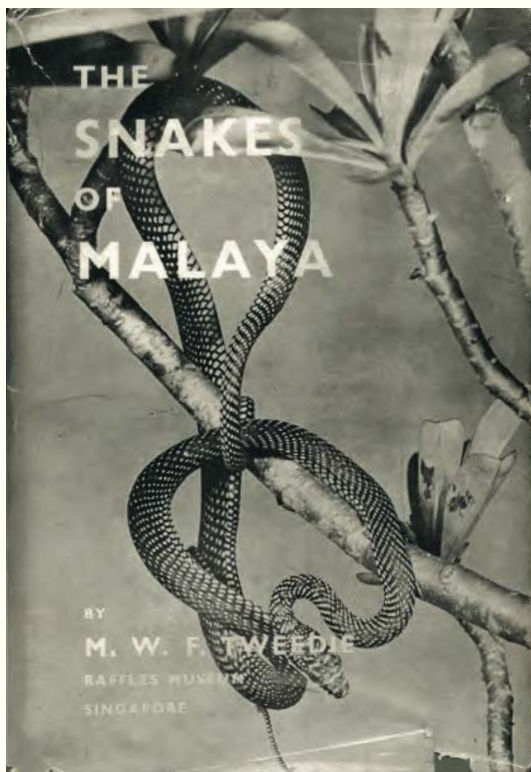
1953

To stimulate interest in snakes

A bestselling book on serpents

“Our knowledge of Malayan snakes now rests on a fairly sound taxonomic basis ... It is the purpose of this book to stimulate interest in snakes and to provide simply but, it is hoped, adequately for their identification. If it succeeds in these two objects and so persuades naturalists in Malaya to make and record observations of these most attractive and interesting animals, the author will be more than content.” — **Michael Willmer Forbes Tweedie**

1953.1



1953.1

The cover of 'The Snakes of Malaya' by Michael W. F. Tweedie 🍀1946.

This cover is from the first edition of this book. The second and third editions are respectively published in 1957 and 1983

1953.2

These are the original drawings for 'The Snakes of Malaya'. These drawings appear as figure 15 on page 66 of the first edition of the book

1953.3

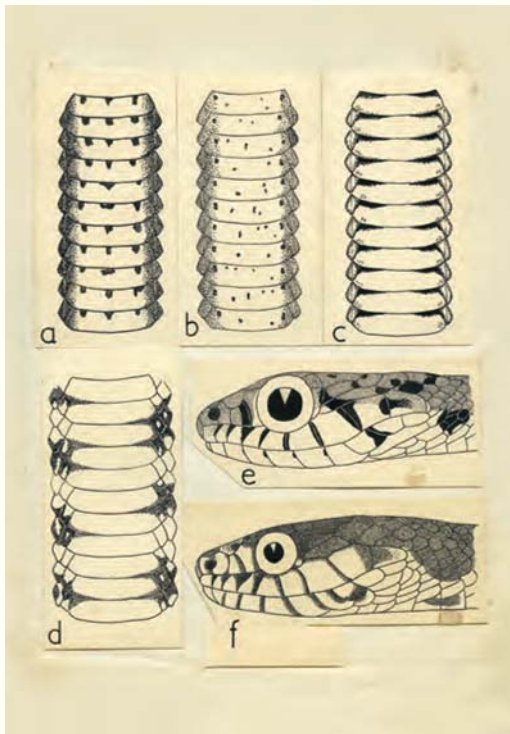
These glass slides are of the original photographs for 'The Snakes of Malaya'. These species are (from top to bottom): Wagler's Pit Viper, *Tropidolaemus wagleri* (Boie, 1827); Elegant Bronzeback, *Dendrelaphis formosus* (Boie, 1927); Malayan Pit Viper, *Calloselasma rhodostoma* (Kuhl, 1824). The scientific names given here are the ones currently in use

1953.4 (on following pages)

A letter from Michael W. F. Tweedie to Edward O. Shebbeare. In this letter, Tweedie writes that "the only thoughtful appreciation" of this book comes from his friend Shebbeare 🍀1958. This letter is from Shebbeare's copy of 'The Snakes of Malaya' and is inscribed: "To E. O. Shebbeare with the author's very sincere regards. August, 1953."

How things change. Snakes go from being the “mischievous or worthless part of the creation” 🍀1832 to becoming “these most attractive and interesting animals” as Michael W. F. Tweedie 🍀1946 advocates in the foreword to his book ‘The Snakes of Malaya’. The book is a bestseller and goes through three editions. It remains an important reference on snakes for Singapore and Peninsular Malaysia. The drawings and photographs in the book are the work of Tweedie as evidenced by the originals in the Museum’s collections. Tweedie’s bestseller, ‘The Snakes of Malaya’, is published in 1953.

1953.2



1953.3



1820

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1900

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1940

🍀 1953

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1980

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1953

1953.4

Houghton House,
RYE, Sussex.
9.X.53

Dear Shakespeare,

Your letter of 17 Sept has
been out to Singapore & all the way
back again. I have had several acknow-
ledgments of copies of "Snakes", but yours
is the only thoughtful appreciation of
it. You have hit on just those points
in it that I was best pleased with myself.
You are very right about pattern, it is
most useful & shamefully neglected by the
pundits. All the drawings are mine, & I
have tried to make them an aid to
identification & not a mere embellishment
of the book (which is really all the
photos are). Another bright idea is the
arrangement for flapping out the diagram
of the head-shields so that it can be
consulted together with any of the
descriptions.

I have another book, "Malayan
Animal Life" being published by Longmans
Green. I hope it will be out early next

year.

We are settled here now & Vera will probably not go to Malaya again, but will stay at home & look after our hogstouts. Charles has just gone to Eastbourne College, Anne is 12 & a lovely little woman. Josephine is now 7 & goes to school by bus every day. She talks all day long, to herself if she has no other audience. I wonder which chromosome carries that gene? I am 46 & plan to come home for good soon after I turn 50, by which time I shall have had 25 years of Malaya.

Yours ever

Michael Tweedie

1820

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✿ 1953

1960

1980

2000

1955

Hooked on fiddler crabs

Jocelyn Crane at the Raffles Museum

“Suddenly, on a muddy patch ahead, we saw a crowd of tiny creatures, each brandishing a great red claw that flashed in the sun. We froze motionless. ‘What ...?’ I asked, and Will said shortly, ‘Fiddlers, of course,’ shocked that an assistant of his didn’t know. And that, more than thirty years ago, was really the beginning of this book. I was hooked on fiddler crabs.” — **Jocelyn Crane**

1955.1



1955.2



1955.1

The Northern Calling Fiddler Crab, *Gelasimus borealis* (Crane, 1975). This species is first described by Crane in her book ‘Fiddler Crabs of the World’. In the accompanying notes, she writes that the name *borealis* is given “in allusion to its northern distribution” and derives “from the Greek noun ‘Boreas’, ‘the north wind’”. This photograph is taken in June 2018 in Kinmen, Taiwan

1955.2

The Western Calling Fiddler Crab, *Gelasimus hesperiae* (Crane, 1975). This is another species that is also described by Crane in her book, ‘Fiddler Crabs of the World’. She explains that this species is “[n]amed in reference to its being the most western of the subspecies. (Genitive of Greek adjective for ‘evening,’ ‘the west,’ and, later, ‘Hesperia,’ ‘Land of the West,’ then Italy and Spain.)”. This photograph is taken in May 2012 in Phuket, Thailand. Crane records this species from Singapore and Malaysia in her book

Jocelyn Crane (1909–1998) is a carcinologist who is renowned for her studies on fiddler crabs. When her book ‘Fiddler Crabs of the World’ appears in 1975 it is the most complete compendium of knowledge of every fiddler crab species known at that time. When naming *Gelasimus jocelynae* after Crane, carcinologists Shih Hsi-Te, Tohru Naruse and Peter Kee Lin Ng write that the book “remains a masterpiece of synthetic taxonomy”. Fiddler crabs are also beloved by Michael W. F. Tweedie 🌿1946 and when Crane visits Singapore, the two spend many hours observing fiddler crabs around the island. As Tweedie writes in the Museum’s annual report for that year: “The study of these crabs has also been one of the Director’s interests for a number of years, and he was able to collaborate with Dr. Crane in observing them around Singapore Island and at Kuching and Santubong in Sarawak”. Crane’s two-month Singapore visit begins in July 1955.

1955.3

Jocelyn’s Fiddler Crab, *Gelasimus jocelynae* (Shih, Naruse & Ng, 2010). In the years after ‘Fiddler Crabs of the World’ is published, carcinologists will discover more new species, including this one that is named after her in 2010. These photographs are taken on Iriomote Island, Okinawa Prefecture, Japan

1955.4

Jocelyn Crane (1909–1998), American carcinologist and doyen of fiddler crabs. Crane can be seen holding a specimen of a fiddler crab in this portrait that is taken in January 1966

1955.4



1955.3



1820

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🌿 1955

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2000

Part 16

Part 16 Raffles Becomes National

Nationhood, Independence and Exodus

The start of the 1960s sees the Raffles Museum being renamed the National Museum 🌿1960 and with the change in name comes a change in focus and priorities. The Singapore Science Centre is established “to promote science and technology through a museum/gallery site” 🌿1970, a role that is partly played by the Raffles Museum and its attendant zoological collection. It is also decided that the display collection of large animals is to be taken over by the Science Centre.

The wider scientific community is alerted of these impending changes by the connections between academics, researchers and administrators 🌿1971. By this time, however, it is decided that the University of Singapore is to take over the collection, but finding space to store it is a problem 🌿1972.

Following the transfer of the display collection to the Science Centre, a decision is made to give the iconic whale skeleton to Malaysia 🌿1974. It is a great loss that “still haunts the minds of those who saw it”. Perhaps the low point in this tumultuous period for the zoological collections is when then-Crown Prince Akihito of Japan requests to examine specimens of fish that are now at the National University of Singapore. His request is very politely refused 🌿1981. Instead the specimens are brought to him at the Istana.

Thankfully, from what seems like this rock bottom, the collection’s prospects improve in the decades to come (see Parts 17 and 18).

16.1

Going through changes. The National Museum and the National Library are created from the Raffles Library and Museum in 1960

NATIONAL MUSEUM



SINGAPORE

NATIONAL MUSEUM,
SINGAPORE, 6.

NATIONAL LIBRARY,
SINGAPORE
5 JAN 1981

1960

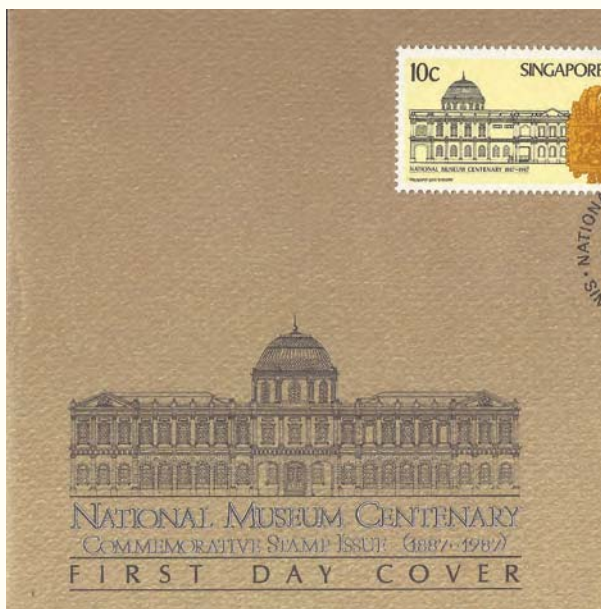
Spirit of Sir Stamford Raffles becomes National

“If the spirit of Sir Stamford Raffles is, at this very moment, hovering in this august chamber, he will, I am sure, accept this inevitable change with good grace ... His name will continue to find a place in the history of Singapore through the place accorded to him in the future may be somewhat different from that accorded him by imperial romantics.” — **Mr Sinnathamby Rajaratnam**

1960.1



1960.2



Following the passing of two ordinances, the already-separate Raffles Museum and Raffles National Library are renamed the National Museum and the National Library. The same article in which the then-Minister for Culture Sinnathambiy Rajaratnam (1915–2006) is quoted, goes on to explain that “... Singapore was not the creation of Raffles alone. Hundreds of thousands of nameless people also contributed to its growth by their blood, sweat and tears”. The earliest public announcement of this change is in a newspaper article entitled ‘Out goes the name Raffles’ that is published on 21 November 1960.



1960.1

The National Museum of Singapore as it appears today. On 21 November 1960, the ‘Straits Times’ announces that the Raffles Museum is to be renamed the National Museum. This is the earliest known public announcement of this change. Today the National Museum and its galleries focus on the story and history of Singapore

1960.2

The National Museum Centenary commemorative first day cover that is issued on 12 October 1987. These stamps commemorate the opening of the Raffles Library and Museum building a century before 🌿1887. The building at Stamford Road becomes known as the National Museum in 1960

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🌿 1960

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1970

This so-called splitting up of the collection Singapore Science Centre

“This so-called splitting up of the collection was an idea that I thought up. I said this Science Centre was going to come up, and they’ve got nothing in store. So what actually was split up was not the Reference Collection. It was the mounted exhibits that people knew. I said, ‘Let all of these go to the Science Centre’ ... So it all went! ... The Science Centre was going to be only exhibition, no reference. And here was a ready, available zoological collection, which made them very happy.” — **Eric Ronald Alfred**

1970.1



When the National Museum divests itself of the zoological collection 🍀1972, there is an immediate problem of where this rather large collection of animal specimens is to be stored. Eric R. Alfred 🍀1966 reveals in an interview that is published in 2015 that the idea of the Singapore Science Centre being the best place for the display collection of large animals is his. The main aim of the Singapore Science Centre is after all “to promote science and technology through a museum/gallery site”, as Kevin Y. L. Tan writes in ‘Of Whales and Dinosaurs’. Furthermore, the Science Centre does not want all of the material, and the scientifically valuable research material goes to the university 🍀1972. The Singapore Science Centre becomes a reality with the Science Centre Act that is passed on 25 September 1970.



1970.1

The Singapore Science Centre is created with the aim “to promote science and technology through a museum/gallery site”. It comes into being with the Science Centre Act that is passed on 25 September 1970

1820

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1960

🍀 1970

1980

2000

1971

Remove completely the natural history

News of the impending exodus spreads

“One incidental scientific item which came my way was the future of the National Museum. As the old Raffles Museum, the Museum in Singapore became world famous. Deposited in it there are very many type specimens from the region, particularly of birds.... I understand there is a move to convert the National Museum into a cultural museum, and to remove completely the natural history section with no clear idea what is to become of it, and in particular the type specimens. A new Raffles Museum would perpetuate a distinguished name.”

— E. C. Dixon

1971.1



1971.1

When Joyce M. Pope receives the letter from E. C. Dixon on 9 July 1971, what is today the Natural History Museum in London is still called the British Museum (Natural History). The name-change only occurs in 1992

Fisheries adviser Dennis Norman Frederick Hall (1923–2005) first hears the news about the change in custodianship of the zoological collections, possibly from Tham Ah Koh 🍀1962. Hall contacts E. C. Dixon of the Overseas Development Administration at the British Foreign and Commonwealth Office to inform him of this. Dixon writes a note to Joyce Mary Pope (1927–2013), a scientist at what is now the Natural History Museum in London. Pope discusses the implications with several zoologists, including Michael W. F. Tweedie 🍀1946. The wider scientific community thus becomes aware of the changes that are coming to the zoological collections of the Museum. Pope receives the fateful news from Dixon on 9 July 1971.

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🍀 1971

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2000



1972

Cannot wait for the specimens to be removed

Leaving Stamford Road behind

“... the members of the Working Committee at the meeting urged the University to consider some means of temporary storage and maintenance before March 1972 as the Museum cannot wait for the specimens to be removed till the new campus is ready.” — **Lim Chuan Fong**

1972.1



1972.2



Lim Chuan Fong 🍀1992 is put in charge of representing the university at meetings to discuss the transfer of the zoological collections, a role that is earlier played by Chuang Shou-Hwa 🍀1961 and Tham Ah Kow 🍀1962. After one of these meetings, Lim writes to the University of Singapore's deputy vice-chancellor, Reginald Quahe (1920–1977), that there is great urgency and that the schedule for the removal is far ahead of the university's own plans. In the months to come, the parts of the collection that are not reserved for the Science Centre 🍀1970 are moved out of the National Museum building 🍀1960. The exodus begins. The deadline that is set for the removal of the zoological collections from Stamford Road is 31 March 1972.

1972.3



1972.1

An aerial photograph of the Kent Ridge site along Ayer Rajah in the early 1970s. The zoological collections are stored in five Romney huts after they leave Stamford Road

1972.2

The Dalvey Road Mess (photograph in colour) and Dalvey Road Mess garage at Dalvey Road. Parts of the zoological collections are moved here when the land at Ayer Rajah is needed for the new university hospital building. Other parts of the collections are moved to another location in the University of Singapore's campus, as well as locations beyond the university

1972.3

A space crisis at the University of Singapore in 1970 results in a very dire outlook for the zoological collection. There are rumours that the collections are to be disposed of altogether. Here the advocacy of members of the Malayan Nature Society (Singapore Branch) such as Anne Johnson 🍀1959 and Nancy Byramji 🍀1954 helps to prevent this fate. The collections are moved to Nanyang University in 1980. The storage cabinets that are in use during this time can be seen in these two photographs

1820

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🍀 1972

1980

2000

1974

Still haunts the minds of those who saw it The whale leaves Singapore

“The much lamented whale skeleton, which the Science Centre gave to the Muzium Negara in 1974, still haunts the minds of those who saw it.”

— Kevin Yew Lee Tan

1974.1



1974.1

These two photographs taken in July 2010 show the Blue Whale, *Balaenoptera musculus* (Linnaeus, 1758), that is originally at Stamford Road at its new home in the Labuan Marine Museum

After its stranding 🍀1892, the Blue Whale, *Balaenoptera musculus* (Linnaeus, 1758), is put on display at the Museum in 1907. It is the Museum's most iconic display. When the zoological collections are removed from the Stamford Road building, the whale is sent to Malaysia. Historian Timothy P. Barnard writes that the "[m]useum officials in Malaysia hoped it would become a 'main attraction' for visitors, and it eventually became a centerpiece of the Labuan Marine Museum when it opened in 2003". The whale leaves Singapore in May 1974.



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🍀 1974

1980

2000

1981

Conditions were so dreadful

The zoological collection at their nadir

“Indeed, the conditions were so dreadful that when Crown Prince Akihito (now Emperor Akihito) of Japan visited Singapore in March 1981 and asked to visit the university to look at the goby specimens—he being one of the world’s leading experts on these fish—the university had to politely decline. Instead, Yang and Lam Toong Jin, the Head of Department, had to bring the specimens to the Istana for the Prince.” — **Kevin Yew Lee Tan**

1981.1



1981.1

These three specimens of gobies may be amongst those that are examined by Crown Prince Akihito in March 1981. On the left is the Golden Flathead Goby, *Glossogobius aureus* Akihito & Meguro, 1975, that is collected in 1961 from Penang, Malaysia. In the middle is the Bynoe Goby, *Amblygobius bynoensis* (Richardson, 1844), that is collected from Pulau Brani, Singapore. On the right is the Bumblebee Goby, *Brachygobius doriae* (Günther, 1868), that is collected in 1969 from Sarawak, Malaysia. The Golden Flathead Goby is one of at least eight species of fishes that Crown Prince Akihito describes. When he describes this species in 1975, he examines two specimens that are collected from Seletar River

The request to visit the zoological collections during the second visit of Crown Prince Akihito (b. 1933) is a low point in the story of the Museum. The Crown Prince, and later Emperor until 30 April 2019, is an accomplished marine biologist and names several new species of fishes. When the Crown Prince names the Golden Flathead Goby in 1975, two specimens from Seletar River are amongst those that he examines. The goby is known scientifically as *Glossogobius aureus* Akihito & Meguro, 1975. The Crown Prince is still able to examine the specimens of gobies when they are brought to the Istana by Mrs Yang Chang Man 🍀2000 and head of the Department of Zoology Lam Toong Jin 🍀1988. The goby specimens get a royal viewing during Crown Prince Akihito's second visit to Singapore in March 1981.

1981.2

This plaque commemorates the planting of a cycad by then-Crown Prince Akihito during his first visit to Singapore in 1970. It is during his second visit in March 1980 that he requests to see specimens of gobies

1981.2



1820

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1940

1960

🍀 1981

2000

Part 17

Part 17 In the Shadow of the Ridge

The ZRC and the RMBR

Between 1987 and 2014, the Museum (under different names) is based at Block S6, as the Science Library building is officially known. The building is located along the Kent Ridge. Many significant events take place during this time—the Museum’s time in the shadow of the ridge.

In 1987 the Zoological Reference Collection (ZRC) moves to Block S6. For the first time since the zoological collections leave the National Museum at Stamford Road (see Part 16), they are brought back together again in one place. The following year, this three-storey facility is officially opened by then-Minister for Education Dr Tony Tan Keng Yam 🌿1988.

The Museum recovers much of its research, outreach and public-facing functions in the next two decades. First comes the changing of its name from the ZRC to the Raffles Museum of Biodiversity Research (RMBR) 🌿1998. A few years later a public gallery is opened which allows for part of this rich collection to be displayed to the public 🌿2001. The Museum’s volunteer group, the Toddycats, is also formed at this time 🌿1997.

17.1

These are two book stamps that bracket the Museum’s history in the shadow of Kent Ridge. The Zoological Reference Collection is geographically consolidated in the three-storey facility at Block S6. The Raffles Museum of Biodiversity Research stamp is used until 2014 when the Museum officially becomes the Lee Kong Chian Natural History Museum

Three other events of note take place during this phase. The Museum is involved with dinosaurs for the first time ♣2006 but not for the last time (see Part 18). The first four volumes of ‘Private Lives’, a series of natural history ‘exposés’ are published between 2007 and 2012 ♣2007. Staff and students connected to the Museum also experience celebrity when David Attenborough comes to Singapore to film at Sungei Buloh ♣2008.

In his book ‘Of Whales and Dinosaurs’, historian Kevin Y. L. Tan recounts that “[i]n 1987, the Zoological Reference Collection moved to its ‘permanent home’ in three floors of the S6 building ...”. Tan places the words “permanent home” in inverted commas deliberately. In hindsight, Block S6 is not a ‘permanent home’ (see Part 18).

17.1

**Zoological Reference Collection
DEPARTMENT OF ZOOLOGY
NATIONAL UNIVERSITY OF SINGAPORE**

RAFFLES MUSEUM OF BIODIVERSITY RESEARCH
National University of Singapore
Department of Biological Sciences
Block S6, #03-01 Science Drive 2
Singapore 117546
<http://rmbr.nus.edu.sg>

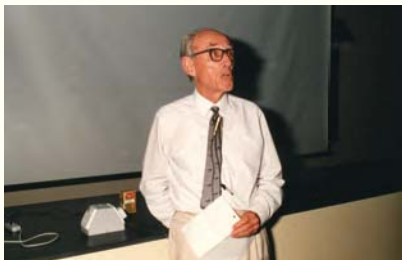
1988

A context of death and decay

The Zoological Reference Collection opens

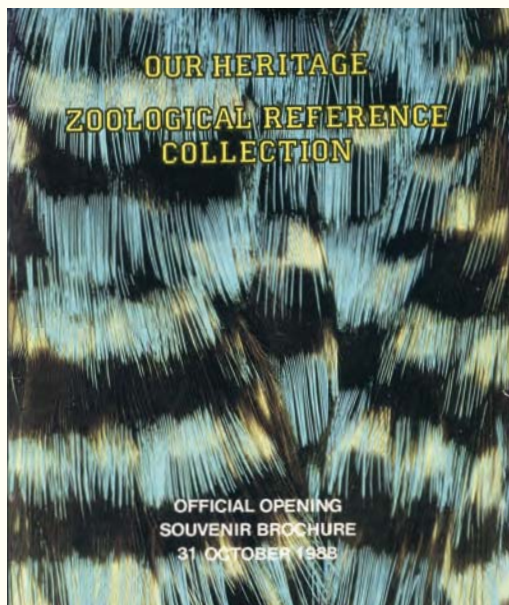
“Zoology differs from most other curatorial disciplines that deal with artifacts. Zoological specimens, if in poor condition, have a context of death and decay. A fragment of broken porcelain is not distasteful but an infested skin is. It is simple for a non-zoological curator to solve the problem of disposal by arguing that the specimen is not suitable for display. However, zoological specimens possess a scientific context which remains regardless of their condition. No zoologist would suggest throwing away the only mounted fish skins of extinct freshwater fishes of Singapore because they are damaged. For less rare specimens, the decisions are much harder.” — **Eric Ronald Alfred**

1988.1



A century after the Raffles Library and Museum building at Stamford Road is opened 🍀**1887**, the Zoological Reference Collection opens in the same building as the Science Library at the National University of Singapore. The guest-of-honour is Dr Tony Tan Keng Yam, who also opens the Lee Kong Chian Natural History Museum 🍀**2015**. Also present is Michael W. F. Tweedie 🍀**1946**. The Zoological Reference Collection opens on 31 October 1988.

1988.2



1988.3



1988.1

The opening of the Zoological Reference Collection (ZRC) on 31 October 1988. The top two photographs show then-Minister for Education Dr Tony Tan Keng Yam at the opening. Dr Tan also opens the Lee Kong Chian Natural History Museum building almost thirty years later 🍀**2015**. Michael W. F. Tweedie 🍀**1946** is also present during the opening of the ZRC which is located at the Science Library building at the foot of Kent Ridge

1988.2

The cover of 'Our Heritage: Zoological Reference Collection', the souvenir booklet from the official opening of the ZRC on 31 October 1988

1988.3

These two photographs show the Zoological Reference Collection when it first opens

1997

An abandoned common palm civet kitten Toddycats!

“The original toddycat drawing on the museum logo was based on an abandoned common palm civet kitten which was rescued from ants at an army camp and brought in to the then Department of Zoology in 1996. A few of us cared for the animal and gave this civet the name ‘Toddy’. Tragically he was killed by a dog.” — **Anonymous**

1997.1

An Asian Palm Civet, *Paradoxurus hermaphroditus* (Pallas, 1777). “Toddycat” is another common name for some civets that are said to drink the fermented nectar of certain sugar palms and become intoxicated. There does not appear to be scientific evidence for this. This species is also known as the ‘Musang’ in Malay 🌿1920

1997.1



Education and outreach at the Museum can be traced to the efforts of Richard Hanitsch 🌿1919. He publishes a guide to the zoological collections 🌿1908 and is responsible for the reorganisation of the displays that become very popular 🌿1910. After a very long hiatus, the Museum begins to play a role in natural history education and outreach once again. A volunteer group, the Toddycats, is founded and “Toddy” is also the inspiration for their mascot, the current well-known representation of which first appears in 2006. The Toddycats are still a part of the Museum today, over two decades since the group is started in 1997.

1997.3



200: Points in
Singapore's Natural History

1997.2



1997.2

The mascot of the Museum's volunteers, the Toddycats. It is first used in 2006 and is inspired by “Toddy”

1997.3

The Toddycats at the ‘NUS Goes Lite 2019’ roadshow in February 2019

Part 17:
In the Shadow of the Ridge

1820

1840

1860

1880

1900

1920

1940

1960

1980

🌿 1997

1998

Too much of colonial hangover

Raffles Museum of Biodiversity Research

“Initially, some members of the department were not so keen on the proposed name, arguing that going back to the name ‘Raffles’ smacked too much of colonial hangover. However, Ng and Lam were certain that the proposed name was timely and appropriate; after all, it was the historical name of the collection—everyone called it the Raffles Collection—and gave it instant recognition and a high profile. ... The proposal received strong support from the Vice-Chancellor, Lim Pin, and in 1998, the new facility was renamed the Raffles Museum of Biodiversity Research (RMBR).” — **Kevin Yew Lee Tan**

1998.1



1998.1

The mascot of the Raffles Museum of Biodiversity Research. The mascot is inspired by a real-life Asian Palm Civet 🦦 **1997**

1998.2

An exterior sign from the late 1990s outside the Raffles Museum of Biodiversity Research at the Science Library building

In 1997, it is felt that the Zoological Reference Collection (ZRC) should move from a role that is primarily involved in the curation of the collection to one that is more public-facing. An added emphasis on research is also a consideration. There are also discussions about opening a public gallery. To reflect these new roles and new research agendas, the ZRC needs a new name. Academics Peter Kee Lin Ng and Lam Toong Jin are proponents of retaining a connection to the “Raffles Collection” as it is known to many researchers. The ZRC is renamed the Raffles Museum of Biodiversity Research (RMBR) in 1998.

1998.2



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1860

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1960

1980

🌿 1998

2001 The size of a five-room Housing Board flat The RMBR Public Gallery

“How do you set up a gallery showcasing the best of Singapore’s natural history without expert help? What about when the space is the size of a five-room Housing Board flat and the budget \$30,000? These were the challenges that staff at the Raffles Museum faced when they decided to add a public arm to their set-up.” — **Lea Wee**

2001.1



2001.1

The plaque that commemorates the opening of the public gallery of the Raffles Museum of Biodiversity Research on 15 June 2001. The gallery is opened by then-Minister for Education Rear-Admiral Teo Chee Hean

2001.2

A souvenir from the official opening of the public gallery of the Raffles Museum of Biodiversity Research (RMBR)

2001.3

Exhibits in the public gallery of the Raffles Museum of Biodiversity Research (RMBR)

2001.2



Lea Wee is a journalist for the ‘Straits Times’ who covers the opening of the public gallery of the Raffles Museum of Biodiversity Research 🍀1998. The opening of the public gallery has several aims. It allows for some of the rich zoological collections of the Museum to be displayed once again. This in turn, it is hoped, will engage the public in the debate over issues such as conservation and the biodiversity crisis. As Wee quotes the director of the Museum, Peter Kee Lin Ng: “These are changing times [a]cademics cannot afford to sit in their ivory towers and just do research for research’s sake”. The Museum’s new public gallery is officially opened by then-Minister of Education Rear-Admiral Teo Chee Hean on 15 June 2001.

2001.3



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🍀 2001

2006 Never before been exhibited together 'Dinosaurs! A *T. rex* named Sue and Friends'

“The main highlight of the exhibition was to meet two life-sized *T. rex* skeleton casts – the 12.8 m long ‘Sue’ and ‘Stan’, measuring 12.2 m. Taking centre-stage was ‘A *T. rex* named Sue’, a travelling exhibition created by The Field Museum in Chicago. ‘Sue’ is the largest, best-preserved, and most complete – at 95%. ‘Stan’ is the second most complete *T. rex* – at 75%. Although ‘Sue’ and ‘Stan’ were discovered in the same general area by the same team, they had never before been exhibited together.” — **Anonymous**

2006.1



This is the first time the Museum is involved with dinosaurs. ‘Dinosaurs! A *T. rex* named Sue and Friends’ is a travelling exhibition that comes to Singapore through a collaboration between the Faculty of Science at the National University of Singapore and the Singapore Science Centre 🍀1970. The Museum is involved in content creation for the additional exhibition panels that are on display. The exhibition features casts of ‘Sue’ and ‘Stan’, the two most well-known specimens of *Tyrannosaurus rex* Osborn, 1905. The exhibition opens on 20 May 2006.

2006.1

The cover of the November 2006 issue ‘OmniSci’. The article on page 11 of the newsletter shows visitors at the ‘Dinosaurs! A *T. rex* named ‘Sue’ and Friends” exhibition. The exhibition is opened by then-President Mr S. R. Nathan

2006.2

A scale replica of the neck and skull of ‘Sue’. Special bronze-plated replicas of ‘Sue’, similar to this one, are presented to donors during a fund-raising event that is organised by the Faculty of Science at the National University of Singapore. The event is held in conjunction with ‘Dinosaurs! A *T. rex* named ‘Sue’ and Friends’

2006.2



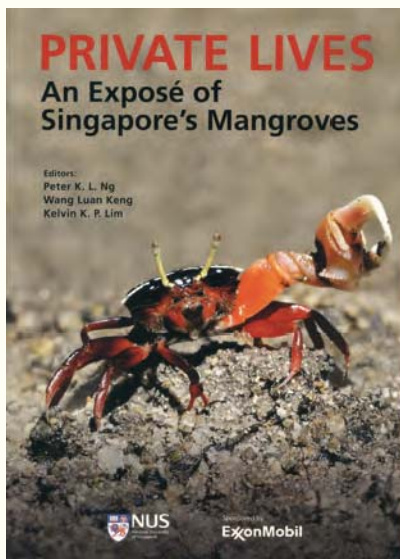
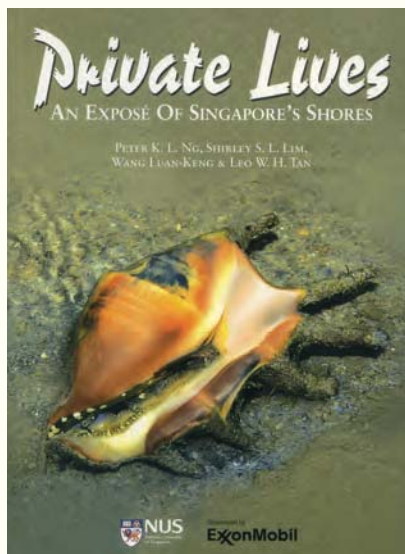
2007

Why another book on the seashore?

‘Private Lives’ made public

“Why another book on the seashore? The reader may ask. ... Our original intent was to write a field guide of the seashore but we realised that it would be more interesting and appealing to students as well as to the public if we wrote about the life and times of the plants and animals themselves. The books which have been published in recent years have all tended to be accounts of the shore and its denizens. While all these have been great, we know far less about the ‘private lives of the players’. ... The present book is therefore titled ‘Private Lives: an exposé on Singapore’s shores’. It highlights the interesting, strange and often innovative ways in which seashore organisms cope with their harsh environment. In a way, we are taking a ‘paparazzi’s’ perspective on the plants and animals that live on our shores.” — Peter Kee Lin Ng, Shirley Siew Lee Lim, Wang Luan-Keng and Leo Wee Hin Tan

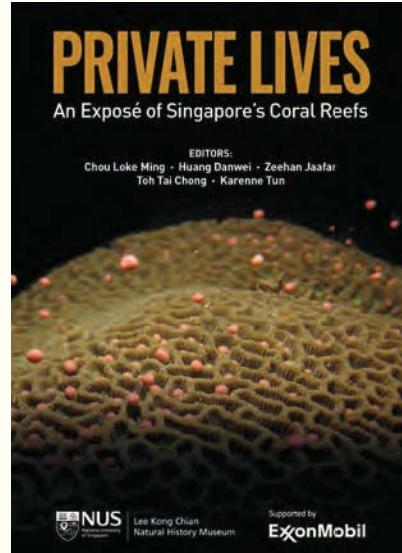
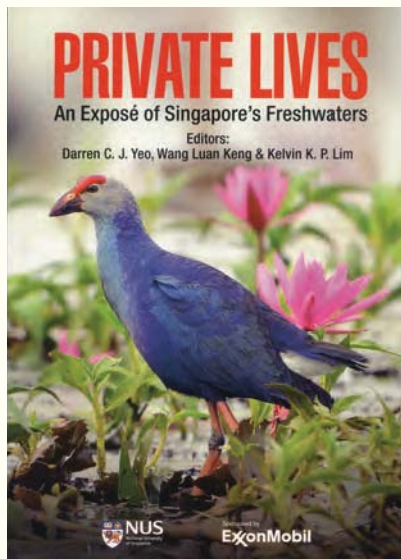
2007.1



The Museum launches a series of guides to the many natural environments in Singapore. The title 'Private Lives' is chosen to signify that these accounts are meant to be an intimate first-hand look at the animals and plants that live in these habitats. The fifth volume is expected in June 2019. The very first 'Private Lives' book is launched in 2007.

2007.1

The five volumes of the 'Private Lives' series: 'Shores' (2007); 'Mangroves' (2008); 'Freshwaters' (2010); 'Rainforests' (2012); 'Coral Reefs' (2019)



2008

To eat a lobster twice the size of my head David Attenborough in Sungei Buloh

“So there is a meal for a snake here, but crabs are not easy to tackle. They’re strong, armour-plated and covered in spines. For a snake to tackle one of these would be like me trying to eat a lobster twice the size of my head with my hands tied behind my back. But there is a snake that knows how to do so.”

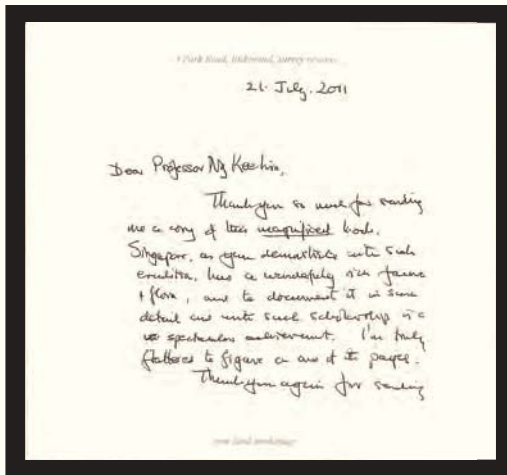
— David Frederick Attenborough

2008.1



In 2006, English natural historian and broadcaster David Frederick Attenborough (b. 1926) visits the mangroves in Sungei Buloh in Singapore. The purpose of the visit? To record the Crab-eating Snake eating crabs. This footage appears in the television series 'Life in Cold Blood' that is produced by the British Broadcasting Corporation (BBC). Here Attenborough describes the difficulties that this snake, known scientifically as *Fordonia leucobalia* (Schlegel, 1837), encounters each and every time it needs a meal. The Crab-eating Snake is featured in the fourth episode of 'Life in Cold Blood' that is entitled 'Sophisticated Serpents' and is first aired on 25 February 2008.

2008.2

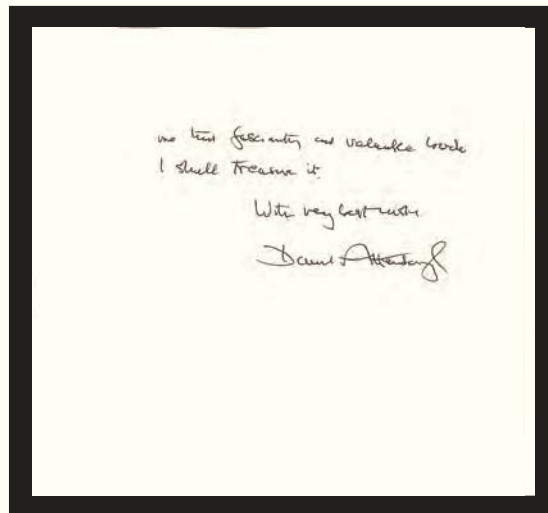


2008.1

David Frederick Attenborough (b. 1926), English natural historian and broadcaster. Attenborough is in the mangroves at Sungei Buloh in Singapore filming footage that is released in 'Life in Cold Blood'

2008.2

This letter is from Attenborough to the director of the Raffles Museum of Biodiversity Research, thanking him for the gift of a copy of the 'Singapore Biodiversity' encyclopedia. Attenborough says that he is "truly flattered to figure on one of its pages"



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🍀 2008

Part 18

Part 18 Home at Last?

The Lee Kong Chian Natural History Museum

When did the Lee Kong Chian Museum Natural History Museum begin?

This part offers several possible points that can be seen as points of its origin. A trip to natural history museums in the United States leads to the realisation that there are three “must-haves” to a successful institution ♣2005. With only one of these three in existence, a natural history museum is not possible at that time. Nonetheless a seed is planted and a theoretical foundation is laid.

An International Museum Day event that is oversubscribed and leads to a groundswell of public support for a natural history museum can be seen as another point of origin ♣2009. The ground-breaking ceremony at the same site that is first considered for the Zoological Reference Collection almost four decades before ♣2013 is the point of origin of the physical structure.

The opening of the new building is certainly one of these points ♣2015. It is also the culmination of the effort of so many individuals, institutions and organisations. In many ways, a multitude of threads can be seen stretching back from this physical structure into the events of the previous two centuries—the stories, events, animals, plants and people that make up ‘200’.

18.1

LEE KONG CHIAN NATURAL HISTORY MUSEUM
National University of Singapore
Block S6, #03-01, 6 Science Drive 2,
Singapore 117546

18.1

Two stamps that represent two points in the history of the Lee Kong Chian Natural History Museum (LKCNHM). The book stamp signifies a transition between two eras. The address is of Block S6 where the Zoological Reference Collection is brought together after their dispersal (see Parts 16 and 17). In 2014, the Raffles Museum of Biodiversity Research is officially changed to the Lee Kong Chian Natural History Museum—and a new era dawns. The other stamp commemorates the opening of the LKCNHM on 18 April 2015

And yet, this culmination is not a conclusion. Like the Ourobouros, the head/tail are origin/destination. Almost before the paint is dry (literally), the gallery has to be reorganised and new showcases are fabricated for a Sperm Whale ♣2016. Since reopening at 2 Conservatory Drive, the Museum also grows in its international roles and commitment to collaborations. In 2016, the International Commission on Zoological Nomenclature secretariat is fully relocated to the Museum ♣2014. The following year, the Biodiversity Library of Southeast Asia is launched by the National University of Singapore Libraries in collaboration with the Museum ♣2017.

Two centuries after the first animal from Singapore is named.

One-hundred and fifty years after Wallace publishes the 'Malay Archipelago'.

A century after Richard Hanitsch retires.

Seventy years after the founding of the university that rescues the zoological collections.

A decade after that fateful International Museum Day.

The Museum is home.

But is the Museum home at last?



2005

No endowment and no dinosaurs

Discovering the “must-haves”

“In late 2005, with funding from NUS and American entrepreneur Frank Levinson, five staff visited successful American museums to understand what it takes to make a natural history museum work. Three ‘must-haves’ arose from this trip: good corporate governance; a good endowment plan; and dinosaurs! So much for the theory. While NUS is a well-governed establishment, it certainly had no endowment and no dinosaurs. A new natural history museum? No way.” — **Peter Kee Lin Ng**

2005.1



2005.1

Photographs from a series of visits to learn about the “must-haves” for a successful natural history museum. The three photographs of the façade, elephants and dinosaur are taken at the Field Museum of Natural History in Chicago. The dinosaur is ‘Sue’ the *Tyrannosaurus rex* ♣2006. The photograph of the backlit display is taken at the American Museum of Natural History in New York

In 2005, then-Ambassador-at-Large Dr Tommy Koh suggests the setting up of a natural history museum that is based around the Museum's collection. Funding from entrepreneur Frank Levinson and the National University of Singapore allows for a visit to half a dozen natural history museums in the USA. Following their return, the then-director of the Raffles Museum of Biodiversity Research, Peter Kee Lin Ng concludes that there are three "must-haves". Ng also surmises that with only the first of them already a reality, a natural history museum is not possible at the time. Nonetheless, the information that is gathered in the white paper the team produces means that the Museum is ready to seize the opportunity when it comes 🌱2009. The visit begins on 7 September 2005.

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🌱 2005



2009

We never ever have a queue at the museum

The day Singapore's natural history museum is born

"I was the only one in the gallery that morning. My colleague was on standby downstairs doing his work. When I went to switch on the lights and open the door, I heard a commotion outside. There was a queue of people—we never ever have a queue at the museum. Straight away I called Dr Tan Swee Hee and told him, 'Something's wrong, I think you need to call more people down'. We have never had a queue outside the museum before." — **Ivan Sijie Tan**

2009.1

Museum needs more space, better access

ON May 24, a Sunday, my family and I were at the Raffles Museum of Biodiversity Research at the National University of Singapore (NUS). It was fascinating to discover that Singapore has such a wide diversity of flora and fauna.

Due to extensive media coverage, many people were there, including old folk in wheelchairs and babies in strollers. Some of the older generation were excited to share kampung stories and their encounters with animals such as flying foxes and monitor lizards.

However, the museum is too small for public viewing. Also, the location is also out of the way for most people and inaccessible to the public – especially for those without their own transport – as it is within NUS grounds. Added to that,

some people had difficulty reaching the museum due to lack of directional signs.

Guides mentioned that less than 1 per cent of the collection, which is mostly

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used for research purposes, was on display. I believe more could be displayed if not for space constraints.

Although there were activities for children, the museum lacks the sort of interactivity that most museums have – for example, an electronic touch panel or even a video wall. There should be large and simple signs for children to read.

The guides were wonderful in introducing us to the museum in terms of flora and fauna classification and diversity, as well as places to visit in Singapore to explore nature. However, they were pretty short-handed in managing guiding sessions, patrolling the specimens and helping out with Q&A.

Singapore may have no dinosaur bones, but we have the resources to showcase the rich and diverse natural history of Singapore and South-east Asia.

Jaya Kumar Narayanan

It is Ivan Tan's final week as education and public relations officer at the Museum in May 2009. He expects his last International Museum Day event on 24 May to be a quiet one, as they always are. Life is full of surprises. The response that day is overwhelming as Tan recounts. As Kevin Y. L. Tan writes, that day "set off a giddy chain of events that would eventually culminate in the decision to establish Singapore's own natural history museum". 'Museum needs more space, better access' is the title of Jaya Kumar Narayanan's letter that appears on 2 June 2009 in the 'Straits Times'. This is the first call for what is in effect a new natural history museum. Tan Swee Hee, who is Ivan Tan's supervisor at that time, oversees the new museum building project to its completion 🍀2013, 2014. The origins of Singapore's very own natural history museum can be traced back to that International Museum Day on 24 May 2009.

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2009.1

'Museum needs more space, better access'. This letter is published in the 'Straits Times' on 2 June 2009, several days after the International Museum Day event. It is in many ways the first public call for a new natural history museum

🍀 2009

2012

Our very own Singaporosaurus

Diplodocid dinosaurs

“My interest was piqued by the recent news that Twinky, the Republic’s first fossil dinosaur skeleton, had finally touched down from Utah. Could having our very own Singaporosaurus help to fire the country’s youth with passion for dinos that lasts a little longer than mine did? I’d love to think so. After all, I still remember the sense of wonder I felt when my parents took me to see the 26m-long replica diplodocus skeleton at London’s Natural History Museum. ... Of course, Singapore is not London. Just because prehistoric skeletons are a hit in Britain, it does not mean people here will necessarily take to dinosaurs. When the Republic’s new natural history museum announced it intended to raise \$12 million to buy dinosaurs, some questioned why it was wasting money importing the ancient bones to a country which has no history of finding them on its own soil. Could the funds be better spent on exhibitions celebrating the island’s rich past? ... Singapore has long been one of the places where people from around the region go to access the latest in global culture, whether it’s theme parks or Formula One. Dinosaurs are no different. They are a scientific treasure, an international industry and a symbol of childhood wonder and fascination with the unknown. The Republic may not have been blessed with its own sauropods or velociraptors, but it is giving kids a chance to experience something magical. Personally, I can’t wait to introduce my inner seven-year-old to Twinky. Who knows? Perhaps it’s not too late to resurrect my dino obsession.” — **Joel Cooper**

2012.1



An earlier visit to successful natural history museums in the USA leads to the idea of the three “must-haves” 🍀2005. By early 2011, two of the three are in the bag: good governance and a good endowment plan. The third—dinosaurs—is elusive. Then in April 2011 the opportunity presents itself and another round of fund-raising, independent of that for the new building, ensues. The funds are raised successfully and for the second time, the Museum is involved with dinosaurs 🍀2006. This time as the owner of three! The first of them, “Twinky”, arrives in Singapore on 18 April 2012.

2012.2



2012.1

These two cut-outs are used to mark the wooden crates in which the three dinosaurs are shipped to Singapore

2012.2

Two views of the three dinosaurs in the Museum's gallery



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🍀 2012

2013

A dream come true

A ground-breaking development at the Museum

“The National University of Singapore drove the first pile for the \$46 million purpose-built Lee Kong Chian Natural History Museum yesterday, on grounds where the school’s estate office once stood. When ready in the second half of 2014, the 8,500 sq m, seven-storey ‘green’ building will house not just three real dinosaur fossils, but also a priceless collection of some 500,000 specimens of vertebrates and invertebrates. It is, in the words of the honorary National Heritage Board chairman, Professor Tommy Koh, ‘a dream come true’. Prof Koh, who was the guest of honour at yesterday’s groundbreaking ceremony, recalled how his visits to New York’s Natural History Museum, Washington’s Smithsonian and later the Raffles Museum of Biodiversity Research (RMBR) had convinced him that Singapore should have a purpose-built museum showcasing South-east Asia’s flora and fauna.” — **Tan Dawn Wei**

2013.1

This rock is collected in about 2013 from the site at 2 Conservatory Drive where ground is broken to build the Lee Kong Chian Natural History Museum. In 1977, the exact same site is mooted by the university administration for the Zoological Reference Collection 🌿1988

Ground is broken for the Lee Kong Chian Natural History Museum 130 years after the foundation stone is laid for the Raffles Museum building 🍀1884. The site that is chosen for the new Museum building immediately creates a sense of déjà vu in those who are involved in the project. In 1977, the same site is initially mooted for the Zoological Reference Collection 🍀1988. One circle is closed when the first pile enters the ground on 11 January 2013.

2013.1



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🍀 2013

2014

No Code is perfect

The International Commission on Zoological Nomenclature

“No Code is perfect. None will please everyone. Indeed, it is unlikely that any Code would be completely satisfactory to any individual. But the Committee and the Commission believe that this third edition is a noteworthy improvement over the previous editions and they commend it to zoologists.”

— William David Lindsay Ride and Curtis Williams Sabrowsky

2014.1

The logo of the International Commission on Zoological Nomenclature (ICZN). The ICZN's secretariat moves to the Museum in 2014

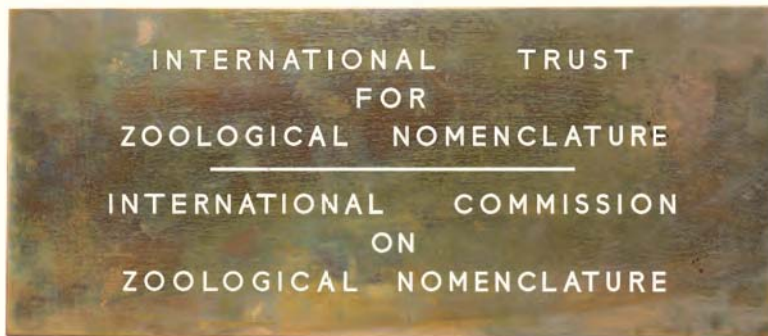
2014.2

This plaque is from the office of the International Commission on Zoological Nomenclature's secretariat at the Natural History Museum in London. The office closes in 2016 with all remaining secretariat functions moving to Singapore

2014.1

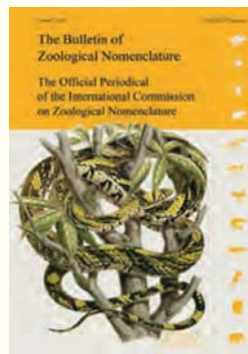


2014.2



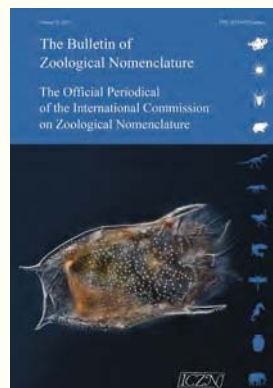
William David Lindsay Ride (1926–2011) and Curtis Williams Sabrowsky (no dates) are commissioners of the International Commission on Zoological Nomenclature (ICZN). They are involved in the publication of the third edition of the ‘International Code of Zoological Nomenclature’. The commission and its ‘Code’ ensure the names that are used for animals are unique, stable and widely accepted. The end-users of these names (including those in applied research fields such as pharmacology and epidemiology) are thus able to use these names with confidence when communicating concepts and hypotheses. When the commission faces financial difficulties, the National University of Singapore (NUS) provides funding for a meeting in November 2013 to discuss the commission’s future, as well as to support its secretariat. The decision is made to split the commission’s secretariat into two offices. Some functions remain at the existing London office while the rest are relocated to the Museum in Singapore. By 2016, these remaining ICZN secretariat functions are relocated to Singapore. And in June 2019, the commission meets at the Museum once more to update the current (fourth) ‘Code’. The Museum’s involvement in the running of the ICZN secretariat first begins in 2014.

2014.3



2014.3

The official publication of the International Commission on Zoological Nomenclature is the ‘Bulletin of Zoological Nomenclature’ or BZN. The BZN publishes requests from scientists (“applications”) for the commission to clarify or amend names in the interest of nomenclatural stability (“opinions”). These are specifically for instances where articles of the commission’s International Code of Zoological Nomenclature are not able to resolve the issue. The orange cover is from volume 75 (2018) while the blue one is from volume 76 (2019)



🌱 2014

2015

To educate many generations of Singaporeans

The Lee Kong Chian Natural History Museum opens

“This museum will serve to educate many generations of Singaporeans on the importance of protecting our heritage and contribute to regional and global biodiversity research.” — **Dr Tony Tan Keng Yam**

2015.1



The Museum opens at 2 Conservatory Drive almost 130 years after the opening of the Raffles Library and Museum building at Stamford Road 🍀**1887**. This is significant because now as then, the Museum has a purpose-built home for the collections, the staff and for research. It even has three dinosaurs. The Then-President Dr Tony Tan Keng Yam reprises his role of some three decades before 🍀**1988** when he opens the Lee Kong Chian Natural History Museum on 18 April 2015.

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🍀 2015

2015.2



2015.1

A photograph of the Lee Kong Chian Natural History Museum taken on 16 February 2015, shortly before its opening

2015.2

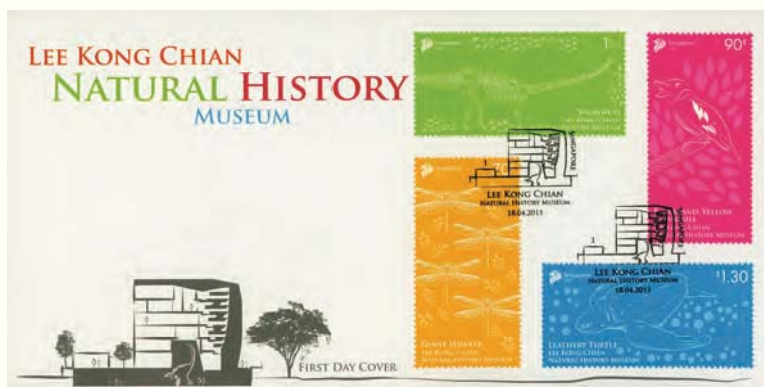
The first visitors to the Lee Kong Chian Natural History Museum are able bring home a memory of their visit with this commemorative stamp

2015.3

This first day cover is issued on 18 April 2015 in conjunction with the official launch of the Lee Kong Chian Natural History Museum. The Museum opens its doors to the public on 28 April 2015



2015.3



2016

There's a whale, do you want it?

A new Museum, a new whale

“On Friday 10th July 2015, an informal meeting was being held in the contemporary conference room of Lee Kong Chian Natural History Museum, as staff Dr Tan Swee Hee, Shu Shwu Li, Kate Pocklington and Chen Mingshi, discussed the future of the temporary gallery with Museum Head, Professor Peter Ng. At 10:30 a.m., there was a knock on the door and in rushed the Curator of Mammals and Birds, Marcus Chua, declaring: “There’s a whale, do you want it?”

— Kate Pocklington and Iffah Iesa

2016.1



2016.2



2016.3



In the subsequent upheaval, the response of those present goes unrecorded. The dead cetacean is later identified as a Sperm Whale, *Physeter macrocephalus* Linnaeus, 1758. It is the first record of the species in Singapore's territorial waters. In the months that follow, staff from the Museum deflesh, dissect, disarticulate and desgrease the entire 10.6 metre whale. Two months and nine days later, the skeleton's preparation is complete. Coinciding with the fiftieth year of Singapore's independence, the whale gets the nickname "Jubi Lee". The next six months see the reorganisation of the brand-new gallery to incorporate a newly-fabricated display for the whale. The public is able see Singapore's first Sperm Whale after the exhibit is unveiled on 14 March 2016.

2016.4



2016.1

The dead Sperm Whale, *Physeter macrocephalus* Linnaeus, 1758, off Jurong Island on 10 July 2015

2016.2

Removing blubber and flesh from the dead whale at Tuas

2016.3

Removing the last remnants of flesh from the whale's skeleton

2016.4

The Sperm Whale exhibit at the Museum that opens on 14 March 2016



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2017

Access to a good library

The Biodiversity Library of Southeast Asia

“We have few data of the geographical distribution of our summer birds north of Morayshire ... Access to a good library can alone solve these doubts”

— Archibald Hepburn

2017.1



2017.2



2017.1

The poster for the launch of the Biodiversity Library of Southeast Asia (BLSEA). The portal goes live in May 2017

2017.2

Two staff members who are attached to the Biodiversity Library of Southeast Asia (BLSEA) project. They are digitising just a minuscule fraction of the rich collections that are held by the National University of Singapore Libraries

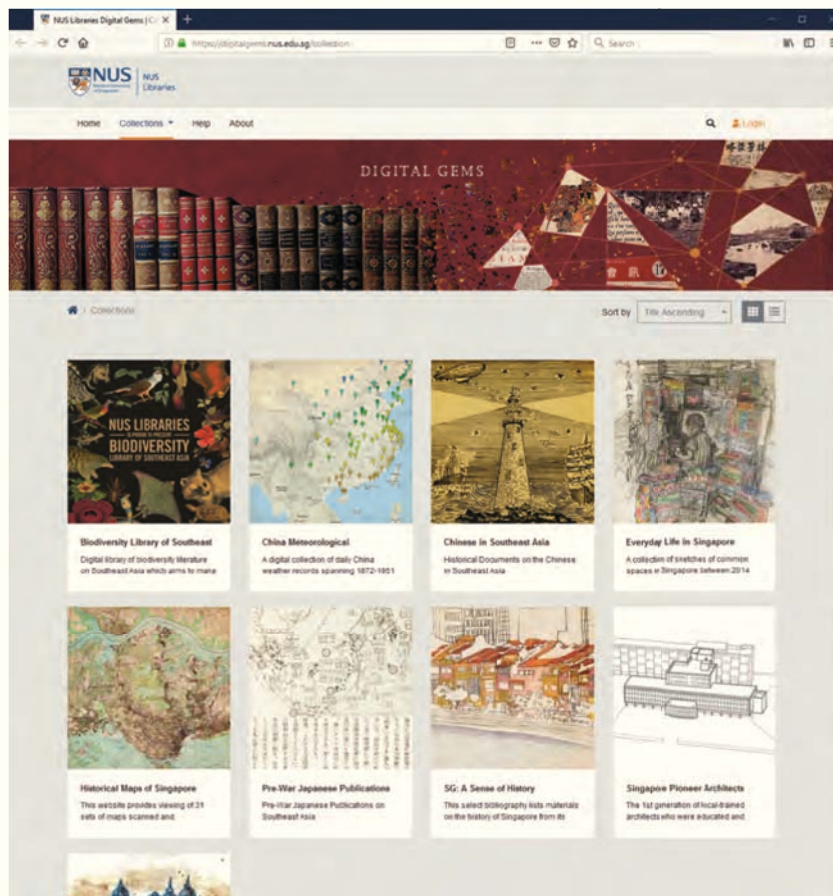
2017.3

The Digital Gems portal. The Biodiversity Library of Southeast Asia (BLSEA) project is part of the larger Digital Gems initiative of the National University of Singapore Libraries. This initiative includes resources that, although not directly pertaining to natural history, nonetheless provide a historical context for its study

Archibald Hepburn (no dates), a naturalist from Inverness, Scotland, makes this observation in the context of the distribution of migrating birds. Nonetheless the importance of “[a]ccess to a good library” applies to all of natural history, and in particular its modern sub-fields of biodiversity and zoology. The Biodiversity Library of Southeast Asia (BLSEA) aims to provide such access. A project by the National University of Singapore Libraries (NUS), the aim of the BLSEA (pronounced “bell-sea”) is to digitise out-of-copyright natural history materials and to make them accessible over the internet. The library also works with publishers to get approval to digitise in-copyright works. The Museum collaborates in this initiative by contributing materials from its own extensive holdings and by identifying suitable materials that the NUS Libraries already hold. The BLSEA portal goes live in May 2017.



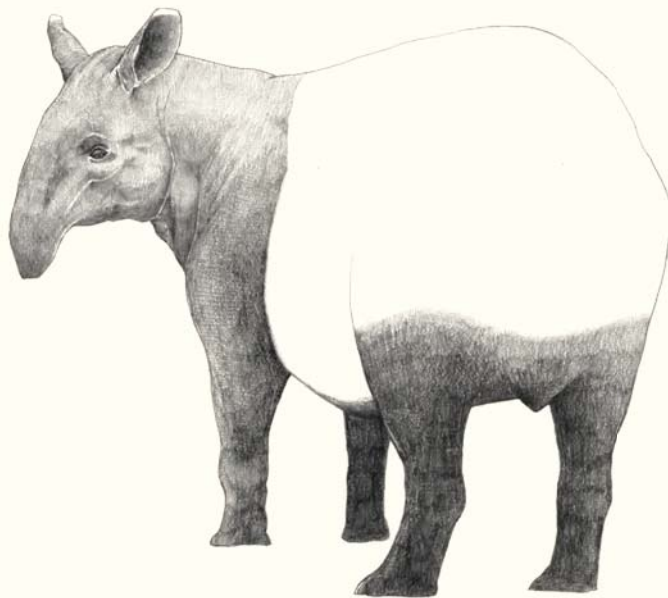
2017.3



“We are all born natural historians. What happens next is up to chance,
environment, and the circumstances of our particular narrative.”

— John G. T. Anderson

19.1





Notes and Sources

The notes to the 18 introductory sections are given first. The notes to each of the years 1819–2018 follow thereafter.

- 1 Farquhar's manuscript is dated 29 January 1816 (Farquhar, 1820: 417). Information on the tapir, Farquhar, Raffles, Diard and Duvaucel is from Bastin (1999: 21; 2010: 26, 27) and M. E. Y. Low (2019). The notes on the entries for the years 1823 and 1824 contain information on Diard and Duvaucel. Cuvier's (1819) account and illustration are dated March 1819 based on date at foot of one of the pages (Cuvier, 1819: 2). Desmarest (1819: 458) first uses the Latin *Tapirus indicus* and refers to Cuvier (1819). Desmarest's (1819) entry is dated September 1819 (Evenhuis, 1997: 198). The quote on the "hippopotamus" or "kūda ayer" comes from Marsden (1811: 116, 117). Information on the 'Yíngyā shènglǎn' from Groeneveldt (1879), W. G. Maxwell (1909) and especially Mills (in Ma, 1970). Identification of the "divine stag" from Groeneveldt (1879: 75). Groeneveldt's Chinese name and biographical information from Kuiper (2019: 993–1000). Additional information on Ma Huan, Zheng He, Chinese voyages and accounts from Dreyer (2007). The usurpation of the name 'Mó' for the tapir is from Harper (2013). One additional tidbit of information on Wahlfeldt is to be found in Silverberg (1966: 155), who writes: "In 1772, an English explorer named Wahlfeldt [sic] saw a 'two-toned rhinoceros' on the island of Java, and his drawing showed it with a long snout. It looked just like a South American tapir. Cuvier shrugged this off in 1800 by saying that Wahlfeldt [sic] had seen a young rhinoceros, and must have imagined the snout". Unfortunately Silverberg does not provide any source for the information.
- 2 The name "John Company" is from Barrow (2017). The suggestion in the 'Economist' that the modern world begins with the East India Company is from Anonymous (2011: 111–113). The company brings with it great upheaval and turmoil as well. Barrow (2017) provides an overview of the company's history and legacy. The quote is from Conniff (2010: 69). Conniff (2010) provides an excellent summary of natural history collectors and the often death-inducing lengths that they go to in search of new species. He maintains an online resource that is entitled 'The Wall of the Dead: A Memorial to Fallen Naturalists'. All other information is from the respective entries to the years in Part 2.
- 3 Quotes in this introductory section are from Jackson (1968: 7), Purcell (1967: 89) and Kwa et al. (2009: 132). Purcell (1967) and Jackson (1968) provide information on agriculture and land use in early Singapore. Other quotes are from the respective entries to the years in Part 3.
- 4 Rice's (2010) book that is subtitled, "A Visual Celebration of Ten of the Greatest Natural History Expeditions", provides an excellent discussion on ship-based voyages and natural history. The remark on the role of surveys and telegraph cables is from Rice (2010: 290). All other information is from the respective entries to the years in Part 4.
- 5 All quotes and information are from the respective entries to the years in Part 5.
- 6 Information on the British Museum (Natural History) is from Thackray & Press (2009). Ratcliff (2016) discusses the East India Company's Museum. The quote on London is from Emerson (1875: 304). All other information is from the respective entries to the years in Part 6.
- 7 All quotes and information are from the respective entries to the years in Part 7.
- 8 All quotes and information are from the respective entries to the years in Part 8.
- 9 All quotes and information are from the respective entries to the years in Part 9.
- 10 All quotes and information are from the respective entries to the years in Part 10.
- 11 All quotes and information are from the respective entries to the years in Part 11.
- 12 The quote in the caption to Fig. 12.1 is from K. W. Johnson (2018: caption to top figure on the thirteenth unnumbered page of figures). In his review of Johnson's book, Kemp (2018: 500) writes that "The Feather Thief" is an uncommon book. It could have been about nothing more than an ill person who did an odd thing. But it's not. It entertains while it educates. It informs and enlightens. It's a heist story that manages to underline the enduring and continuing importance of natural history collections

and their incredible value to science. We need more books like this one". All other information is from the respective entries to the years in Part 12.

- 13 All quotes and information are from the respective entries to the years in Part 13.
- 14 All quotes and information are from the respective entries to the years in Part 14.
- 15 Tweedie's comment on coming "through apparently without any injury to my health" during World War II is from a letter to Herre (see notes on the entry for the year 1939). Discussion on "[t]he relation of a proposed Malayan University to the Raffles Museum and Library" from Tweedie (1948: 1, 2) and K. Y. L. Tan (2015: 111, 112). The annual report that is referred to in the caption to Fig. 15.1 is Tweedie (1951). All other information is from the respective entries to the years in Part 15.
- 16 All quotes and information are from the respective entries to the years in Part 16.
- 17 All quotes and information are from the respective entries to the years in Part 17.
- 18 All quotes and information are from the respective entries to the years in Part 18.

Epilogue Quote from Anderson (2013: xi). The subtitle of Anderson's book is "A History of Natural History", and it certainly delivers on the promise. Anderson (2013: 257, 58) concludes that "[i]n writing this book, I have had the opportunity to read the words and enjoy the pictures produced by some truly remarkable men and women, whose lives and work span at least three millennia. I have encountered many heroes and the occasional villain, and there are few whom I did not wish to meet, and many with whom I would love to share time with in the field. Cultures, languages, and technologies all change; empires have risen and fallen; entire belief systems have flowered and died, but somehow across all this expanse of time, some commonalities exist. There is something remarkably persistent in the joy of seeing a species for the first time. There is a real shared magic in the still moment when one is witness to a particular behavior, or finds the flower unlooked for beside the spring unexpected. Even in my most disheartened moments, I believe that there will always be naturalists and natural history. We have lost a great deal. None of us will ever again experience the 'living storm' that Leopold calls the flights of the passenger pigeon (he himself never saw its glory days), but we can still rejoice in what we have, marvel over what our predecessors did and learned, and strive to make sure that our children will have something of wonder to pass on. ...".

- 1819 Quote from Hardwicke (1822a: 586, 587). The minutes of the meeting of 13 November 1819 are reported as Hardwicke (1820a; 1820b). The 'Asiatick Researches' article is published as Hardwicke (1822). It is not known if Hardwicke is with Raffles when the Neptune's Cup sponges are collected. Additional information on sponge in S. C. Lim et al. (2012) and M. E. Y. Low (2012). Biographical information on Hardwicke from Dawson (1946) and Wheeler (1998).
- 1820 Quote from T. S. Raffles (1821b: 174, 175). Description of Dugong is read before the Royal Society on 18 May 1820 (T. S. Raffles, 1821b: 174). Further Dugong accounts and illustrations from Home (1820; 1821). Biographical information on Raffles from Barley (1999), especially Bastin's (1999) chapter 'Raffles the Naturalist'. See also M. E. Y. Low (2019). Collecting in Singapore in June 1819 from Bastin (1990a: 3) and Wells (2013: 238). See also notes on the entry for the year 1819. Perceptively, Barley (1999: 14) writes that "it is natural history that provides the model by which we may understand all the other Raffles collections".
- 1821 Quote from Horsfield (1821: unnumbered text to *Mydaus javanensis* plate). Horsfield as director of East India Company museum (Ratcliff, 2016: 505). Information on Green Broadbill (Wells, 2013) and Sunda Stink Badger (P. K. L. Ng, 1995a). Date of *Mydaus javanensis* painting from Bastin (1990b: 75). Biographical information on Horsfield (Bastin, 1990b).
- 1822 Quote from Munshi Abdullah (1955: 149). Information on 'jawi-jawi' tree (Skeat, 1900: 154, 155, 205). Biographical information on Farquhar from Bastin (2010) and N. H. Wright (2017).
- 1823 Quote from Raffles (in S. Raffles, 1830: 715). Information on Diard from Fransen et al. (1997: 227–229). See also Bastin (1999: 21) and Pilon & Weiler (2011: 24–29) on the reasons for Raffles falling out with the two Frenchmen. Genetics of Sunda Clouded Leopard are discussed by Kitchener et al. (2006) and Buckley-Beason et al. (2006).
- 1824 Quote from Anonymous (1826b: 60, 61) (our translation). Information on Duvaucel from Anonymous (1825; 1826b), Fransen et al. (1997: 228) and Pilon & Weiler (2011: 24–29). See also notes on the entry for the year 1823.
- 1825 Quote from Anonymous (1845: 47). Biographical information on Montgomerie and on connection with gutta percha from Anonymous (1923a: 7).
- 1826 Quote from Platt (1843: 63). Information on East India Company Museum (see Ratcliff, 2016). Information on Straits Settlements from Langdon (2013: 329).

- 1827** Quote from Crawford (1828: 297). Information on Wallich, Crawford and the 'John Adam' from Bastin (2019: 310).
- 1828** Quote from Crawford (1828: 424). Information on Crawford from Ang (2014: 14, 15).
- 1829** Quote from Wallich (in Hanitsch, 1913a: 48). The date of not later than 21 January 1823 for the creation of first Botanic Gardens is based on a letter from Raffles to Marsden (see S. Raffles, 1830: 533, 535). Date of closing of first Gardens on 30 June 1829 from Hanitsch (1913a: 48).
- 1830** Quote from Bennett (1834: 142, 147, 168). Departure from Singapore on 18 November 1830 (see Bennett, 1834: 149). Information on Bennett from Etheridge (1916).
- 1831** Quote and date of first reported incident from Anonymous (1831: 3). Barnard & Emmanuel (2014) provide a thorough discussion of tigers in Singapore.
- 1832** Quote from Anonymous (1826a: 386). Wheeler (1998) provides information on the 'Illustrations of Indian Zoology' (Gray, 1830–1832; 1832–1835), including its history, authorship and dates of publication (including that of the plate of the Shore Pit Viper).
- 1833** Quote from Anonymous (1833: 3). Additional historical accounts on earthquakes from Zürcher & Margollé (1868). A listing and analysis of historical earthquakes from the region can be found in Pan & Sun (1996).
- 1834** Quote from Chou (2014: 219). Date of 22 April 1834 for end of monopoly is from Anonymous (1836: 256) (see also Nish, 1962: 76). For discussions on the history and geopolitics of tea, see Moxham (2009) and Rappaport (2017).
- 1835** Quote from 'Agricola' (1835: 2). Information on drought (see notes on the entry for the year 1858).
- 1836** Quote from Buckley (1902: 310). Identification of Buckley's (1902: 310) "Jackall" with feral dogs from Kelvin K. P. Lim (in litt., 2018).
- 1837** Quote from de La Salle (1852: 303) (our translation). Information on 'La Bonite' in Singapore from Pilon & Weiler (2011: 34, 36).
- 1838** Quote from T. S. Raffles (1821a: 247). Date of 1 August 1838 for publication of Martin's (1838) article is from Evenhuis (2003: 12). Information on Martin from Parker (1864: 536) and Desmond & Moore (2009: 158 ff.).
- 1839** Quote from Dubouzet (in d'Urville, 1844: 274) (our translation). New species of molluscs are first described by Hombron & Jacquinot (1847–1848), the illustrations and the Latin names in the captions make these names valid. These captions do not include information on the origins of the specimens. The text to the illustrations is written by Rousseau (1854) and this work lists the localities from which the specimens are collected. Pilon & Weiler (2011: 36) provide information on the visit of the ships to Singapore. Date of visit of 27 June 1839 from d'Urville (1844: 80).
- 1840** Quote from Woodward (1861: 298). Information on Cumings' arrival in London from Dance (1980: 489). Information on Cumings' specimens: 82,992 shells (Cranbrook & Mann, 2016: 39) and 130,000 plants (Dance, 1986: 120). Biographical information on Cumings from Dance (1980; 1986). The title "Prince of Shell Collectors" is from Dance (1986: 120).
- 1841** Quote from Anonymous (1841: 3).
- 1842** Quote from Hamilton (1892: 55). Arrival of 'Ex. Ex.' in Singapore on 19 January 1842 from Wilkes (1844: 390). Corals from Singapore are described and figured in Dana (1846; 1849).
- 1843** Quote from Adams (1848: 232, 233). Arrival of 'Samarang' at Singapore on 19 June 1843 from Belcher (1848: viii). Information on Adams from Coan & Kabat (2017: 51) and from White from Clark & Presswell (2001: 149, 150). Only one species of crab from Singapore is described in Adams & White (1848–1849). This is *Chlorodius pilumnoides* Adams & White, 1848 (pl. 9, fig. 3). This species is currently *Pilodius pilumnoides* (Adams & White, 1848).
- 1844** Quote from Itier (1844: 205, 206) (our translation). Date of Itier's arrival in Singapore on 3 July 1844 from Massot (2015: 323). Information on photograph at temple from Massot (2015: 322). Information on Itier from Gimon (1981), Pilon & Weiler (2011: 38, 39) and Massot (2015). The Langrené mission is discussed in Pilon & Weiler (2011: 36–38). On the history of the daguerreotype, see Lowry & Lowry (2000: 12).
- 1845** Quote from Jukes (1847: 217, 218). Dates of Jukes' arrival in Singapore on 5 July 1845 is from Jukes (1847: 214). The crab is first validly described in White (1847b) but White (1847a: 40) states that it is collected by Cumings (see entry for 1840).
- 1846** Quote from Cantor (1846: 193). Information on Cantor from Adler (2007: 65, 66, portrait) and Turner (2015: 30, 31). The King Cobra is first described in Cantor (1836).
- 1847** Quote from Traill (1847: 236). Traill's (1847) paper is published in December 1847 based on a review in Anonymous (1847: 1). Information on Traill from M'Intosh (1887: 419).
- 1848** Quote from Keppel (1853: 11, 12). Date of 'Maeander' in Singapore on 20 May 1848 from C. D. Cowan (1965: 233).

- 1849** Quote from Oxley (1849: 594). Information on Oxley from Teo (2014). Information on flying foxes provided by Sheema Aziz of Rimba (in litt., April 2019).
- 1850** Quote from Logan (1849: 19). Date of laying of foundation stone for Horsburgh Lighthouse on 24 May 1850 from McNair (1899: 61). Information on Logan from Chia & Tan (2009).
- 1851** Quote from Ayrton (1897: 17837. A historical account of the early developments of submarine telegraphy are from Bright (1898) and see also Montovani (2017). Godfrey (2018) provides an excellent analysis of the history and geopolitics of gutta percha. Information on the image of the Kayan men is from Godfrey (2018: 3).
- 1852** Quote (and date) from Pfeiffer (1856: 107). First account of eating snake is found in Pfeiffer (1852: 124). Information on Pfeiffer's natural history collections (and their sale) from Baker (1995) and Heidhues (2004: 292, 294).
- 1853** Quote from Hawks (1856: 131). Date of arrival in Singapore on 25 March 1853 from Hawks (1856: 124). *Tudivasum inerme* is just one species from "Singapore" for which the locality is problematic. This species is described by Angas (1878) and the question of its geographical origin is discussed in Smith (1887). The standard reference on the Meiji Restoration is Beasley (1972 and later revised editions), but see also the review of this work by Bendix & Harootunian (1974).
- 1854** Quote from Marchant (1916: 35). Date of arrival in Singapore on 18 April 1854 from van Whye & Drawhorn (2015: 4). Van Whye & Drawhorn (2015: 3) give 125,660 as the total number of specimens that are collected by Wallace, although Cranbrook & Mann (2016: 15) give 125,600. Beetles that are collected in Singapore in a month from Wallace (1876: 343).
- 1855** Quote from Wallace (1869a: 58). First description of Rajah Brooke's Birdwing is read by Stevens at the 2 April 1855 meeting (see p. 87 of same vol. as Wallace, 1855). Information on *Nepenthes rajah* from J. D. Hooker (1859).
- 1856** Quote from van Whye & Drawhorn (2015: 28). Date of arrival of Ali and Wallace in Singapore on 17 February 1856 from van Whye & Drawhorn (2015: 6). Suggestion that Ali collects the majority of Wallace's bird specimens is from van Whye & Drawhorn (2015: 23, 24).
- 1857** Quote from Jagor (1866: 58) (our translation). Information on Jagor, as well as on the names *Euprepes punctatostriatus* and *Lygosoma bowringii* is from Bauer (2016: 99). Jagor's first trip to Southeast Asia takes place from 1857–1861 (see Bauer, 2016: 99). The species of termite is identified by Jagor (1866: 62).
- 1858** Quote from Mackenzie (1859: 3). Chia & Chew (2016) provide information on Tan Kim Seng. Information on reservoirs, drought and water supply from Yeoh (2003) and Zaubidah Mohamed (2009).
- 1859** Quote from Barnard (2016: 5). Date of announcement on 24 December 1859 from Anonymous (1859: 2).
- 1860** Quote from Jackson (1968: 126). Plantation data from Buckley (1902: 406). Information on nutmeg disease from Collingwood (1867), Jaffrey (1860), Ridley (1891a) and Jackson (1968: 125–127).
- 1861** Quote and date from Castelnau (1861b: 7649). First record of *Myripristis amaena* (Castelnau, 1873) from J. K. Y. Low (2013: 32).
- 1862** Quote from von Martens (1866: 204). Information on von Martens from Kobelt (1905: 171–173) and Adler (2012: 118, 119). Date of 16 March 1862 when von Martens leaves the 'Thetis' expedition is from Kobelt (1905: 172).
- 1863** Quote, date and additional information on Dugong from Anonymous (1863: 3).
- 1864** Quote from Hanitsch (1905: 22). Information on specimens of Cat-eyed Gecko from Günther (1864: 117, 118).
- 1865** Quote from Cameron (1865: 160). Information on gambier from Ridley (1899). The 'Straits Times' report that is quoted is Rigg (1855: 5). Falconer (1987: 190, pl. 106) dates at least one of the gambier-processing photographs that are reproduced to the 1890s.
- 1866** Quote from Beccari (1904: 85). Information on Beccari from Lo Priore (1922) and I. H. Burkill & Moulton (1921: 166). Date of second visit to Singapore from Beccari (1904: 85) and I. H. Burkill & Moulton (1921: 166). Information on Titan Arum from J. D. Hooker (1891).
- 1867** Quote from Kwa et al. (2009: 2, 3). Information on the East India Company's museum from Ratcliff (2016) and on the Natural History Museum in London from Thackray & Press (2009). Date of 1 April 1867 for change in administration of Singapore is from Turnbull (2009: 89).
- 1868** Quote from Collingwood (1868: 288–290). For information on Collingwood, as well as his and Tweedie's observations on the Sand Bubbler Crab, see M. E. Y. Low & Ng (2011).
- 1869** Quote and date from Pringle (1878: 519). Information on Pringle from Hearnshaw (1990: 95). Rieppel (2017)

- discusses the ‘Leviathan’, ‘Hydrarchos’ and *Basilosaurus* in detail. The additional quote from William Crafts is from Rieppel (2017: 139).
- 1870** Quote is from Hamilton (1892: 53, 54). Biographical information on Hamilton, including his stay in Singapore, can be found in Hamilton (1892). Information on tigers from O’Dempsey (2014: 26–28, fig. 1.3).
- 1871** Quote from Saville-Kent (1871: 284). Information on Saville-Kent (including his change of surname) from Esteban et al. (2002) and McCalman (2013: 140–163). We use Saville-Kent herein for convenience.
- 1872** Quote from Anonymous (1924a: 6). Information on Shelford from Poulton (in Shelford, 1916: xiii–xxii).
- 1873** Quote from Barnard (2016: 93). Additional information on aviary from I. H. Burkill (1918b) and Barnard (2016: 90, 93).
- 1874** Quote from Hudson & Boylan (2013: 52, 53). Information on Pharmaceutical Society’s museum and Collins’ time there, see Hudson & Boylan (2013: 52, 53). Information on Collins from Thomas (2002). Dates of appointment and dismissal of Collins from Hanitsch (1921: 544, 550). Date of Museum beginning on 28 March 1874 from K. Y. L. Tan (2015: 13).
- 1875** Quote from Kottelat (2011: 11). Information on Bleeker from Fransen et al. (1997: 212, 213) and Kottelat (2011: 11). *Ctenogobius* (now *Amoya*) *gracilis* is first named in Bleeker (1875: 127).
- 1876** Quote from Reith (1892: 43). Information on menagerie from Anonymous (1876: 2) and Barnard 2016: 92–97).
- 1877** Quote from Anonymous (1877b: 13). Information on Dennys from K. Y. L. Tan (2015: 20–23, 26, 27, 30, 31). Denny’s appointment on 3 August 1877 from Anonymous (1877a: 3) who writes that it takes place “yesterday”.
- 1878** Quote from Collins (1878: no page). Information on pepper-gambier co-cultivation from O’Dempsey (2014: 22). Land area being converted from Restalrig (1843: 3).
- 1879** Quote and date of arrival in Singapore from Bird (1883: 196, 198). On the start of her travelling, Stoddart (1906: 28) writes that “[t]he doctor urged a sea-voyage, and in the early summer of 1854 ...”. On her marriage to and information on her husband, John Bishop, see Stoddart (1906: 143, 146, 175).
- 1880** Quote from Braddell (1934: 123). Background on Singapore wildlife trade from F. L. P. Tan (2014). See notes on the entry for the year 1986 for information on CITES.
- 1881** Quote from Anonymous (1881: 6). Last known race is in 1910 (Anonymous, 1910: 2).
- 1882** Quote from Hanitsch (1921: 552). Information on Knight from Hanitsch (1921: 551, 552). Information on the Museum during this period from Hanitsch (1921: 552) and K. Y. L. Tan (2015: 39).
- 1883** Quote from Reeve (1861: 393). Anonymous (1884b: 101) writes that on display at the International Fisheries Exhibition of 1883 is: “The Great Oyster from Singapore, ‘Tridacne Gigantea’, measuring 3 ft. 4 in. by 2 ft. 2 in., and weighing 3 cwt. 3 qrs. 14 lbs. This is believed to be the finest known specimen, and has been in Rule’s Oyster Warehouse upwards of forty years”. Information on the exhibition and its opening date from Anonymous (1884) and Whymper (1884).
- 1884** Quote from Weld (1884: 9). History of the building from K. Y. L. Tan (2015: 35, 38). Biographical information on Weld from Lovat (1914: xxxvi, 404). The ‘Straits Times’ article announcing “new public buildings” is Anonymous (1884a: 9).
- 1885** Quote from Hornaday (1885: 298). Information on Hoo Ah Kay and donation of the Narwhal tusk, see Ee (2014). Information on Hornaday from Lacey (1904).
- 1886** Quote from Anonymous (1886: 1). Additional information on crocodiles in Singapore from Pocklington & Perez (2018). Data on human fatalities due to crocodiles from K. Pocklington (unpub. data). Data on human fatalities due to tigers from C. K. W. Tan et al. (2015: 3113).
- 1887** Quote from Liu (1987: 9). Additional information on building from Liu (1987) (see also the notes on the entry for the year 1884). Dates of postcards and images Cheah (2006: 176, fig. 296) and K. Y. L. Tan (2015: 59, fig. 3.8).
- 1888** Quote from Moulton (1920: 561). Limits are first laid down in Davison (1889: 36). For information on Davison and Chasen, see respectively, notes on the entries for the years 1893 and 1940. Information on Allen from G. M. Allen from Tyler (1943).
- 1889** Quote from Ridley (1889: 1). On the ‘Coco-nut Tree Preservation Ordinance’ (see Curtis, 1890: 68; Ridley, 1892: 176).
- 1890** Quote from Ridley (1891b: 66). For information on menagerie at the Botanic Gardens, see Barnard (2016) and notes on entries for the years 1873, 1876, 1905.
- 1891** Quote from Davison (1892: 37). Dermestid beetle problem discussed in K. Y. L. Tan (2015: 146).
- 1892** Quote from Hellier (in Hanitsch, 1906: 21). Information on the whale from Hanitsch (1906: 20, 21; 1908: 13,

- 14) and K. Y. L. Tan (2015: 48, 49). Information on Hervey from van Steenis (1950: 227) and Blagden (1911). Taxonomy of Blue Whale is discussed in Sears & Perrin (2018: 111).
- 1893** Quote from Sharpe (1906: 337). Information on Davison from Anonymous (1893: 478–480), Liu (1987: 24) and K. Y. L. Tan (2015: 39–50).
- 1894** Quote from Quin (1895: 15). Information on de Haviland from Desmond (1994: 326) and for Quin from Anonymous (1896: 2). Information on Museum from K. Y. L. Tan (2015).
- 1895** Quote from Archer (in Walker, 1887: 108). Archer is in Singapore during the period 1879–1883 (see Walker, 1887: 108). Information on Archer brothers from Reade (1892: 113–116), Dean (1936: 241, 242), Woodward (1963: 3–14), Dance (1986: 204). Date of publication of two species of *Tornatina* from Coan & Kabat (2017: 102 [Annex 1])
- 1896** Quote from Flower (1897: 908). Flower's observations on the Banded Bullfrog in Singapore take place in April 1896 (see Flower, 1897: 909). Information on Flower from Hindle (1946) and Moore & Warr (2009).
- 1897** Quote from Curtis (1901: 40). Information on Ridley from Salisbury (1957) and Barnard (2016: 66). Names “Rubber Ridley” and “Mad Ridley” from Tully (2011: 188). First Rubber seedlings in Singapore in August 1876 (see Drabble (1973: 3). First publication on rubber tapping and growing is Ridley (1897) according to Drabble (1973: 7, 8). Ridley (1897) is published in June (title-page).
- 1898** Quote from Hanitsch (1900: 30). Bedford and Lanchester arrive in Singapore in October 1898 and leave in August 1899 (see Anonymous, 1900: 9). Information on Singapore visit from Bedford (1900a: 444) and Lanchester (1900a: 249; 1900b: 719). Information on Bedford from Anonymous (1900: 9; 1901: 280). Information on Belcher's Lancelet from Y. L. Lee et al. (2016: 128). Quote on Belcher from Gray (1847: 35).
- 1899** Quote from Hanitsch (1899: 12). The date of the postcard is handwritten on it.
- 1900** Quote from Owen (1921: 380). Information on Owen is from an ongoing project by one of us (KP).
- 1901** Quote from Hellier (1902: 4). Lim co-authors a paper on toxicity in fishes (see B.-K. Lim & Boddaert, 1900). Information on Lim Boon Keng from Song (1923) and Ang & Lim (2015).
- 1902** Quote from Fritz Sarasin is from postcard (Fig. 1902.1 of this volume) (translation by H. Rothweiler, H. Wagner, N. Wagner and J. Peuker). Connection between IUCN and Sarasins from Anonymous (1948), Jepson & Whittaker (2002) and Mohammad Umar (2017). Information on Basel Zoological Gardens and Hagmann from Strehlow (2001). Omar Road is no longer extant (see Y. P. Ng, 2018: 345).
- 1903** Quote from Woodroffe & Berry (1994: 3). Date of transfer of Cocos (Keeling) Islands to Singapore is given in Ordinance 84 in Anonymous (1920: 95, 96). Information on Cocos (Keeling) Islands from Gibson-Hill (1950), Woodroffe & Berry (1994) and Anonymous (2015a).
- 1904** Quote from Alfred (1966: 9, 10). Information on Duncker from Klatt (1953). The name “Stamp Fish” from S. K. Tan & Lim (2015: 34). On the material of *Rasbora heteromorpha* (see Alfred, 1963: 166).
- 1905** Quote from Barnard (2016: 112). Information on menagerie from Barnard (2016: 110–112) (see also notes on the entries for the years 1873, 1876, 1890).
- 1906** Quote from Hanitsch (1907: 5). Postcard is dated 1908 but photograph that is used is extant from 1892 (see Anonymous, 1982b: 44, 45, fig. 92). Information on Scrivenor from Twidale (2009) and on Newton from Woodward (1926). Singapore localities known to contain fossils from K. W. Lee & Zhou (2009: 76–81). Regarding Mount Guthrie, Scrivenor (1924: 3) states that it is a “a hill now cut away that was situated off the Anson Road, near the entrance to the docks ...”.
- 1907** Quote from H. M. Burkill (1960: [1]). Date of Tan Kah Kee's estate from Drabble (1973: 41). Information on Tan Chay Yan and Tan Kah Kee from D. Sutherland (2009), Yong (2014: 45) and B. Tan & Wee (2016). Postcard is dated to ca. 1915 (see Anonymous, 1982b: 120, 121, fig. 309).
- 1908** Quote from Hanitsch (1908: [ii]). Date of publication of December 1908 for Hanitsch (1908) is from Hanitsch (1910: 4).
- 1909** Quote from Ma (in Groeneveldt, 1879: 75). Etymology of “divine stag” from W. G. Maxwell (1909: 97–99) (who is brother of C. N. Maxwell, see entry for 1913).
- 1910** Quote from Brathay (1910: 4). Information on extension to building from K. Y. L. Tan (2015: 62). Information on tiger at entrance is from Hanitsch (1908: 4).
- 1911** Quote from Gray (1848: 23, 24). Biographical information on Low from C. F. Cowan (1968). On the first rubber trees in Malaya in Perak grown by Low (see Drabble, 1973: 4). Information on alcohol consumption in the Pencil-tailed Treeshrew from Wiens et al. (2008). Hanitsch (1912b: 5) states that the specimen “was sent

to the Museum for identification, but the owner could not be persuaded to present it to the Museum, and the specimen found its way to the United States”.

- 1912 Quote from Hanitsch (1912b: 9). Knight's appointment as chief taxidermist from Hanitsch (1903: 27). On his appointment as assistant curator, Hanitsch (1913b: 1) writes: "... but from July 1st it was fortunately found possible to procure again the services of the former Taxidermist, Mr. Valentine Knight, who had resigned in May, 1911, and who now rejoined in the capacity of Assistant Curator". Replicas of local fruits and vegetables from Hanitsch (1921: 563). See also notes on the entry for the year 1919.
- 1913 Quote from Hanitsch (1914: 5). Krishna Govinda Gupta is quoted in C. N. Maxwell (1921: 5). Additional quote in caption is from C. N. Maxwell (1921: 4). Charlton Neville Maxwell is the brother of W. G. Maxwell (see notes and entry to year 1909). Date of postcard is based on Cheah (2006: 148, fig. 241).
- 1914 Quote from Hanitsch (1919a: 2). For information on Knight and de Fontaine, see respectively, notes on the entries for the years 1912 and 1937.
- 1915 Quote from Distant (1915: 328). Notes on Distant and his collection from Anonymous (1922a) and Campion (1922).
- 1916 Quote from Munshi Ibrahim (1955: 75, 76). Singapore Durian is described by Ridley (1916). See also notes on the entry for the year 1866.
- 1917 Quote from Hanitsch (1918: 59). Information on the Mainland Serow specimen from Hanitsch (1918: 2; 1919).
- 1918 Quote from Saunders (1923: 113). Information on Saunders from K. G. Blair (1941).
- 1919 Quote from "The Onlooker" (1940: 8). Biographical information on Hanitsch from Carpenter (1940: 360), Anonymous (1940b: 8), Imms (1940: 360) and Arunasalam (2016). Information on Hanitsch's departure from Singapore aboard 'Marama' from Anonymous (1919: 4).
- 1920 Quote from 'A. H.' (1920: 12).
- 1921 Quote from Anonymous (1922b: 15). Information on formation of society also from Anonymous (1922: 15). Most sources give date of cessation as 1928, but the last known meeting is on 27 February 1930 (Anonymous, 1930a). Information on Allen from Anonymous (1929a: 5).
- 1922 Quote from Jarrett (1923: 73). Information on Giant African Snail from Mead (1961).
- 1923 Quote from Moulton (1922b: 20). Biographical information on Moulton from K. Y. L. Tan (2015: 70–77, 80). Moulton's October 1923 resignation date from Anonymous (1926: 371) and appointment as Chief Secretary of Sarawak from Anonymous (1923b: 11).
- 1924 Quote from Kloss (1926a: 56). Information on Karny from Anonymous (1965: 245) and on Kiah from Holttum (1983: 227). See also notes on the entry for the year 1957 for information on Kiah. Information on ethnographic material at the Asian Civilisations Museums from Onn (2009).
- 1925 Quote from Chasen (1925: 100, 101). The first specimens probably date from 1898, as Hanitsch (1900: 33) writes that "... a specimen of the Australian lizard *Egernia depressa*, discovered in a cargo of sandalwood at Tanjong Pagar, Singapore, presented by Mr. W. D. Wilson. It is noteworthy that a specimen of the same species was caught in the same locality two years ago".
- 1926 Quote from Kloss (1928b: 228). Information on Shellshear from Anonymous (1958: 453, 454), Gordon-Taylor (1958: 517, 518) and Kirk (1958: 643). It is known with certainty that parts from at least one orangutan are sent from the Raffles Museum to Shellshear (see Anonymous, 1929: 143) and are published in Shellshear (1927).
- 1927 Quote from P. K. L. Ng et al. (1999: 5). Expedition takes place from 24 April 1927 to 29 May 1927 (see H. M. Burkill, 1983: 100). Additional information on Tioman from Henderson (1930). Information on Henderson from H. M. Burkill (1983). Information on Ghous from H. M. Burkill (1959a: 336) (see also notes on the entry for the year 1957).
- 1928 Quote from Kloss (1928: i). Additional information on the 'Bulletin of the Raffles Museum' and successor publications in Ng et al. (1992), M. E. Y. Low et al. (2009) and M. E. Y. Low & Tan (2009).
- 1929 Quote from Owles (1984: 71). Date when Smedley joins the Museum from Kloss (1926: 233). Smedley participates in a session of zoology and fisheries during the Fourth Pacific Science Congress on 24 May 1929 (see Anonymous, 1930b: 303–305). John L. Shellshear is also present at the Fourth Pacific Science Congress and participates in a parallel session on anthropology on the same day as Smedley's (see Anonymous, 1930c: 307, 308).
- 1930 Quote from S. E. Tan (2006: 19). Information on post-1930 sightings of tigers can be found in Anonymous (1935a: 3) and other newspaper reports in 1935.
- 1931 Quote from Olds (1935: 471, 472). Additional quote from Berncastle (1850: 21, 22). Information on

Berncastle from Organ (2012: 302, note 13). Information on Lim Nee Soon and pineapples in Singapore from Cornelius-Takahama (2010), Dass (2017) and Wong (2018). The 'Report of Pineapple Conference' is published in 'Proceedings of the Legislative Council of the Straits Settlements for the Year 1931' (on pp. C214–C245). Quote on Singapore tinned pineapples from Anonymous (1906: 403).

- 1932** Quote from Smedley (1932b: 17). Information on this fish can be found in Smedley's two papers (i.e., Smedley, 1932a; 1932b).
- 1933** Quote from Anonymous (1934: 6). Information on 'The Cable' from Anonymous (1932: 126, 128), Haigh (1968: 123, 124; 1978: 123, 124). The "officiating curator" is Tweedie (see Chasen, 1934: 93). Information on wreck of 'The Cable' from Lettens (2016).
- 1934** Quote from Blair (in Orwell, 2010: 61). The additional quote on how "Collings was Cambridge" to Blair is from J. Sutherland (2016: 118), who also writes elsewhere in the same book that "[n]o book has been written about Collings, although he deserves one". John Sutherland (2016: 117, 118) also provides information on Collings, although the focus is on Blair. Date of Collings joining Raffles Museum from Anonymous (1935: 353). Clinnick & Lim (2017: 39–42) discuss the archaeological context of the trip that Collings and Williams-Hunt make to Pulau Ubin (see also notes on the entry for the year 1948).
- 1935** Quote from Anonymous (1954: 2). Biographical information on Van Kleef and on the history of the aquarium from Khoo (2008: 48–51). Van Kleef's desire that the bequest is used for "the embellishment of the town" is from Khoo (2008: 49). The date of 22 November 1935 when the decision is made for the locating of the aquarium at Fort Canning is from Anonymous (1935: 13). Information on the experts brought in to solve fish deaths from Anonymous (1954: 2). The successful breeding of anemonefish is from Anonymous (1984: 13).
- 1936** Quote from Kathirithamby-Wells (2005: 215). Additional quote on Wan Teh is from Hubback (1942: 657). Several articles on wildlife photography are written by Hubback (1939: 48–64; 1942: 656, 657). Information on Hubback from Pocock (1947: 358, 359) and Gullick (2008). Information on Wan Teh from Anonymous (1946: 3) and Anonymous (1962: 3). Wan Teh's date of birth estimated from Anonymous (1962: 3) "... 50-year old boatman Wan Teh bin Salleh". Relevant House of Commons discussions on King George V National Park are from Anonymous (1936a; 1936b).
- 1937** Quote from Anonymous (1937b: 15). Information on de Fontaine from Anonymous (1937a: 12; 1937b: 15). The

date of de Fontaine's retirement is from a manuscript by F. L. P. Tan and one of us (MEYL) that is forthcoming. The subspecies *Psittacula longicauda defontainei* is named by Chasen (1935).

- 1938** Quote from Wright (1950: 11). Costa-Pierce (2003: 74) writes that "[t]ilapia were 'discovered' in Asia—first in Java, Indonesia in 1938—and were hailed as a miracle ... Some scientists believe the Indonesian tilapia came from transfer by an aquarist in Singapore in 1938 (R. S. V. Pullin, pers. comm.)". Additional background information on Mozambique Tilapia from Costa-Pierce (2003). Information on introduction of the Mozambique Tilapia from Singapore to Fiji and Hawai'i from Balarin & Hatton (1979: 152).
- 1939** Quote from Gibson-Hill (1949: 133). Information on Herre from Higgins (1962) and Herre (1997). For information on Tweedie and Henderson, see respectively, the notes on the entries for the years 1946 and 1927.
- 1940** Quote from Anonymous (1940a: 13). Information on Chasen from Tweedie (1946, 1947), F. Tan (2013) and K. Y. L. Tan (2015: 90–92). Information on the HMS 'Giang Bee' from Gorelik (2013: 71–75) and K. Y. L. Tan (2015: 92). Date of publication of April 1940 for Chasen (1940) from Low & Tan (2009: 286).
- 1941** Quote from E. J. H. Corner (1981: 97). Information on Ngadiman and the Kelantan origin of Corner's macaques from H. M. Burkill (1959b: 337). Controversy of Corner as a Japanese collaborator from Anonymous (1982a: 16) and K. Y. L. Tan (2015: 94, 95). Parts of Dransfield's (1989) warm review of the third edition of Corner's 'Wayside Trees of Malaya' are also quoted in the text. Additional quote of "first apes in government service" from E. J. H. Corner (1981: 98). Two invaluable sources of information on Corner are E. J. H. Corner (1981) and J. K. Corner (2013). See also Mabblerley (1999).
- 1942** Quote from Simmons (in Brown, 1942: 160). Crouch (1969: 88, 1 pl.) is the first in a post-war series of letters to the 'Malayan Nature Journal' on the Changi Tree. His photograph also appears on the issue's cover. Information on Crouch from (Anonymous, 1939: 296). The second letter is from H. M. Burkill (1969: 33) who gives a date of February 1942 for the destruction of the tree. The third letter is by Cessford (1970). The fourth account is by Reid & Quaife (1970: 177). Information on Reid is from Nielsen (1987) and Anonymous (1988c: 109). The Changi Tree is identified as a Sepetir in 'Wayside Trees of Malaya' (E. J. H. Corner, 1952: 403, 404).
- 1943** Quote from Haneda (1955: 350). Biographical information on Haneda from (Buck et al., 1995: 323), K. Y. L. Tan (2015: 104) and Ancil (2018: 287–307). Haneda

becomes assistant director of Museum and then director after the Marquis retires in 1944 (see K. Y. L. Tan, 2015: 99, 100, 104). Haneda, Corner and Birtwistle made at least one excursion together to Pulau Sudong (see E. J. H. Corner, 1981: 110). Birtwistle also does work with Haneda on fish (see Ancil, 2018: 296). Information on Teutonia Club/Goodwood Park Hotel from Corfield (2011: 98, 99)

- 1944** Quote from E. J. H. Corner (1981: 121, 122). Information on and photographs of Birtwistle can be found in E. J. H. Corner (1981: 162, 163). Information on 'Shokuyō yasei dōshokubutsu' (Malay Military Administration, 1944) from Ifrah Iesa (in litt., March 2019). Information on Birtwistle and East Indian Company documents from G. Lee (2016: 44). Information on the Marquis from K. Y. L. Tan (2015: 100, 101, 104).
- 1945** Quote from Sheppard (1964: 34). Information on Christmas Island material at the Selangor Museum from Gibson-Hill (1947a: 6). History of the Selangor Museum from Gullick (2000: 168, 169, n. 39). Bombing of the Selangor Museum from Sheppard (1964: 32–34). Muzium Negara opens on 31 August 1963 (see Sheppard, 1979: 234; Zuraini Md Ali, 2015: 17). Information on Lee Kong Chian gift of murals from Sheppard (1979: 234) and Zuraini Md Ali (2015: 113).
- 1946** Quote from P. K. L. Ng & Yang (1989: 161). Tweedie's return to Singapore is reported in Anonymous (1946: 3) on 22 June 1946 which is a Saturday but states that "The following passengers arrived in Singapore by the 'Empress of Australia' on Thursday from the United Kingdom". The previous Thursday is 20 June 1946. Also K. Y. L. Tan (2015: 106, 232, n. 41). Information on Tweedie during wartime from Croft (2016: 7, 8), including "It is interesting to note that despite all his privations as a POW, Michael Tweedie never lost his love of nature, and is recorded as listing all the butterflies he saw on his first walk outside the camp gates when released.". Sinking of 'Kamakura Maru' on 28 April 1943 from Lockwood (1951: 89). Biographical information and list of publications by Tweedie can be found in P. K. L. Ng & Yang (1989) and P. K. L. Ng (1995).
- 1947** Quote from Gibson-Hill (1947b: 50, 51). Information on earliest maps of Christmas Island from Tent (2016). Information on Gibson-Hill from Hodgson (1965). Volume 18 of the 'Bulletin of the Raffles Museum' that is dedicated to the fauna of the island is published in October 1947 (see Low & Tan, 2009: 286). Information on extinction of rats from Green (2014). The same paper also discusses the link between Maclear's Rat and the

Christmas Island Red Crab. Information on Christmas Island Red Crab migration and on David Attenborough from Davie & Ng (2012: 17).

- 1948** Quote from Williams-Hunt (1948: 104) that is published in June 1948. Williams-Hunt also publishes another paper on "air-photographs" in 1949. Information on Williams-Hunt from Bradford (1953), Fagg & Underhill (1953) and Moore (2009). Moore (2009) presents a summary of the Williams-Hunt collection of photographs (see also Periasamy, 2009). Visit by Williams-Hunt to the Raffles Museum in December 1950 from Tweedie (1951: 2). See also notes on entry for the year 1934. Appointment as acting director of temporary museum in Selangor from Ali (2016: 79). Biographical information on Hislop from Macpherson (1992: 6). Additional quote on fate of *Charopa lafargei* and on Gunung Kanthan from Vermeulen & Marzuki (2014).
- 1949** Quote from Tweedie (1948: 1). Background on University of Malaya from B. T. G. Tan (2017: 77). The Singapore division of the University of Malaya becomes the University of Singapore in 1962 (see B. T. G. Tan, 2017: 78). Information on Tweedie's vision of the Museum and university from Tweedie (1948) and K. Y. L. Tan (2015: 111, 112).
- 1950** Quote from Anonymous (see note that is reproduced as Fig. 1950.3 herein). Information on the King Cobra is from this note and from Tweedie (1951: 6, 1 pl.). Additional quote from the 'Straits Times' (Anonymous, 147: 7).
- 1951** Quote from Wolff (1956: 273). Date of May 1951 for visit of the 'Galathea' from Tweedie (1952: 2). Biographical information Pickford from Brown (1994: 16, 17). Account of 'Galathea' expedition from Bruun et al. (1956).
- 1952** Quote from Foenander (1952: 177). Foenander (1952: 176) describes the Malayan Tapir as follows: "The hackneyed phrase, 'poor dumb creature', cannot but be most applicable to this of all animals, for, as far as is known, it is mute. Sir George Maxwell who has left the only record of a tapir hunt in Malaya, mentioned this peculiarity, and though frequently disturbed during the hunt it did not make a vocal sound to indicate its indignation at the interference. Moreover, when finally shot and killed, not a sound was uttered though one would have expected it to do so on the sudden infliction of pain. Peacock, on the other hand, mentions that he has not heard the shrill squeaks of the only sounds this animal is said to utter. A very queer animal indeed". Biographical information on Foenander from Anonymous (1974b: 249). According to Kathirithamby-Wells (2005: 218, n. 13), "Foenander joined the Malayan Forest Service in 1920 as a Ranger,

worked largely in Pahang and, in 1946, became Senior Asst Conservator of Forests.”. See also K. Y. L. Tan (2015: 109–111) on Foenander’s Seladang heads.

- 1953** Quote from Tweedie (1953: foreword). Tweedie’s ‘Snakes of Malaya’ being a bestseller and “standard reference” is from K. Y. L. Tan (2015: 114).
- 1954** Quote from Hall et al. (2014: 20). All information on the Nature Society (Singapore) its predecessors and activities is from Hall et al. (2014), including: ‘Malayan Nature Journal’ and Shebbeare (p. 6), on helping keep the Raffles Museum collection together (p. 20), split from Malayan Nature Society on 28 October 1991 (p. 32).
- 1955** Quote from Crane (1975: xxi). Crane (1975: 3) also writes that “[a]ny human being who finds a suitable piece of warm shore, sits down, keeps quiet, and watches fiddler crabs must be impressed”. Crane and Beebe come to Singapore in July and August 1955 (see Tweedie, 1956: 2). Biographical information on Crane from Boyko (2000). Additional quote on how Crane’s (1975) book “remains a masterpiece of synthetic taxonomy” is from Shih et al. (2010).
- 1956** Quote from Ommanney (1962: 157, 166). Biographical information on Ommanney from Anonymous (1980: 622). Background on ‘Manihine’ from Ommanney (1960: 139–172; 1962: 1–3). Note that some of the dates in Ommanney’s two accounts (1960; 1962) conflict with each other. History of the events leading to the end of the ‘Manihine’ programme in waters around Singapore: disagreements in funding for research leads to end of funding from the Malayan government (Ommanney, 1960: 170), final (twelfth) cruise of the ‘Manihine’ ends on 22 August 1956 (see Ommanney, 1962: 2, 3). On analysis of fish, Ommanney (1962: 2) gives “28 tons of fish and 7 tonnes of sharks and rays” for a total of 35. Additional quote from Gordon (1963: 319). *Megokris manihine* is described by Shinomiya & Sakai (2006). See also notes on the entry for the year 1985.
- 1957** Quote from H. M. Burkill (1959a: 332). Nur accompanies the Tioman expedition (see Burkill, 1958a: 336), while Kiah accompanies the Mentawai Expedition (see Holtum, 1983: 227). Information on Ngadiman and Corner’s botanical monkeys from H. M. Burkill (1959b). Information on *Kadsura scandens* from I. H. Burkill (1966: 1296). Additional information on botanical collectors and workers from I. H. Burkill (1927). Additional quote from Kathirithamby-Wells (2015: 197).
- 1958** Quote from Westaway (2018: 208, 209). ‘Soondar Mooni’ is published by Shebbeare (1958). Biographical information on Shebbeare from Gee (1964: 274), Anonymous (1964d: 10), Seow (2010: 34–36) and Westaway (2018).

Review of ‘Soondar Mooni’ from Gee (1958: 385). Biographical information on Berg from Shergalin (2011).

- 1959** Quote from K. Y. L. Tan (2015: 184). Information on Johnson from Anonymous (1966: 932). On *Halophila ovalis* being a preferred food of the dugong, see Johnstone & Hudson (1981: 685, table 2) and Tol et al. (2016: [11]).
- 1960** Quote from Rajaratnam (in Anonymous, 1960b: 7). Earliest public announcement is in Anonymous (1960a: 9).
- 1961** Quote from Banner (1963: 375). Information on Chuang and Tham’s involvement with the Zoological Reference Collection (ZRC) from K. Y. L. Tan (2015).
- 1962** Quote from K. Y. L. Tan (2015: 138, 139). Information on Tham for the same source. Information on Hall possibly hearing about the removal of the zoological collections from Tham from K. Y. L. Tan (2015: 138).
- 1963** Quote from Chua & Lim (2011: 365). Information on Pek Yeong Berry from Adler (2012: 395). Information on Hendrickson from Owens (2003: 1–3). Date of publication of issue of ‘Copeia’ in which the Black-eyed Litter Frog is described is 31 December 1963 (from the issue’s title-page). Information on Hendrickson as Alfred’s lecturer from K. Y. L. Tan (2015: 115) and on Berry donating specimens to Alfred (see Alfred, 1969: 214).
- 1964** Quote from ‘Sympathiser’ (1964: 17). Information on the Whale Shark appears in three ‘Straits Times’ articles (1964a; 1964b; 1964c). Actual date of killing is on 6 June 1964 as Anonymous (1964a: 4) is dated 7 June 1964 (Sunday) but the article is headlined “Singapore. Sat. ...”. Tham is quoted as saying that the Whale Shark is to be used for research (see Anonymous 1964b: 9). Additional quotes from Fraser-Bruner are from (Anonymous, 1964c: 7). The only published information on Harrison appears to be the recollections of his son, Bernard, in Singh (2014).
- 1965** Quote from Anonymous (2008: D10). Murphy’s (1965) paper is published on 23 August 1965 (see p. 31 of paper). Information on Murphy from Chan (1991) and Anonymous (2008).
- 1966** Quote from K. Y. L. Tan (2015: 115). Information on Alfred from Hall et al. (2014: 20) and K. Y. L. Tan (2015: 115, 118, 119). See notes on the entry for the year 1963 for information on Hendrickson. The date of publication of Alfred’s (1966a) ‘The fresh-water fishes of Singapore’ is 15 March 1966 (see Fig. 1966.2). The two species of fishes that are featured in the text are described in Alfred (1966b; 1967). The quote on Ogilvie is from Alfred (1967: 590).

- 1967** Quote from Anonymous (1967: 11). Additional quote from Alfred is from Hall et al. (2014: 20). The newspaper report in which the incident is reported appears on 3 July 1967 (a Monday) by refers to “Singapore, Sun. ...” (i.e., 2 July 1967). Data on human fatalities that are caused by sharks are from an ongoing project by one of us (MEYL). Some of the relevant newspaper articles are from the ‘Straits Times’ (17 January 1923, p. 9; 27 July 1928, p. 8; 5 January 1929, p. 12; 13 September 1935, p. 12; 29 July 1954, p. 1), the ‘Malaya Tribune’ (8 December 1919, p. 4; 22 August 1932, p. 8; 7 September 1932, p. 7; 27 October 1932, p. 9) and the ‘Singapore Free Press and Mercantile Advertiser’ (15 July 1925, p. 1; 16 July 1938, p. 3; 26 June 1940, p. 5). The large number of fatalities in the 1930s and 1940s is puzzling. The most infamous incident is that of Doris Bowyer-Smyth who is fatally wounded by a shark on 14 July 1925 (see Anonymous, 1925: 1).
- 1968** Quote from Marsita Omar (2016). Information on early reclamation in Singapore from T. S. Lim (2017). See notes on the entry for the year year 1906 for information on Mount Guthrie.
- 1969** Quote from Medway (1969: 2). Information on Lord Medway (currently the fifth Earl of Cranbrook) from Davison et al. (2013).
- 1970** Quote from Alfred (in K. Y. L. Tan, 2015: 134, 135). Information on Science Centre from K. Y. L. Tan (2015: 130–135). Science Centre Act is passed on 25 September 1970 (see K. Y. L. Tan, 2015: 234, note 60).
- 1971** Quote from Dixon (in K. Y. L. Tan, 2015: 137). Date of letter is 9 July 1971 (see K. Y. L. Tan, 2015: 137). Information on Pope from Hyatt (2013).
- 1972** Quote from C. F. Lim (in K. Y. L. Tan, 2015: 144). Information on the period from K. Y. L. Tan (2015).
- 1973** Quote from Ong (in Anonymous, 1973b: 4). Crowds and traffic congestion following opening from Anonymous (1973a: 1).
- 1974** Quote from K. Y. L. Tan (2015: xix). Information on whale from Barnard (2014: 199, 200) and K. Y. L. Tan (2015: 48, 49).
- 1975** Quote from Anonymous (1975: 12). Information on the Parks and Trees Act from Anonymous (1975: 12; 2015). Information on falling of Chengal Pasir tree from Ho & Koh (2015).
- 1976** Quote from McClure (1977: 497, 498). Information on this fifth and final volume of the ‘The Birds of the Malay Peninsula’ from Medway & Wells (1976: v–vii) and McClure (1977: 497, 498). Information on McClure from Yoshii & Kuroda (1999).
- 1977** Quote from Lee (in Ahmad Mattar, in Hon, 1990: [i]). Mr Lee Kuan Yew is quoted in then-Minister for Environment Ahmad Mattar’s foreword. The date of the opening is from Mattar (in Hon, 1990: [i]). Further information on the Singapore River and on general aspects of the “Singapore Water Story”, see Tortajada et al. (2013).
- 1978** Quote from F. L. K. Lim (2009: 463). Information on the snake from F. L. K. Lim (2009) and A. Tan (2014).
- 1979** Quote from B. L. Lim (2010: 79). The first edition of ‘Poisonous Snakes of Peninsular Malaysia’ is published as B. L. Lim (1979). Information on Lim from Morais (1969: 152).
- 1980** Quote from Thomson (1852: 378). Information on Horsburgh Lighthouse including the name “Pharos of the Eastern Seas” from Pavitt (1966) and Tarling (1994). Information on the Pedra Branca case (including date of Singapore’s formal protest) from Jayakumar & Koh (2009).
- 1981** Quote from K. Y. L. Tan (2015: 158). Information on the visit are from the same source.
- 1982** Quote from Buck (1933: 5, 6). Information on Buck from Lehrer (2000: i–xix) and Bender (2016). Buck (1922) provides an account of his first trip to Southeast Asia. Information on Buck’s films from A. L. Chua (2017). Information on television remake of ‘Bring ‘Em Back Alive’ from Brooks & Marsh (2007: 183).
- 1983** Quote from Anonymous (1969: 4). Information on donation of fish specimens from K. Y. L. Tan (2015: 177).
- 1984** Quote from Miksic (2013: 286, 287). Date of 18 January 1984 for first excavation on Fort Canning from Miksic (2013: 226). Miksic (2013) provides information on the archaeology of early Singapore.
- 1985** Quote from Holthuis & Ingle (1989: 95), as are the title “Grand Old Lady of Carcinology” (p. 93), the limerick (p. 99) and information on Gordon. Her last paper is Gordon (1985) that is published in September 1985. Two of Gordon’s (1938a; 1938b) papers that are published in the ‘Bulletin of the Raffles Museum’. See also notes on entry for the year 1956. There is one more link between Gordon and the ‘Manihine’ via the carcinologist Raoul Serène (1909–1980) (see Forest, 1982). When naming *Albunea paradoxa* from a specimen that is collected in Singapore, Gordon (1938b) does not provide an etymology for the name “*paradoxa*”. However, this name appears be an allusion to the difficulty in classifying this species in the correct genus. Gordon (1938b: 196) writes that “[t] his species seemed at first sight to be exactly intermediate between the two genera, *Albunea* and *Lepidopa*”, which are two groups of sand crabs. Two decades later, Serène

(1977: 54) describes a new genus and new species of sand crab that he names *Paralbunea manihinei*, after a specimens that are collected by the ‘Manihine’ in the Seychelles. In a later paper, Serène (1979: 97) characterizes *Paralbunea* and assigns *Albunea paradoxa* to this group. This is why the current name for Gordon’s species is *Paralbunea paradoxa*. Gordon’s (1938b: 186) suspicions that “*paradoxa*” belongs to neither *Albunea* nor *Lepidopa* are thus borne out two decades later!

- 1986** Quote from Gamboa (1984: 15). Information on trade of animals, plants and their products in the context of Singapore and CITES is from Goh (2014) and Ong et al. (2016).
- 1987** Quote from Chang (2002: 1).
- 1988** Quote from Alfred (1988: 6). Information on Zoological Reference Collection from Alfred (1988: 5, 6) and Anonymous (1988a; 1988b).
- 1989** Quote from Tunku Abdul Rahman Putra Al-Haj (in Davison, 1989: 9). Information on Endau-Rompin from Davison (1988). Information on Zoological Reference Collection (ZRC) team on second expedition from K. K. P. Lim et al. (1990: 31–33).
- 1990** Quote from Nureza Ahmad (2004). Information, dates and events on the elephants are from Nureza Ahmad (2004).
- 1991** Quote from Murphy & Sigurdsson (1990: 235). Information on Sungei Buloh from Murphy & Sigurdsson (1990). *Murphydoris singaporensis* is described in Sigurdsson (1991).
- 1992** Quote from C. F. Lim (1965: 126). Information on Lim Chuan Fong’s role in removal of zoological collection from the National Museum from K. Y. L. Tan (2015: 114, 152). Lim and Wee’s ‘Southeast Asian *Conus*’ is published in 1992.
- 1993** Quote from Davison (1995: 12). Date of 24 May 1993 for launch of expedition from Davison (1995: 25). Davison (1995) provides a comprehensive account of the expedition to Belum. For a more recent information on Belum, see Schwabe et al. (2015). The date of when Belum is gazetted as a state park is from Shazwani et al. (2016: 74).
- 1994** Quote from Anonymous (1994a: 20). Information on False Killer Whale from Anonymous (1994a: 20; 1994b: 29).
- 1995** Quote from T. S. Raffles (1821a: 259). Information on Cream-coloured Giant Squirrel from P. K. L. Ng et al. (2011: 27, 34, 122, 467).
- 1996** Quote from NPark (2019). Information on the National Parks Board from NParks (2019).

- 1997** Quote from Anonymous (2019). Information on Toddycats from K. Y. L. Tan (2015: 185–187, fig. 9.15).
- 1998** Quote from K. Y. L. Tan (2015: 183). Information on Raffles Museum of Biodiversity Research (RMBR) from K. Y. L. Tan (2015). See also notes on the entry for the year 1997 for information on the mascot.
- 1999** Quote from Anonymous (1999a: 22). Information on dead dugongs from Anonymous (1999a: 22; 1999b: 25).
- 2000** Quote from Cranbrook (in K. Y. L. Tan, 2015: 172). *Lathriovelgia rickmersi* is described in Kovac & Yang (2000). Information on Mrs Yang can be found in K. Y. L. Tan (2015).
- 2001** Quote from Wee (2001b: 5). Ng is quoted in Wee (1995a: 4). Information on the public gallery of the Raffles Museum of Biodiversity Research (RMBR) from K. Y. L. Tan (2015).
- 2002** Quote from Mah (in R. Tan & Teo, 2003: 2). Information on Chek Jawa from R. Tan & Teo (2003). Additional quote and information from Chou (2011: 73).
- 2003** Quote from Fan et al. (2019: [1]). Fan et al. (2019) also provide a review of bats and coronaviruses. For examples of work on parasites and zoonoses related to the Museum, see volume 28 of ‘Bulletin of the Raffles Museum’ from 1956 that contains papers by J. Ralph Audy (1914–1974) and John L. Harrison (on whom see notes on the entry for the year 1964). Information on Audy can be found in Macfarlane (1976) and Sargent (1976). Information on Severe Acute Respiratory Syndrome (SARS) from Lam et al. (2003). Study that is quoted on prevalence of viruses in small mammals is Garrett (2012).
- 2004** Quote from Bouchet et al. (2009: 2). Information on PANGLAO 2004 and PANGLAO 2005 is from Bouchet et al. (2009) and Richer de Forges (2009). The terms “cold spot” and “heart” is from Bouchet et al. (2009: 1).
- 2005** Quote from P. K. L. Ng (2012: 6). Information on USA museums visit from P. K. L. Ng (2012: 6) and K. Y. L. Tan (2015: 190, 191).
- 2006** Quote from Anonymous (2006: 11). Information on exhibition from Anonymous (2006: 11) and page 9 of the same issue of ‘OmniSci’.
- 2007** Quote from P. K. L. Ng et al. (2007: [1]). The five titles in the series are ‘Shores’ (P. K. L. Ng et al., 2009), ‘Mangroves’ (P. K. L. Ng et al., 2008), ‘Freshwaters’ (Yeo et al., 2010), ‘Rainforests’ (Wang et al., 2012), and after a seven-year hiatus, ‘Coral Reefs’ (Chou et al., 2019). The fifth volume is the first to be published by the Lee Kong

- Chian Natural History Museum. For additional information on 'Private Lives', see Wang et al. (2011: 184, 185).
- 2008** Quote from Attenborough's 2008 documentary 'Life in Cold Blood' (episode 4, 'Sophisticated Serpents'). Information on Attenborough in Singapore is from Wang et al. (2011: 185, 188, fig.).
- 2009** Quote from Tan is from a telephone interview with one of us (MEYL) on 5 May 2019. Tan also mentions that "looking back now, it is all quite funny". The most relevant newspaper articles are Narayanan (2009: A18), D. W. Tan (2000: 26) and Vaughan (2009: A18). Additional information on the developments at this time are from K. Y. L. Tan (2015).
- 2010** Quote from K. S. Tan et al. (2016: 1). Information on the Comprehensive Marine Biodiversity Survey (CMBS) is from K. S. Tan et al. (2015; 2016). On Belcher's Lancelet, see notes on the entry for the year 1898.
- 2011** Quote from Tun & Goh (2011). Information on Neptune's Cup from G. Chua (2011), Tun & Goh (2011) and S.-C. Lim et al. (2012). See also notes on the entry for the year 1819.
- 2012** Quote from Cooper (2012: 15). Cooper (2012) also provides a (mostly) non-scientific defense for bringing dinosaurs to Singapore. Information on dinosaurs from D. W. Tan (2012a; 2012b) and K. Y. L. Tan (2015).
- 2013** Quote from D. W. Tan (2013: 19). Information on ceremony from D. W. Tan (2013: 19) and K. Y. L. Tan (2015: 214, 215). On the same plot of land being mooted for the Zoological Reference Collection (ZRC) in 1977, see K. Y. L. Tan (2015: 208).
- 2014** Quote from Ride and Sabrowsky (in ICZN, 1985: xii). Information on the International Commission on Zoological Nomenclature (ICZN) meeting and funding from the National University of Singapore from G. Chua (2013: 47).
- 2015** Quote from Tan (in A. Tan, 2015a: 1). Information on launch on 18 April 2015 from A. Tan (2015a: 1; 2015b: 10).
- 2016** Quote from Pocklington & Iesa (2016: 5). Pocklington & Iesa (2016) provide a very detailed and very graphic look at the whale, from the moment it is discovered to the day the exhibit opens. Information on additional developments since 2016 can be found in M. A. H. Chua et al. (2019) and A. Tan (2019: A29).
- 2017** Quote from Hepburn (1848: 2014). Information on BLSEA from NUS Libraries (2017).
- 2018** Quote from Boh (2018: B2).



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- 1878.1** Pepper cultivation in Borneo photographs. Sources: (photograph with nine individuals) Beccari (1904: 375). BHL/IA; (photograph with five individuals) Green (1910: pl. facing p. 146). BHL/IA
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Acknowledgements

This book is an entire-Museum effort. Comments and suggestions from Peter K. L. Ng, Kelvin K. P. Lim and Tan Siong Kiat on the manuscript are greatly appreciated. The many photographs of the specimens, animals and artefacts are the work of Tan Heok Hui, Ruzaini Bin Ghazali, Kelvin K. P. Lim, Tan Siong Kiat, Tan Swee Hee, Joelle Lai, Hwang Wei Song, Siti Maimon Binte Hussin, Sabrina X. E. Tang and Tashia Raquib. We want to thank Dzaki Safaruan for his original drawings of Greek philosophers and Malayan Tapirs. Iffah Iesa deserves a big thank you for her help with the exhibition and book. We also thank Belinda Teo, Shu Shwu Li, Chua Keng Soon, Wan F. A. Jusoh, Foo Maosheng, Clarisse Y. D. Tan, Gwynne Lim and Yusrina Mohd Yusoff for their help. All errors and omissions remain the responsibility of the authors.

We thank the following individuals for allowing us to reproduce images and materials belonging to them (or in their care) and for providing us with information and helpful comments: Emeritus Prof. Dato' Dr. Abdul Latiff Mohamad, Amani Williams-Hunt, Amar-Singh HSS, Tad Bennicoff, Gert Jan Bestebreurtje, Mathias Böhm, Bill Burns, Nick Cai, Grace Chan, Chan Tin-Yam, Vincent K. K. Chow, Paul F. Clark, Reuben G. Clements, Sammy De Grave, Ed Douglas, Gandhimathy Durairaj, Paula Fahey, Alex Figueroa, Stephanie Foo, Lindsay Gasik, Ernest Goh, Eugene Goh, Ceri Humphries, Matthew Johnston, Alan Kabat, Maurice Kottelat, Enoke P. Kudavidanage, Josef Lebovic, Eric C. H. Lee, Paula Lightfoot, Francis L. K. Lim, Lim Swee-Cheng, Donovan Louis, Low Chai Hok, Lilian Low, Mary-Ruth Low, Shawn Lum; Sana Masood, David P. Middleton, Mohammed ali Moussa, Ted Morris, Sue Morton, Stephen Murphy, Tohru Naruse, Sofina C. Q. Ng, Rene Ong, Helen Ouf, Jan Peuker, Christopher Z. Puan, Hans Rothweiler, Peter Schoppert, I. S. Shanmugaraj, Sylvia Schwencke, Sheema Aziz, Shih His-Te, Toby Smith, Fiona Tan, Gene Tan, Ivan Tan Sijie, James Tan, Ria Tan, Tay May Ling, Teo Zi Tong, Kennie Teng, Daniel Tham, Madeleine Thompson, Peter Topley, Karenne Tun, Helga Wagner, Nadia Wagner, Naomi Wang, Jonathan Westaway, Xu Weiting, Lucille Yap, Jeremy W. L. Yeo, Yip Hoi Kee, Elisabeth Zankl and Justin Zhuang.

The following are acknowledged for allowing us to reproduce materials belonging to them (or in their care): CS Philatelic; Faculty of Science, National University of Singapore; Indonesia Institute of Science (LIPI); Malaysian Nature Society; National Archives of Singapore; National Library of Australia; National Museum of Singapore; National Parks Board, Singapore; National University of Singapore Libraries; Natural History Museum, London; Naturalis Biodiversity Center, Leiden; Nature Society Singapore; NUS Press; Rimba, Malaysia; Singapore Philatelic Museum; Singapore Press Holdings; Tropical Marine Science Institute, National University of Singapore; Universitätsbibliothek Universität Regensburg; Wildlife Conservation Society.



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Appendix

200 in 496

The exhibition ‘200: a natural history’ is comprised of the following 496 objects—physical and virtual. The exhibition runs for a year from June 2019 at the Lee Kong Chian Natural History Museum. Actual specimens, artefacts and other physical objects are denoted by [P], reproductions by [R] and audio-visual projections by [AV].

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| <p>1819 Neptune’s Cup; <i>Cliona patera</i> (Hardwicke, 1820); Singapore, undated [P]</p> <p>1819 Neptune’s Cup; Name plate from Raffles Museum at Stamford Road; Singapore, 1903 [P]</p> <p>1819 Neptune’s Cup; <i>Cliona patera</i> (Hardwicke, 1820); ‘Asiatick Researches’ (T. Hardwicke, 1822) [R]</p> <p>1819 Thomas Hardwicke (1756–1835) by J. Lucas; ‘Illustrations of Indian Zoology’ (J. E. Gray, 1830–1832) [R]</p> <p>1820 Dugong flesh; <i>Dugong dugon</i> (Müller, 1776); Singapore, 2006 [P]</p> <p>1821 Sunda Stink Badger skull ♀; <i>Mydaus javanensis</i> (Desmarest, 1820); North Natuna Islands, Bunguran Island, 1928 [P]</p> <p>1821 Sunda Stink Badger; <i>Mydaus javanensis</i> (Desmarest, 1820); ‘Zoological Researches on Java’ (T. Horsfield, 1821–1824) [R]</p> <p>1821 Thomas Horsfield (1773–1859); Courtesy of ÖNB/ Wien Bildarchiv PORT_00021333_01, Österreichische Nationalbibliothek, Austria [R]</p> <p>1822 Dog skull; <i>Canis lupus familiaris</i> (Linnaeus, 1758); Singapore, Kranji, 2010 [P]</p> <p>1822 Dog paw; <i>Canis lupus familiaris</i> (Linnaeus, 1758); Singapore, undated [P]</p> <p>1822 “Catching a crocodile with a hook and line”; ‘Two Years in the Jungle’ (W. T. Hornaday, 1885) [R]</p> <p>1823 Sunda Clouded Leopard skull ♂; <i>Neofelis diardi</i> (Cuvier, 1823); Indonesia, Sumatra, 1926 [P]</p> <p>1823 Sunda Clouded Leopard; <i>Neofelis diardi</i> (Cuvier, 1823); The Naturalist Library’ (W. Jardine, 1834) [R]</p> <p>1824 Scarlet-rumped Trogon ♂; <i>Harpactes duvaucelii</i> (Temminck, 1824); Malaysia, Sarawak, Mount Dulit, 1920s [P]</p> | <p>1824 Scarlet-rumped Trogon; <i>Harpactes duvaucelii</i> (Temminck, 1824); ‘Nouveau recueil de planches coloriées d’oiseaux’ (C. J. Temminck & M. Laugier, 1820–1839) [R]</p> <p>1825 Clove; <i>Syzygium aromaticum</i> (L.) Merrill & Perry; From local markets, 2018 [P]</p> <p>1825 Nutmeg; <i>Myristica fragrans</i> Houtt.; Malaysia, Penang, 2018 [P]</p> <p>1825 Clove; <i>Syzygium aromaticum</i> (L.) Merrill & Perry; ‘Köhler’s Medizinal-Pflanzen’ (G. Pabst, 1883–1914) [R]</p> <p>1825 Nutmeg; <i>Myristica fragrans</i> Houtt.; ‘Köhler’s Medizinal-Pflanzen’ (G. Pabst, 1883–1914) [R]</p> <p>1826 “Straits Settlements” cigar card; ‘Recruit’ Little Cigars’ “Flags of All Nations Series”; United States of America, Pennsylvania, c. 1909 [P]</p> <p>1826 “Straits Settlements” cigarette card; W.D. & H.O. Wills’s “Flags of the Empire, 2nd Series”; United Kingdom, Bristol, c. 1929 [P]</p> <p>1826 “Straits Settlements” cigarette silk patch; Egyptienne Straights; United States of America, New York, c. 1910 [P]</p> <p>1826 East India Company’s Museum at East India House, Leadenhall Street, London; ‘London’ (J. C. Platt, 1843) [R]</p> <p>1826 East India House, Leadenhall Street, London; ‘The World’s Metropolis’ (H. S. Brooke, 1855) [R]</p> <p>1827 Singapore Fern; <i>Tectaria singaporiensis</i> (Wall. ex Hook. & Grev.) Ching; Singapore, 2002 [P]</p> <p>1827 “<i>Aspidium Singaporianum</i>”; ‘Icones filicum’ (W. J. Hooker & R. K. Greville, 1827) [R]</p> <p>1828 Cardamom; <i>Elettaria cardamomum</i> (L.) Maton; From local markets, 2018 [P]</p> <p>1828 Cardamom; <i>Elettaria cardamomum</i> (L.) Maton; ‘Köhler’s Medizinal-Pflanzen’ (G. Pabst, 1883–1914) [R]</p> |
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- 1829 Nathaniel Wallich (1786–1854); ‘One Hundred Years of Singapore’ (W. Makepeace et al., 1921) [R]
- 1830 Siamang skull ♂; *Symphalangus syndactylus* (Raffles, 1821); Indonesia, Sumatra, Korinchi, 1914 [P]
- 1830 Illustration of the Siamang described by Bennett; ‘Magazine of Natural History’ (G. Bennett, 1832) [R]
- 1830 Illustration of the Siamang described by Bennett; ‘Magazine of Natural History’ (G. Bennett, 1832) [R]
- 1830 George Bennett (1804–1893); ‘Records of the Australian Museum’ (R. Etheridge, 1916) [R]
- 1831 Tiger skull ♂; *Panthera tigris* (Linnaeus, 1758); Malaysia, Johor, 1928 [P]
- 1831 “Tiger & Indian Bullock after Nature”; ‘Engravings of Lions, Tigers, Panthers, Leopards, Dogs ...’ (T. Landseer, 1853) [R]
- 1831 “My collector killed by a tiger”; ‘A Naturalist’s Wanderings in the Eastern Archipelago’ (H. O. Forbes, 1885) [R]
- 1832 Shore Pit Viper; *Trimeresurus purpureomaculatus* (Gray, 1832); Singapore, Sentosa Island, 1991 [P]
- 1832 “*Trigonocephalus purpureo maculatus*”; ‘Illustrations of Indian Zoology’ (J. E. Gray, 1830–1832) [R]
- 1832 John Edward Gray (1800–1875); ‘Portraits of Men of Eminence’ (L. Reeve, 1863) [R]
- 1833 “Incident during the earthquake at Sumatra (1861)”; ‘Volcanoes and Earthquakes’ (F. Zürcher & É. Margollé, 1868) [R]
- 1834 “The East Indianman ‘Thomas Coutts,’ as she appeared in the year 1826”; ‘Old East Indianmen’ (E. K. Chatterton, 1914) [R]
- 1835 “Path across the swamp (Tschängi)”; ‘Skizzen aus Singapur und Djohor’ (E. von Rasonnet, 1876) [R]
- 1835 “Near a tiger pit (Bukit Timah)”; ‘Skizzen aus Singapur und Djohor’ (E. von Rasonnet, 1876) [R]
- 1836 Feral Dog skull; *Canis lupus familiaris* Linnaeus, 1758; Singapore, undated [P]
- 1836 Golden Jackal; *Canis aureus* Linnaeus, 1758; ‘Dictionnaire universel d’histoire naturelle’ (C. d’Orbigny, 1849) [R]
- 1837 Leechwood; *Anisophyllea disticha* (Jack) Baill.; Singapore, 1992 [P]
- 1838 Banded Leaf Monkey; *Presbytis femoralis femoralis* (Martin, 1838); Singapore, Tampines, 1894 [P]
- 1838 “*Semnopithecus maurus*”; ‘Zoological Researches on Java’ (T. Horsfield, 1821–1824) [R]
- 1839 Striated Quantula; *Quantula striata* (Gray, 1834); Singapore, 2017 [P]
- 1839 Quoy’s Horn Shell; *Cerithidea quoyii* (Hombron & Jacquinot, 1848); Singapore, Pulau Semakau, 2009 [P]
- 1839 “Les corvettes prêtes a tomber sur les rochers de Sanguir”; ‘Atlas pittoresque’ (Anonymous, 1846) [R]
- 1839 “Mollusques, pl. 4”; ‘Atlas d’Histoire naturelle zoologie’ (J. B. Hombron & H. Jacquinot, 1847–1848) [R]
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- 1840 Singapore Keyhole Limpet; *Diodora singaporensis* (Reeve, 1850); Singapore, Pulau Salu, 1986 [P]
- 1840 Singapore Keyhole Limpet; *Diodora singaporensis* (Reeve, 1850); Singapore, Pulau Semakau, 2009 [P]
- 1840 Hugh Cuming (1791–1865); ‘Portraits of Men of Eminence’ (L. A. Reeve, 1864) [R]
- 1841 Price list of meats and other supplies; ‘Singapore Free Press’ (16 December 1841) [R]
- 1841 Green Sea Turtle; *Chelonia mydas* (Linnaeus, 1758); Tortoises, Terrapins, and Turtles’ (J. de C. Sowerby & E. Lear, 1872) [R]
- 1842 Mud Lobster; *Thalassina gracilis* Dana, 1852; Thailand, South Ranong, 1990s [P]
- 1842 Leaf Coral; *Pavona decussata* (Dana, 1846); Singapore, Pulau Hantu, undated [P]
- 1842 Pore Coral; *Montipora hispida* (Dana, 1846); Singapore, 1985 [P]
- 1842 “Zoophytes, pl. 44”; ‘Zoophytes’ (Dana, 1849) [R]
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- 1842 James Dwight Dana (1813–1895); ‘Popular Science Monthly’ (Anonymous, 1872) [R]
- 1843 Ribbon Jellyfish; *Chrysaora chinensis* Vanhöffen, 1888; Singapore, Beting Bronok, 2010 [P]
- 1843 “Immersion of the H.M.S. Samarang in the Sarawak”; ‘Narrative of the Voyage’ (E. Belcher, 1848) [R]
- 1843 Plate “Crustacea. Tab. VI” from ‘Zoology of the ... Samarang’; ‘Zoology of the ... Samarang’ (A. Adams & A. White, 1848–1849) [R]

- 1843 Plate “Crustacea. Tab. XII” from “Zoology of the ... ‘Samarang’”; ‘Zoology of the ... ‘Samarang’ (A. Adams & A. White, 1848–1849) [R]
- 1844 Sea Cucumbers; unknown locality, undated [P]
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- 1845 Broad-front Climber; *Metopograpsus latifrons* (White, 1847); Philippines, Bohol, 2003 [P]
- 1845 “*Grapsus latifrons*”; ‘Description of ... new species of Crustacea’ (A. White, 1847) [R]
- 1845 “On the river Singapore”; ‘Narrative of the Surveying Voyage of H.M.S. Fly’ (J. B. Jukes, 1847) [R]
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- 1846 Binturong skull ♂; *Arctictis binturong* (Raffles, 1822); Malaysia, Selangor, Ulu Klang, 1921 [P]
- 1846 “*Hamadryas hannah*”; ‘Asiatic Researches’ (T. Cantor, 1836) [R]
- 1846 “*Cantoria violacea*”; ‘United States Exploring Expedition’ (C. Girard, 1858) [R]
- 1847 Obtuse Horn Shell; *Cerithidea obtusa* (Lamarck, 1822); Singapore, West Coast Park, 2016 [P]
- 1847 “*Cerithium lineolatum*”; ‘A few remarks on conchology and malacology’ (W. Traill, 1847) [R]
- 1848 Water Buffalo skull and horns; *Bubalus bubalis* (Linnaeus, 1758); unknown locality, undated [P]
- 1848 “View of a country road in Penang”; ‘Our Tropical Possessions in Malayan India’ (J. Cameron, 1865) [R]
- 1848 “New Harbour, Singapore” showing HMS ‘Maecander’ at sail; ‘A Sailor’s Life under Four Sovereigns’ (H. Keppel, 1899) [R]
- 1848 Henry Keppel (1809–1904); ‘The Navy and Army Illustrated’ (17 January 1896) [R]
- 1849 Large Flying Fox skull; *Pteropus vampyrus* (Linnaeus, 1758); Indonesia, West Java, Teluk Palabuhanratu, 1920 [P]
- 1849 “Flying Fox, Singapore”; Singapore, 1900s [R]
- 1849 “Flying foxes recently added to the Zoological Society’s Gardens, Regent’s Park”; ‘Illustrated London News’ (3 August 1861) [R]
- 1850 Rock from former Pulau Ubin Quarry; Singapore, Pulau Ubin, undated [P]
- 1850 “Convicts stone-quarrying, at Pulo Obin, Singapore”; ‘Prisoners Their Own Warders’ (J. F. A. McNair, 1889) [R]
- 1850 “Sketch-map of Pulau Ubin and Changi (Singapore)”; ‘Quarterly Journal of the Geological Society’ (J. B. Scrivenor, 1910) [R]
- 1851 Atlantic Telegraph Cable section; Atlantic Telegraphy Company, early 1850s [P]
- 1851 Gutta Percha; *Palaquium gutta* (Hook.) Burck.; ‘Köhler’s Medizinal-Pflanzen’ (Pabst, 1883–1914) [R]
- 1851 The ‘Goliath’ lays the first telegraph cable across the English Channel; ‘Les Merveilles de la Science’ (L. Figuier, 1868) [R]
- 1852 Ida’s River Prawn; *Macrobrachium idae* (Heller, 1862); Indonesia, West Sumatra, 1982 [P]
- 1852 Reticulated Python section; *Broghammerus reticulatus* (Schneider, 1801); Singapore, undated [P]
- 1852 Pfeiffer’s Sand Loach; *Nemacheilus pfeifferae* (Bleeker, 1853); Indonesia, Sumatra, 1996 [P]
- 1852 “Killing the python”; ‘Travels in the East Indian Archipelago’ (A. S. Bickmore, 1869) [R]
- 1852 Ida Laura Pfeiffer (1797–1858); ‘Last Travels of Ida Pfeiffer’ (I. Pfeiffer, 1861) [R]
- 1853 Toffee Apple Shell; *Tudivasum inerme* (Angas, 1878); Australia, Western Australia, undated [P]
- 1853 “Oral statement by American Navy admiral” (1850–1900); Library of Congress, Prints and Photographs Division [R]
- 1854 Lampstand Land Snail; *Geotrochus lychnia* (Benson, 1852); Singapore, 1999 [P]
- 1854 Humphrey’s Land Snail; *Hemiplecta humphreysiana* (I. Lea, 1840); Singapore, 2012 [P]
- 1854 Striated Quantula; *Quantula striata* (J. E. Gray, 1834); Singapore, 2017 [P]
- 1854 “Mr Wallace’s new land-shells”; ‘Proceedings of the Zoological Society of London’ (A. R. Wallace, 1865) [R]
- 1854 Alfred Russel Wallace (1823–1913); ‘Letters and Reminiscences’ (J. Marchant, 1916) [R]

- 1855 Rajah Brooke's Birdwing ♂; *Trogonoptera brookiana albes-cens* (Rothschild, 1895); Malaysia, Cameron Highlands, 1975 [P]
- 1855 Rajah Brooke's Birdwing ♀; *Trogonoptera brookiana albes-cens* (Rothschild, 1895); Southeast Asia, undated [P]
- 1855 Sarawak one-cent coin; Indonesia, Sarawak, 1865; Courtesy of the Low Family [P]
- 1855 James Brooke (1803–1868); 'Illustrated History of the British Empire' (E. H. Nolan, 1858) [R]
- 1856 King Bird-of-Paradise; *Cicinnurus regius* (Linnaeus, 1758); unknown locality, undated [P]
- 1856 King Bird-of-Paradise; *Cicinnurus regius* (Linnaeus, 1758); New Guinea, undated [P]
- 1856 King Bird-of-Paradise; *Cicinnurus regius* (Linnaeus, 1758); 'Monograph of the Paradiseidae' (R. B. Sharpe, 1891–1898) [R]
- 1856 Ali (b. unknown – d. unknown); 'My Life' (A. R. Wallace, 1905) [R]
- 1857 Termite; *Macrotermes gilvus* (Hagen, 1858); Singapore, 2018 [P]
- 1857 Bowring's Supple Skink; *Lygosoma bowringii* (Günther, 1864); Singapore, Kent Ridge Campus, 1999 [P]
- 1857 Wood eaten by *Macrotermes gilvus* (Hagen, 1858); Malaysia, Johor, 2018 [P]
- 1857 "Rochor, Singapore" 1857–1861; 'Singapore–Malacca–Java' (F. Jagor, 1866) [R]
- 1857 Andreas Fedor Jagor (1816–1900); 'Freund Allers' (A. Olinda, 1900) [R]
- 1858 "The Impounding Reservoir, Singapore"; Singapore, 1900s [R]
- 1858 Tan Kim Seng Fountain; Singapore, Esplanade Park [R]
- 1859 Botanic Gardens Lake; Singapore, 1900s [R]
- 1859 Botanic Gardens Lake; Singapore, 1900s [R]
- 1859 Outline map showing the Botanic Gardens at Tanglin, Singapore; 'Gardens' Bulletin' (I. H. Burkill, 1918) [R]
- 1860 Nutmeg plantations in Singapore (1848); 'An Anecdotal History of Old Singapore' (C. B. Buckley, 1902) [R]
- 1861 "*Clarias batrachus*"; 'Atlas Ichthyologique' (P. Bleeker, 1862–1865) [R]
- 1861 A case of fish 'rain', 1500s; 'Historia de gentibvs septen-trionalibvs' (O. Magnus, 1555) [R]
- 1861 M. le Comte de Castelnau (1810–1880); 'L'Illustration' (1847); Courtesy of National Library of Australia [R]
- 1862 Red Berry Snail; *Optedicros brevicula* (L. Pfeiffer, 1855); Singapore, Pulau Semakau, 2009 [P]
- 1862 "Cathedral, Singapore"; Singapore, St Andrew's Cathedral; 'Prisoners Their Own Warders' (J. F. A. McNair, 1899) [R]
- 1862 Eduard Karl von Martens (1831–1904); 'Journal of Conchology' (W. Kobelt, 1905) [R]
- 1863 "Rest Hut, Gunung Pulai, 1929"; Photograph by 'Baum'; Norman Smedley Collection [R]
- 1864 Fox-faced Gecko; *Aeluroscalabotes felinus* (Günther, 1864); 'Reptiles of British India' (A. C. L. G. Günther, 1864) [R]
- 1865 Coin showing a 'Tepak Sirih' containing the ingredients for betel chewing; Malaysia, 1989 [P]
- 1865 Gambier; *Uncaria gambir* (W. Hunter) Roxb.; Singapore, Neo Tiew Lane, 2001 [P]
- 1865 Gambier; *Uncaria gambir* (W. Hunter) Roxb.; 'Köhler's Medizinal-Pflanzen' (G. Pabst, 1883–1914) [R]
- 1865 A Gambier plantation; 'Gorkom's Oost-indische Cultures' (H. C. P. Geerligs, 1919) [R]
- 1865 Leaves being brought to processing shed; 'Gorkom's Oost-indische Cultures' (H. C. P. Geerligs, 1919) [R]
- 1865 Washing and cooking leaves; 'Gorkom's Oost-indische Cultures' (H. C. P. Geerligs, 1919) [R]
- 1865 Scooping paste into kegs; 'Gorkom's Oost-indische Cultures' (H. C. P. Geerligs, 1919) [R]
- 1865 Cutting and arranging blocks on bamboo screen; 'Gorkom's Oost-indische Cultures' (H. C. P. Geerligs, 1919) [R]
- 1865 Blocks drying in the sun; 'Gorkom's Oost-indische Cultures' (H. C. P. Geerligs, 1919) [R]
- 1866 "*Rafflesia tuan-mudae*, Becc. (flower 22 inches in diam-eter)"; 'Wanderings in the Great Forests of Borneo' (O. Beccari, 1904) [R]
- 1866 "Lobang Angin, Upper Sarawak"; 'Wanderings in the Great Forests of Borneo' (O. Beccari, 1904) [R]
- 1866 "A forest clearing in North Borneo"; 'Wanderings in the Great Forests of Borneo' (O. Beccari, 1904) [R]
- 1866 Odoardo Beccari (1843–1920); Wikimedia/Sailko [R]
- 1867 The British Museum, Bloomsbury, London; 'The World's Metropolis' (H. S. Brooke, 1855) [R]
- 1868 Sand Bubbler Crab; *Scopimera intermedia* Balss, 1934; Singapore, Lim Chu Kang, 2000 [P]

- 1868 Sand Bubbler Crab ‘pills’; Berlayer Creek, Singapore, 2017; wildsingapore/Ria Tan [R]
- 1868 “Group of Nudibranchs from the China Sea”; ‘Rambles of a Naturalist’ (C. Collingwood, 1868) [R]
- 1869 “Sea-Serpent seen from the S.S. ‘City of Baltimore,’ in the Gulf of Aden, Jan. 28, 1879”; ‘Mythical Monsters’ (C. Gould, 1886) [R]
- 1870 “An unexpected meeting”; ‘Records of Sport in Southern India’ (D. Hamilton, 1892) [R]
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- 1871 *Balanophyllia imperialis* Saville-Kent, 1871, Singapore; ‘Proceedings of the Zoological Society of London’ (Saville-Kent, 1871) [R]
- 1871 “Authors’ methods of photographing submerged corals and bêche-de-mer”; ‘Great Barrier Reef of Australia’ (W. Saville-Kent, 1895) [R]
- 1871 William Saville-Kent (1845–1908); Western Australia; ‘The Naturalist in Australia’ (W. Saville-Kent, 1897) [R]
- 1872 Giant Mudskipper; *Periophthalmus schlosseri* (Pallas, 1770); ‘Two Years in the Jungle’ (W. T. Hornaday, 1885) [R]
- 1872 Robert Walter Campbell Shelford (1872–1912); ‘A Naturalist in Borneo’ (R. W. C. Shelford, 1916) [R]
- 1873 Barred Eagle-Owl ♂; *Bubo sumatranus* (Raffles, 1822); Indonesia, North East Sumatra, 1935 [P]
- 1873 Luzon Bleeding-Heart ♂; *Gallicolumba luzonica* (Scopoli, 1786); Philippines, Luzon, 1935 [P]
- 1873 Teal; *Anas crecca* Linnaeus, 1758; Thailand, Mekong River, 1930 [P]
- 1873 “Plan of the Botanic Gardens showing the old and new roads”; ‘Gardens’ Bulletin’ (I. H. Burkill, 1918) [R]
- 1874 Singapore Town Hall; Singapore, c. 1880; Courtesy of National Archives of Singapore [R]
- 1875 Plates from ‘Atlas Ichthyologique’; ‘Atlas Ichthyologique’ (P. Bleeker, 1862–1865) [R]
- 1875 Pieter Bleeker (1819–1878); Wikimedia/Valérie75 [R]
- 1876 Wallaby skull; *Dendrolagus* sp.; New Guinea, 1926 [P]
- 1876 Kangaroo skull; *Macropus* sp.; unknown locality, undated [P]
- 1877 Rhinoceros skull; unknown locality, undated [P]
- 1877 “Raffles Institution, Singapore”; Singapore, c. 1890s [R]
- 1878 Pepper; *Piper nigrum* L.; From local markets, 2018 [P]
- 1878 Pepper; *Piper nigrum* L.; ‘Köhler’s Medizinal-Pflanzen’ (G. Pabst, 1883–1914) [R]
- 1878 “Gathering Pepper”, Borneo; ‘BorneoThe Land of River and Palm’ (E. Green, 1910) [R]
- 1878 “Cultivation of Pepper in Sarawak”; ‘Wanderings in the Great Forests of Borneo’ (O. Beccari, 1904) [R]
- 1879 Asian Marauder Ant ♂ ♀; *Carebara diversa* (Jerdon, 1851); Singapore, 2017 [P]
- 1879 Trap-jaw Ant ♀; *Odontomachus rixosus* Smith, 1857; Singapore, undated [P]
- 1879 “The author’s first ride in Perak”; ‘The Golden Chersonese’ (I. L. Bird, 1883) [R]
- 1879 Isabella Lucy Bird (1831–1904); ‘The Life of Isabella Bird’ (A. M. Stoddart, 1906) [R]
- 1880 “Oran Utan, Singapore”; Singapore, 1900s [R]
- 1880 Orangutan skull ♂; *Pongo* sp.; unknown locality, 1925 [P]
- 1881 “A menagerie race at Singapore”; ‘The Graphic’ (20 August 1881) [R]
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- 1883 “The great oyster from Singapore. (*Tridacna gigas*).”; ‘Fisheries of the World’ (F. Whympere, 1884) [R]
- 1883 Lovell Augustus Reeve (1814–1865); ‘Journal of Conchology’ (J. C. Melville, 1900) [R]
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- 1884 Frederick Aloysius Weld (1823–1891); ‘The Life of Sir Frederick Weld’ (A. Lovat, 1914) [R]
- 1885 Currier’s knife for preparing animal skins; George Barnsley and Sons, Sheffield, England, 1900s [P]
- 1885 “Paring Down a Large Mammal Skin”; Taxidermy and Zoological Collecting’ (W. T. Hornaday, 1894) [R]
- 1885 “Corroyeur”; ‘Recueil de planches, sur les sciences et les arts’ (D. Diderot, 1763) [R]
- 1885 William Temple Hornaday (1854–1937); ‘Annals of Iowa’ (J. F. Lacey, 1904) [R]
- 1886 Saltwater Crocodile skull; *Crocodylus porosus* Schneider, 1801; Singapore, undated [P]
- 1887 “Raffles Museum, Singapore”; Singapore, c. 1925 [R]
- 1887 “Raffles Museum, Singapore”; Singapore, c. 1908; Courtesy of the Low Family [R]

- 1888 Letter from Chasen to Allen; 23 August 1939 [R]
- 1888 “Physical Map of the Malay Archipelago by Alfred Russel Wallace, 1868”; ‘The Malay Archipelago’ (A. R. Wallace, 1869) [R]
- 1889 Coconut Rhinoceros Beetle; *Oryctes rhinoceros* (Linnaeus, 1758); Singapore, undated [P]
- 1889 “A coconut plantation, Singapore”; ‘British Malaya’ (F. Swettenham, 1907) [R]
- 1889 “Coco-nut Estate attacked by Beetles”; ‘Journal of the Straits Branch of the Royal Asiatic Society’ (H. N. Ridley, 1889) [R]
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- 1890 Dhole skull; *Cuon alpinus* (Pallas, 1811); Malaysia, Perak, Bukit Gantong, 1909 [P]
- 1890 Dhole bones; *Cuon alpinus* (Pallas, 1811); unknown locality, undated [P]
- 1891 Termite; *Coptotermes* sp.; Singapore, 2018 [P]
- 1891 Nest of *Coptotermes* sp.; Singapore, 2018 [P]
- 1892 “The Indian Whale (*Balaenoptera indica*)” at the Raffles Museum, c. 1908; ‘Guide to the Zoological Collections of the Raffles Museum’ (R. Hanitsch, 1908); Courtesy of NUS Libraries [R]
- 1893 William Ruxton Davison (d. 1893); ‘Nests and Eggs of Indian Birds’ (A. O. Hume, 1890) [R]
- 1894 “The Regalia of the Sultan of Perak”; ‘Twentieth Century Impressions of British Malaya’ (A. Wright, 1908) [R]
- 1894 Sultan Idris Murshidul Azzam Shah of Perak (1849–1916); ‘Twentieth Century Impressions of British Malaya’ (A. Wright, 1908) [R]
- 1895 Unidentified species of *Acteocina*; Singapore, Changi, 2005 [P]
- 1895 Scabrous Demon Crab; *Demania scaberrima* (Walker, 1887); Singapore, Tuas, 1981 [P]
- 1895 Walker’s Spider Crab; *Holthuijia miersi* (Walker, 1887); Singapore, Pulau Semakau, 2013 [P]
- 1895 “Tornatinidae”; ‘Manual of Conchology’ (H. A. Pilsbry, 1895) [R]
- 1895 “*Xantho scaberrima*”; ‘Journal of the Linnean Society’ (A. O. Walker, 1887) [R]
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- 2018** Compacted instant noodle cup; SJADES Expedition, 2018 [P]
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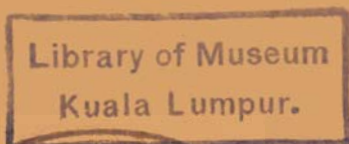
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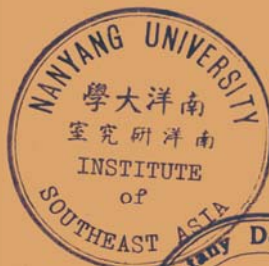
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1800 The natural history of Singapore abounds with stories that are as remarkable as they are diverse. There are explorers who eat wild animals. And wild animals which eat people. Some discoveries are field-changing, like the only land snail that produces light. Research and discoveries made in Singapore also give rise to the commoditization of natural resources. This has geopolitical ramifications. As this knowledge solidifies into a more formal natural history, a place to store and study the resulting material arises. This leads to the foundation of one of the oldest museums in South-east Asia, and with it the story of a whale that “still haunts the minds of those who saw it”. The origins of Singapore’s very own natural history museum are another remarkable story. In conjunction with ‘200: a natural history’, a Bicentennial exhibition at the Lee Kong Chian Natural History Museum, this book gathers these stories and locates them in the larger context of Singapore’s natural history.

1880 **Peter K. L. Ng** is Head of the Lee Kong Chian Natural History Museum and a Professor at the National University of Singapore.

1900 **Martyn E. Y. Low** is a Research Associate at the Lee Kong Chian Natural History Museum. His research interests include topics related to natural history, such as zoological nomenclature, historical surveying voyages and the bibliography of natural history.

1920 **Kate Pocklington** is Head Conservator at the Lee Kong Chian Natural History Museum. She is the co-author of ‘A Whale Out of Water: The Salvage of Singapore’s Sperm Whale’, curator for the project ‘Out of the Water’ and artistic collaborator for ‘Buaya: The Making of a Non-Myth’.

1940

1960

1980



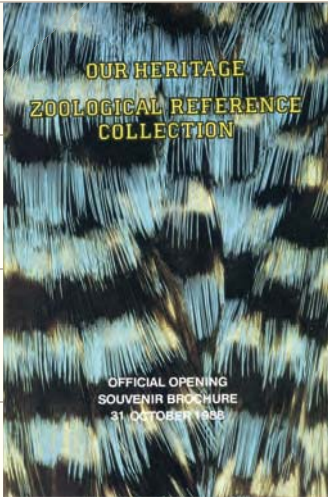
1856.2



1910.1



1988.2



1886.1



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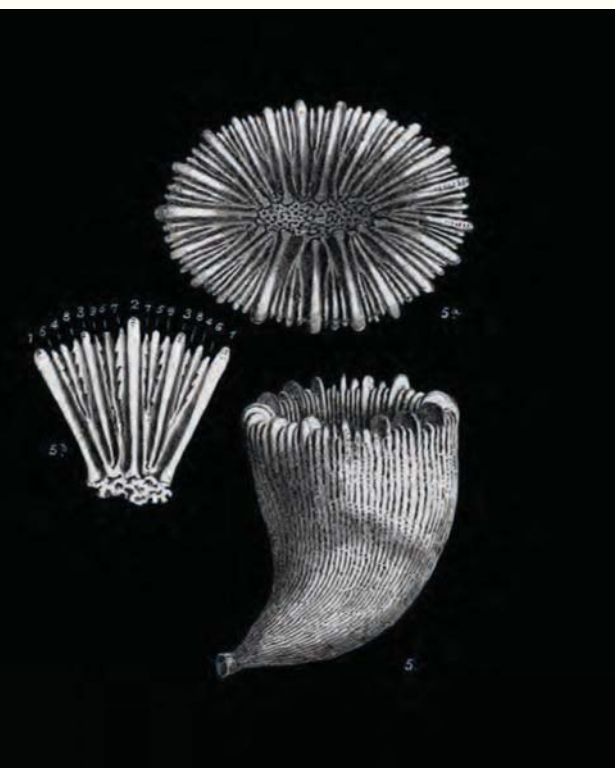
1800

1820

1840



1881.1



1980

1871.1



1950.3



1896.1

2011.1

Locating 200

A Graphical Timeline-Index

[illegible]

'200: Points in Singapore's Natural History': Errata

Please make the following corrections in your copy of '200: Points in Singapore's Natural History'.

| Page | Section | Correction |
|------|----------------------|---|
| — | Jacket front flap | Change "commoditization" to "commoditisation" |
| viii | Paragraph 1, line 2 | Change "those who support it" to "those who support them" |
| x | Paragraph 4, line 2 | Change "ponder our about" to "ponder about" |
| 2 | Paragraph 1, line 3 | Change "who are ultimately" to "who ultimately" |
| 3 | Paragraph 3, line 6 | Change "Mr. Whalfeldt, an" to "Mr. Whalfeldt [sic], an" |
| 3 | Paragraph 4, line 3 | Change "Whalfeldt" to "Wahlfeldt" |
| 4 | Fig. 1.2, caption | Change " <i>malayanus</i> " to " <i>indicus</i> " |
| 7 | Fig. 1.10, caption | Change "shows the scale" to "shows the scale of the vessel" |
| 9 | Fig. 1909.1, caption | Change "article the" to "article in the" |
| 12 | Paragraph 1, line 7 | Change "make great" to "makes great" |
| 19 | Fig. 1821.4, caption | Change "researches" to "research" |
| 21 | Fig. 1822.3, caption | Change "source tension tension" to "source of tension" |
| 23 | Line 6 from top | Change " <i>Neofelis diardi</i> " to " <i>Felis</i> (now <i>Neofelis</i>) <i>diardi</i> " |
| 36 | Fig. 1825.3, caption | Change "were purchase" to "were purchased" |
| 43 | Fig. 1834.2, caption | Change "trade is a very lucrative" to "trade is very lucrative" |
| 63 | Fig. 1907.1, caption | Change "thatare" to "that are" |
| 75 | Paragraph 1, line 6 | Change "Singapore in" to "Singapore on" |
| 79 | Paragraph 1, line 3 | Change "(1798–1877)" to "(1798–1877)." |
| 83 | Fig. 1843.4, caption | Change "Samaran" to "Samarang" |
| 84 | Fig. 1843.5, caption | Change "Samaran" to "Samarang" |
| 93 | Fig. 1855.5, caption | Change "may the" to "may be the" |
| 116 | Fig. 1840.1, caption | Change cross-reference to "1853" to "1883" |
| 117 | Paragraph 1, line 6 | Change "never be" to "never to be" |
| 124 | Fig. 1854.4 | The two apical views of the Lampstand Land Snail are reverse (i.e., the apertures face the wrong direction) |
| 126 | Paragraph 1, line 9 | Change "Whye" to "Wyhe" |
| 159 | Fig. 1832.3, caption | Change "Gray, 1834" to "Hardwicke & Gray, 1827" |
| 168 | Fig. 1883.1, caption | Change the second instance of "1883.1" to "1883.2" |

| Page | Section | Correction |
|------|-------------------------|--|
| 181 | Paragraph 1, lines 7, 8 | Change "O'Dempsey considers these declines to be a result of habitat destruction due to agriculture, beginning around 1870." to "O'Dempsey shows that these declines, which are the result of habitat destruction due to agriculture, reach their first all-time low in 1870." |
| 187 | Paragraph 1, line 4 | Change "as for" to "for" |
| 202 | Fig. 1930.1, caption | Change "Singapore last" to "Singapore's last" |
| 215 | Paragraph 1, line 2 | Change "promptly" to "are promptly" |
| 228 | Fig. 1952.1, caption | Change "(middle)" to "(top right)" and "(right)" to "(bottom right)" |
| 232 | Paragraph, line 2 | Change "police, "exciting" to "police, 'exciting" |
| 235 | Paragraph 1, line 3 | Change "1923. This" to "1923. The" |
| 238 | Paragraph 1, line 3 | Change "passes" to "passed" |
| 241 | Line 7 from the top | Change "collectively" to "collective" |
| 274 | Paragraph 2, line 3 | Change "Itthenwentonwith" to "It then went on with" |
| 285 | Paragraph 1, lines 7, 8 | Change "topic" to "topics" |
| 291 | Fig. 1984.2, caption | Change "The 'Damar' is" to "'Damar' is" and "is during" to "is found during" |
| 299 | Fig. 1877.2, caption | Change "Birgus latro" to " <i>Birgus latro</i> " |
| 313 | Fig. 1919.4, caption | Change "1916" to "1906" |
| 323 | Paragraph 1, line 6 | Change "with the preparation" to "with its preparation" |
| 324 | Fig. 1892.1, caption | Change "musculus" to " <i>musculus</i> " |
| 327 | Fig. 1899.1, caption | Change " <i>Batagurborneoensis</i> " to " <i>Batagur borneoensis</i> " |
| 333 | Paragraph 1, line 2 | Change "collections" to "collection" |
| 346 | Fig. 1934.1, caption | Change "Diplommatina" to " <i>Diplommatina</i> " |
| 348 | Paragraph 1, line 3 | Change "ad" to "and" |
| 358 | Paragraph 2, line 5 | Change "the Fisheries" to "the staff of the Fisheries" |
| 378 | Fig. 1969.1, caption | Change "(Hodgson, that is" to "(Hodgson, 1841) that is" |
| 387 | Paragraph 1, line 7 | Change "Conus" to " <i>Conus</i> " |
| 391 | Paragraph 1, lines 4, 9 | Change "SARS-COV" to "SARS-CoV" |
| 393 | Paragraph 1, line 6 | Change "Singapore Straits" to "Singapore Strait" |
| 470 | Paragraph 1, line 4 | Change "through" to "though" |
| 481 | Fig. 1981.2, caption | Change "March 1980" to "March 1981" |
| 499 | Paragraph 1, line 7 | Change "time is needs" to "time it needs" |
| 513 | Fig. 2014.3, caption | "International Code of Zoological Nomenclature" should be in inverted commas |
| 515 | Paragraph 1, line 4 | Change "Then-President" to "then-President" |
| 517 | Paragraph 1, line 4 | Change "desgrease" to "degrease" |

| Page | Section | Correction |
|------|---------------------------|---|
| 522 | Left column, line 22 | Change "Whalfeldt" to "Wahlfeldt" |
| 522 | Left column, lines 24, 28 | Change "Wahlfeldt [sic]" to "Wahlfeldt" |
| 524 | Year 1843, line 4 | Change "and from White" to "and on White" |
| 525 | Year 1854, lines 2 and 3 | Change "Whye" to "Wyhe" |
| 525 | Year 1855, line 4 | Change "Nepenthes rajah" to " <i>Nepenthes rajah</i> " |
| 525 | Year 1856, lines 1, 3, 5 | Change "Whye" to "Wyhe" |
| 526 | Year 1887, line 3 | Change "images Cheah" to "images from Cheah" |
| 526 | Year 1888, lines 4, 5 | Change "on Allen from G. M. Allen" to "on Allen" |
| 540 | Fig. 1855.1, line 2 | Change "Tashia" to "Tashfia" |
| 549 | Fig. 2000.1, lines 1, 2 | Change to "Siti Maimon Binte Hussin" to "Wendy Y. Wang" |
| 552 | Paragraph 1, line 5 | Change "Tashia" to "Tashfia" |
| 556 | Left column, line 15 | Change "London," to "London, 212 pp." |
| 561 | Right column, line 1 | Change "Suitcase In" to "Suitcase. In" |
| 578 | Left column, line 1 | Change "Whye" to "Wyhe" |
| 605 | Right column, line 37 | Change "Whye" to "Wyhe" |
| — | Back outside cover | Change "commoditization" to "commoditisation" |

The following corrections apply only to printed copies of '200: Points in Singapore's Natural History'.

| Page | Section | Correction |
|------|------------------------|---|
| 335 | Fig. 1912.2, caption | Change "Bulla ampulla" to " <i>Bulla ampulla</i> " |
| 369 | Paragraph 1, lines 2–4 | Change "zoological collections of the ... taken over by Chuang Shou-Hwa" to "zoological collections of the Museum, it is likely that he hears it from Tham Ah Kow (1913–1987). Tham is instrumental in getting the university involved with the zoological collections, a role that is taken over by Chuang Shou-Hwa" |

Citation Information for '200: Points in Singapore's Natural History'

The suggested citation for the parts of this book are:

Ng PKL (2019) Exordium. In: Low MEY & Pocklington, 200: Points in Singapore's Natural History. Lee Kong Chian Natural History Museum, Singapore, pp. viii–xi.

Low MEY & Pocklington K (2019) 200: Points in Singapore's Natural History. With an Exordium by Peter K. L. Ng. Lee Kong Chian Natural History Museum, Singapore, xiii + 607 pp.