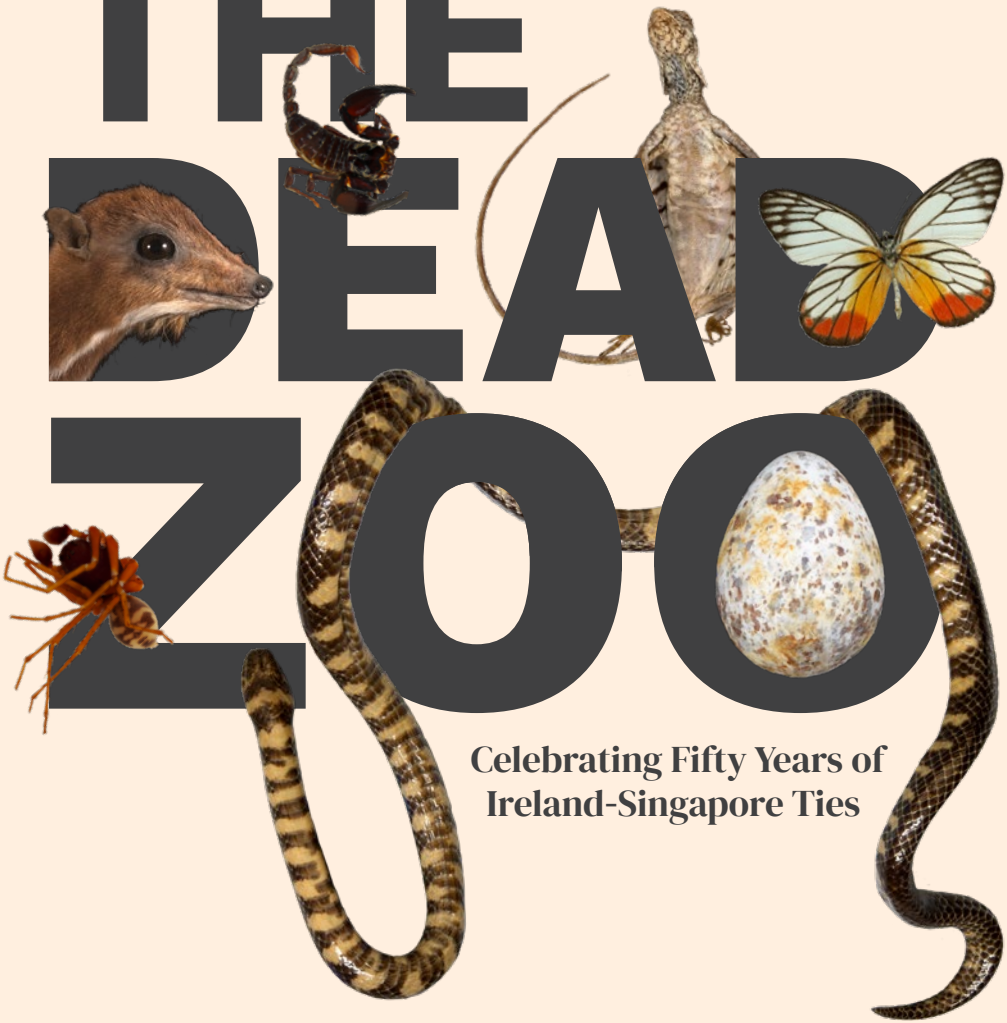
Singapore at THE DEAD ZOO



Celebrating Fifty Years of Ireland-Singapore Ties

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Ard-Mhúsaem na hÉireann

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50 Years of Diplomatic Relations

Singapore at The Dead Zoo:

Celebrating Fifty Years of Ireland-Singapore Ties

EDITORS
Lydia X. Gan and Martyn E. Y. Low

TEXT BY
Amy Geraghty, Deon J. H. Lee, Myles Nolan, Paolo Viscardi,
Paul Y. C. Ng and Tricia J. Y. Cho

CONTENTS

FOREWORDS

A Message from the Ambassador of Ireland to Singapore

Ireland and the Republic of Singapore commemorate half a century of diplomatic relations in 2024 which provides an opportunity to reflect on our many links and connections. I am delighted that one of the ways we will mark this milestone is with this booklet exploring our shared natural history and heritage.

In fact, these natural history links date back to when Singapore was still largely unknown to Europeans and Ireland similarly mysterious to those from South East Asia. The story begins in 1796 with an Irish botanist, Christopher Smith, who was looking to hitch a ride to the Spice Islands (now Kepulauan Maluku) to collect spice plants. Smith missed his rendezvous at Penang with a naval squadron by just six days. Undeterred, Smith travelled from Penang down the Malay Peninsula, and went as far south as Barn Island (today's Pulau Senang, one of Singapore's southern islands) where he collected seven plant specimens. These specimens represent the oldest natural history collections from Singapore known to be in existence. They are also the embodiment of one of the earliest known Irish-Singapore connections; connections that continue and are still growing today.

Little about Smith survives; we do not know of his birth date or what he looked like. However, his specimens from Singapore, like countless others of animals and plants collected from the island, have been cared for and safeguarded for more than two centuries in natural history repositories all over the world. These repositories and the natural history objects they contain are windows into the past; a testament to the passion and efforts of the people who made these collections. The National Museum of Ireland – Natural History is one such institution that has preserved natural history materials collected from Singapore over the centuries. Through these specimens, as well as the associated stories and information we learn more about the people, places, culture and perspectives surrounding natural history.

Beyond the histories, these collections are important materials and tools for scientific research that remain available to scientists today. I am pleased that the *SIGNIFY* initiative by the Lee Kong Chian Natural History Museum (LKCNHM) will bring these specimens, including the ones in Ireland, together digitally and no doubt pave the way for future collaborations.

There is much to learn from our shared past as Ireland and Singapore continue to look ahead to our futures. In a world grappling with climate change and biodiversity loss, scientific collections become more relevant than ever. They hold records of what existed, what we have lost, and what continues to exist. There is an urgent need to reconcile history with the present, to reflect on our past, and better equip ourselves for challenges that the future may hold.

I know that our shared cooperation as small island nations will blossom further during the next 50 years of diplomatic relations as we work together to find global solutions to these global challenges. The power of community and working together is a vital part of both Ireland and Singapore's story and is well described in the Irish language proverb

"Ní neart go chur le chéile."

(There is no strength without unity).

Her Excellency Sarah McGrath
Ambassador of Ireland to Singapore

Messages from the National Museum of Ireland

One of the most exciting aspects of a collection like the National Museum of Ireland's Natural History specimens is how often it is the source of new partnerships and collaborations that lead to the further development of research. Our engagement as part of the *SIGNIFY* project has shone new light not only on the collection of specimens we hold but also on the historic relationships that existed between Ireland and Singapore. Furthermore, it has offered an opportunity for our team to collaborate with a digitisation project of scale, gaining insights and learning from our colleagues in Singapore as well as establishing networks of best practice from which we all can benefit.

At a time when some of our most critical challenges, like biodiversity loss and climate change, require global responses and action, projects like *SIGNIFY* enable the development of greater understanding not only of the specimens we hold but also of our individual cultures and museum practice. It is this bedrock of collaboration and engagement that will most benefit not only our institutions but the visitors and public we serve. We were honoured to host the *SIGNIFY* team and it is a great pleasure to provide a note to this important publication.

Lynn Scarff
Director
National Museum of Ireland

Each object in the collections of the National Museum of Ireland – Natural History can tell a multitude of stories. Each animal in the collection led a life full of activity – a story rarely recorded, but important for our understanding of biodiversity when considered as part of the habits of that species. Each animal was collected by someone who also had a story, including a reason for taking that specimen. This human story may have been recorded, albeit rarely, but more often even the name of the original collector would be lost or conflated with the name – and story – of an intermediary who passed the specimen into the collections of the Museum.

Through collaboration with our colleagues (and dare I say friends) in the *SIGNIFY* team, we have been able to explore some of the stories of our specimens from Singapore, opening up a deeper understanding of the relevance of our collections to the past biodiversity of the nation and learning more about the people and routes by which our collection was formed. I am delighted to be able to share some of those specimens and the stories associated with you here in this book – I hope you enjoy the read.

Paolo Viscardi
Keeper
National Museum of Ireland – Natural History

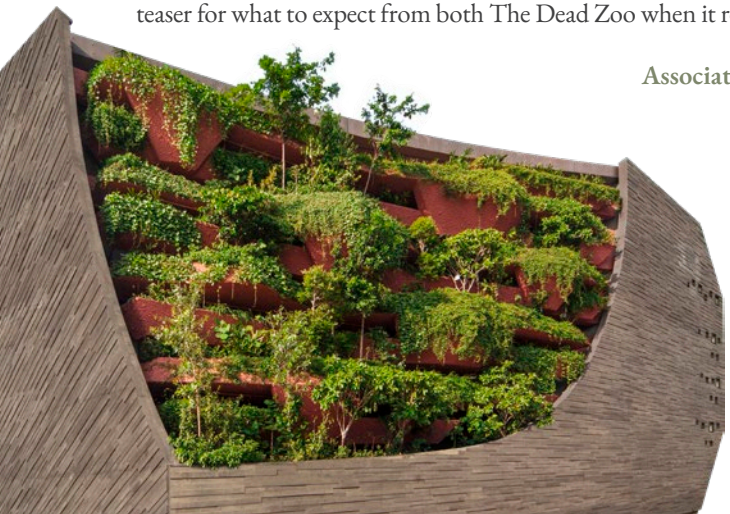
A Message from the Lee Kong Chian Natural History Museum

Ireland's connection with Singapore's natural history heritage, dating back as far as the turn of the 19th century, is celebrated in the present volume through accounts of historical specimens housed in Dublin's beloved "Dead Zoo" (the National Museum of Ireland – Natural History).

The book is a product of *SIGNIFY* (Singapore in Global Natural History Museums Information Facility), a landmark initiative of the Lee Kong Chian Natural History Museum (LKCNHM) to digitise and make accessible scientifically and historically significant animal specimens (and their associated data) that were collected in the past from Singapore and deposited in museums around the world. Through this project, LKCNHM engages with partners that safekeep Singapore specimens to re-collect our natural heritage globally.

This book represents a wonderful collaboration between LKCNHM and The Dead Zoo, who reached out to us proactively, illustrating another benefit from *SIGNIFY*—that of enhancing collaborative networks among natural history museums. Working together, our teams made some surprising discoveries within The Dead Zoo, including uncovering specimens that were the basis of the first checklist of molluscs in Singapore, the first Singapore record of a very rare snake from the Malay Peninsula, and specimens collected by H. N. Ridley, famously known as the "father of the rubber industry".

I congratulate the editors and writers from the LKCNHM *SIGNIFY* team and The Dead Zoo for this intriguing publication, which coincides with the temporary closure of The Dead Zoo for renovation. The specimens and multifaceted anecdotes featured, tell us about biodiversity across disciplines, highlighting the importance of natural history institutions/collections and their continuing relevance to society, and should serve as a teaser for what to expect from both The Dead Zoo when it re-opens and from LKCNHM.



Associate Professor Darren C. J. Yeo
Head
Lee Kong Chian Natural History Museum

INTRODUCTION

Situated at the southern tip of the Malay Peninsula and just 87 kilometres north of the Equator, Singapore is a small and densely populated metropolis. The island developed rapidly after it was established as a British East India Company trading post by Sir Stamford Raffles in 1819 (the maritime sector continues to flourish and remains important to the economy). Where tropical lowland forests once dominated, the landscape has evolved tremendously—with initial exponential growth of agricultural plantations that traced their roots to even before 1819, replaced by rapid urbanisation following World War II. Today, Singapore is characterised by its skyscrapers and high-rise housing and bustling city life, but also by its urban greenery that, together with remaining forest patches found mostly in the Bukit Timah and Central Catchment Nature Reserves nestled in the heart of the island, serve to transform the city state into a "City in Nature".

Beginning in the mid-19th century, Singapore received travellers from around the world, including those interested in natural history: naturalists, explorers, and collectors. Voyages across oceans and continents were often with the island either as the destination or as a stopover en route to other destinations. This gave many opportunities to explore the wonders of Singapore's natural environment. Though land-scarce, Singapore has always been home to a thriving biodiversity, both on land and in the sea. This is evidenced by the plethora of specimens collected from Singapore that are now housed in museums worldwide. Natural history specimens are windows to the past through records of the species that once existed on the island as well as many that are still around today.

In 2019, the Lee Kong Chian Natural History Museum (LKCNHM) at the National University of Singapore initiated a project to digitally re-collect and archive specimens that now reside in these overseas museums. Named *SIGNIFY* (Singapore in Global Natural History Museums Information Facility), the project aims to locate, document, digitise, and make publicly available up to 10,000 specimens collected from Singapore. These specimens comprise mainly type specimens (exemplars of organisms on which scientific names are based) and those of historical significance (either due to their rarity, or the people or events that made these collections possible).
In collaboration with partner institutions, all digitised material (including high-resolution images and accompanying metadata) are readily available on the project website (www.signifynaturalhistory.sg) and on their custodian museums' data portals. This allows "anyone-anywhere-anytime" access to these resources.

In late 2023, the *SIGNIFY* team visited the National Museum of Ireland – Natural History (NMINH). The Natural History Division is one of three branches of the National Museum of Ireland (with the other branches encompassing Irish Antiquities, Art and Industry, and Irish Folklife). The founding collection of minerals and insects was acquired in 1792 by the Royal Dublin Society (RDS) and the current exhibition building was constructed in 1856 to house the growing natural history collections of the RDS. The museum building (located on Merrion Street, Dublin, Ireland) formed a new wing to Leinster House, where the RDS was based for most of the 19th century. In 1877, the Museum and its collection were transferred to state ownership by an Act of Parliament, to form the National Museum of Ireland. The NMINH collections continued to expand and flourish with increased funding and through the dedication of Alexander Carte, its first Director. Virtually unchanged since its opening in 1857, the 'cabinet-style' museum is sometimes referred to as a "museum of a museum", but has been more affectionately known to generations of Dubliners as "The Dead Zoo" for its many taxidermy specimens. More than 10,000 specimens are normally on display and it remains much loved by Irish and international visitors alike.

NMINH currently houses more than 2,000,000 natural history specimens in its collections. Working closely with the NMINH curatorial team, the *SIGNIFY* team uncovered and digitised more than 200 historical specimens originating from Singapore, including some very important type specimens.

This book is a celebration of the NMINH specimens and their custodian museum, which temporarily closes its doors at the end of August 2024 for much needed renovation and conservation works. It outlines (as much as possible) where and when some of these specimens were collected, their journeys to, and how they ultimately ended up in NMINH. We delve into the people (and their lives) involved in the collection and study of these specimens, shedding light on their dedication to observing and seeking to understand the natural world. How arduous it must have been to try to make sense of it without the intricate technological tools and advances in science that scientists have at their disposal today!

We start off by showcasing Irish collectors who are associated with the NMINH collection of Singapore materials: C. P. W. Flynn, whose full name remains a mystery, collected one of the rarest snakes in Singapore; William Jeffcott, a successful lawyer and naturalist who made valuable contributions to society; and Thomas Workman, a well-known businessman and arachnologist whose passion for spiders is one of the foundations of the most comprehensive checklist of the arachnofauna of Singapore to date. We also become acquainted with prominent figures in the history of Singapore, such as Henry Nicholas Ridley, the first Director of the Singapore Botanic Gardens whose legacy lives on through his contributions to zoology and botany. The book then explores the diversity of specimens collected from Singapore since the early 19th century, including molluscs, birds and mousedeers. The final stories in this book highlight specimens with problems common to many natural history museums, such as vague collector data and ambiguity in the origins of specimens.

The book is testament to the deep ties and history shared between Singapore and Ireland beyond diplomacy. The natural world connects people, places, and countries in unexpected ways. It is through these specimens and the stories we glean from them that the connections between science and history become apparent. The stories in this book reiterate the indisputable importance of natural history collections, and the need to safeguard these precious resources in their custodian museums.

Lydia X. Gan and Martyn E. Y. Low

Portrait of C. P. W. Flynn

C. P. W. FLYNN

Of rubber and snake

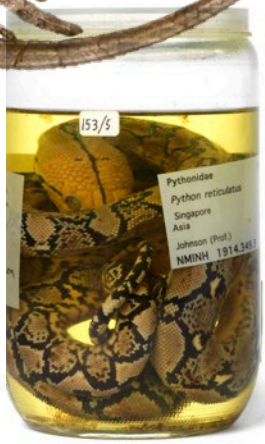
C. P. W. Flynn (died 1927) was an Irish planter who worked in Singapore as the general manager for the Bukit Sembawang Rubber Estate in Seletar. He spent several years in India before coming to Singapore in 1911, where he remained until his death from gunshot wounds during an armed robbery in 1927.

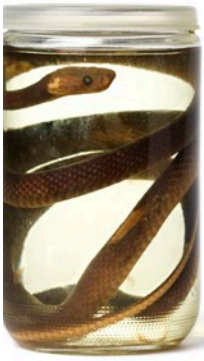
Bottles of specimens collected by Flynn

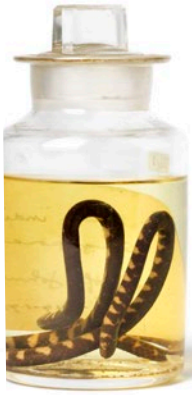
NMINH houses 18 specimens (mostly reptiles) collected by Flynn in Singapore. It is unclear how exactly the specimens came to NMINH, though they were noted to have been "given by Prof. Johnson". This most likely refers to Thomas Johnson (1863–1954), a professor in botany who developed and curated the herbarium of NMINH (which is now housed in the National Botanic Gardens of Ireland). This donation of "a valuable and interesting collection of snakes" was then accepted by Robert Francis Scharff (1858–1934) (naturalist and Keeper of the natural history collections from 1890 to 1921), with approval from Count George Noble Plunkett (1851–1948) (Irish nationalist politician and Director of NMINH from 1907 to 1916).

Flynn's specimens were likely collected on the rubber plantation that he managed, which was located in the vicinity of the modern day Springleaf area. This area is particularly well known to Singapore locals for its prata, a thin and crispy version of the Indian roti that is enjoyed with curry and sugar. Springleaf Nature Park is also one of several parks that buffer the Central Catchment Nature Reserve (CCNR), and the closest to Nee Soon Swamp Forest within the CCNR, Singapore's last remaining freshwater swamp that is home to much of its native biodiversity.

Draco sumatranus







Map of Bukit Sembawang Estate and Seletar Village

FLYNN'S SELANGOR MUD SNAKE: A very rare species

The most notable species in Flynn's collection is the Selangor mud snake (*Raclitia indica*), one of the rarest snakes in the Malay Peninsula region, with only nine known records worldwide. Flynn's specimen, likely collected in 1914, remained the sole record of the species in Singapore until its rediscovery in 2020 when a second individual was found at the nearby Upper Seletar area.

Raclitia indica

Tridacna maxima

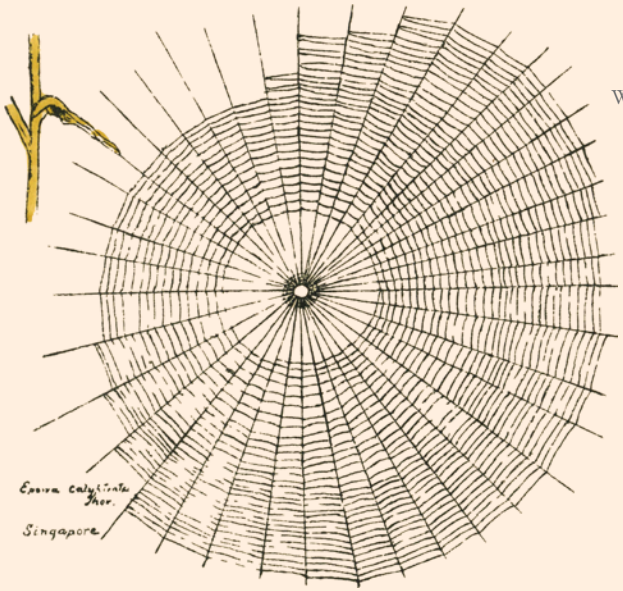
WILLIAM JEFFCOTT

Successful lawyer and naturalist

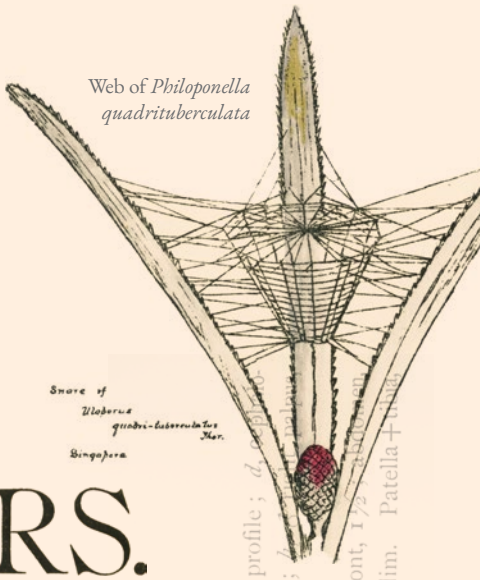
An Irish native, Sir William Jeffcott (1800–1855) was educated at Trinity College, Dublin, and was then called to the Irish Bar in 1828. In 1843, he moved to Sydney, Australia and was appointed as judge of the Supreme Court at Port Phillip. Jeffcott was described to be good-tempered, systematic and fair, earning him popularity and success in court. He resigned two years later and returned home. In 1849, he was knighted and appointed as Recorder (essentially a judge) of the Straits Settlements.

Hippopus hippopus

Besides his successful career in law, Jeffcott was also an honorary member of RDS, which later founded what is today NMINH in 1856. Even after Jeffcott's death from dysentery, he was remembered for his extensive and valuable contributions of specimens to the society. NMINH currently houses a number of these specimens, including a horse hoof clam (*Hippopus hippopus*) and fluted giant clam (*Tridacna maxima*) from Singapore.

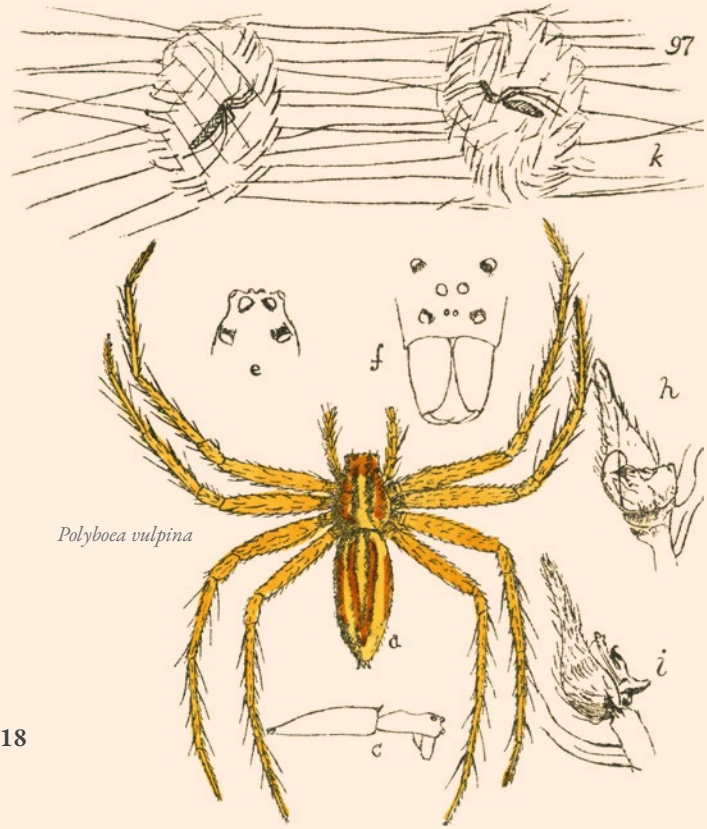


Web of *Zygiella calyptrata*



Web of *Philoponella quadrituberculata*

SPIDERS.



Polyboea vulpina

POLYBŒA VULPINA. Thor.

1895. *Polyboea vulpina*, Thor. The Spiders of Burma, p. 228.

Description of Plate 97 ♀—*a*, spider, mag.; *b*, natural size; *c*, profile; *d*, thorax, underside; *e*, eyes, from above; *f*, do., in front; *g*, epigyne; in front; *i*, do., from outside.

♂ Total length, 7½; cephalothorax, 4; breadth, 2½; do. in front, 1½; 4½; breadth, 2 millim. Leg. i.—19; ii.—20; iii.—17; iv.—18 millim. Patella + iv.—5½ millim.

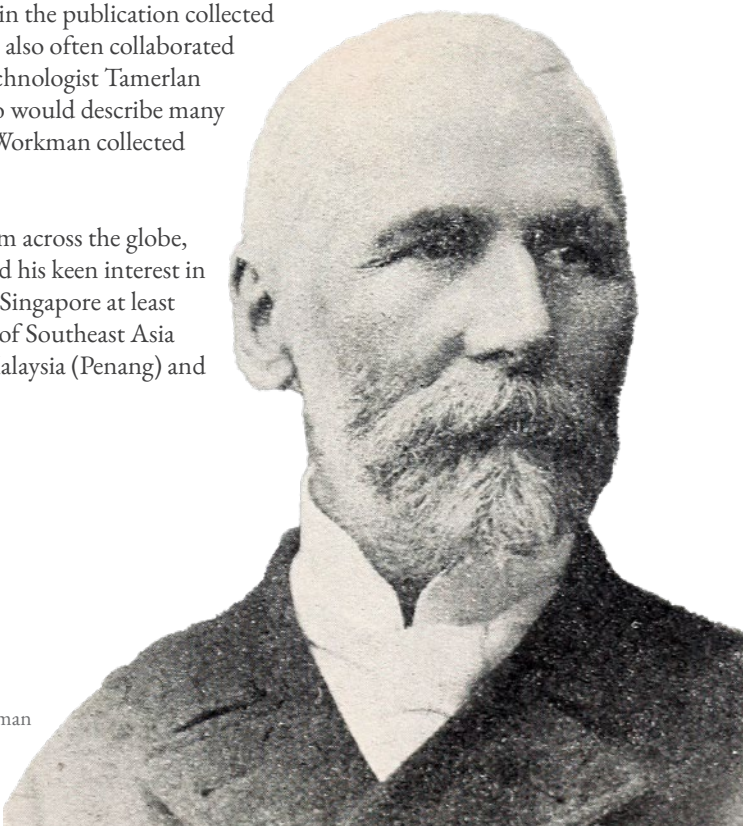
THOMAS WORKMAN

Dedication to spiders

Thomas Workman (1844–1900) was a well-known, successful Irish merchant specialising in two trades: linen and shipbuilding. He was also honorary librarian and later president of the Belfast Natural History and Philosophical Society.

A naturalist at heart, Workman's contributions to arachnology culminated in the first illustrated guide to spiders in Southeast Asia. The guide comprises two volumes (published in 1896 and 1900) with detailed drawings (some hand-coloured) of the animals, along with web structure and details of reproductive organs (the last of which is critical for modern taxonomic work). This publication was a significant contribution to documenting the spider fauna of Singapore and the region, with 76 of the 104 species in the publication collected from the island. Workman also often collaborated with eminent Swedish arachnologist Tamerlan Thorell (1830–1901), who would describe many species from the material Workman collected from Singapore.

Workman's travels took him across the globe, pursuing both business and his keen interest in natural history. He visited Singapore at least four times, as well as parts of Southeast Asia including what are now Malaysia (Penang) and Indonesia (Java).



Portrait of Thomas Workman

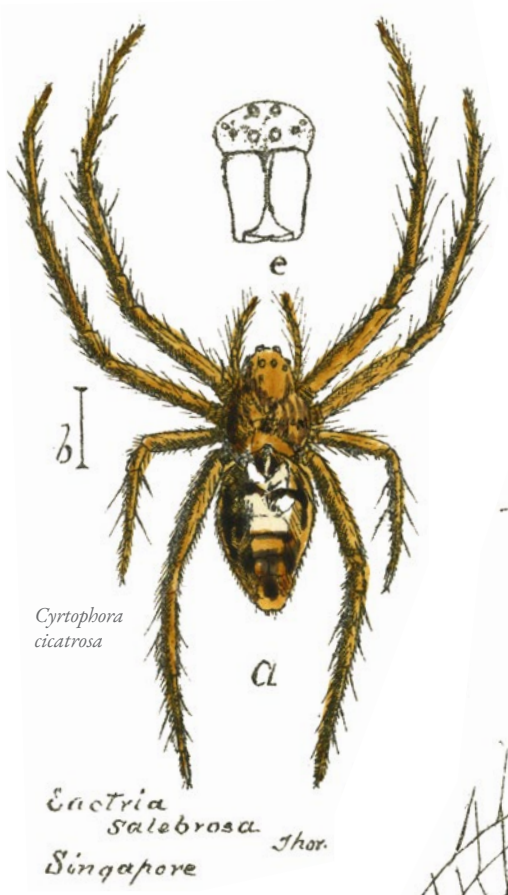
In a talk at the Belfast Natural History and Philosophical Society in 1889, he recounted his last trip to Singapore:

> Unfortunately the last war scare has not improved the summits of the islands; for, as we know, Singapore is one of our principal coaling stations, and it is considered necessary to fortify it strongly ... [and] the surrounding islands are all cut into bastions, ravelins, scarpments and counter-scarpments, and all the paraphernalia of defensive warfare, to the great injury of their natural beauty. ... Monkeys, of which there are two species, abound in the jungle round Mr. Davidson's plantation, which I visited, and are very destructive to the coffee. Pepper is also raised in quantity on Mr. Davidson's plantation ... The jungle round the plantation swarms with tigers, and I was shown the tracks of one not five hundred yards from Mr. Davidson's house.

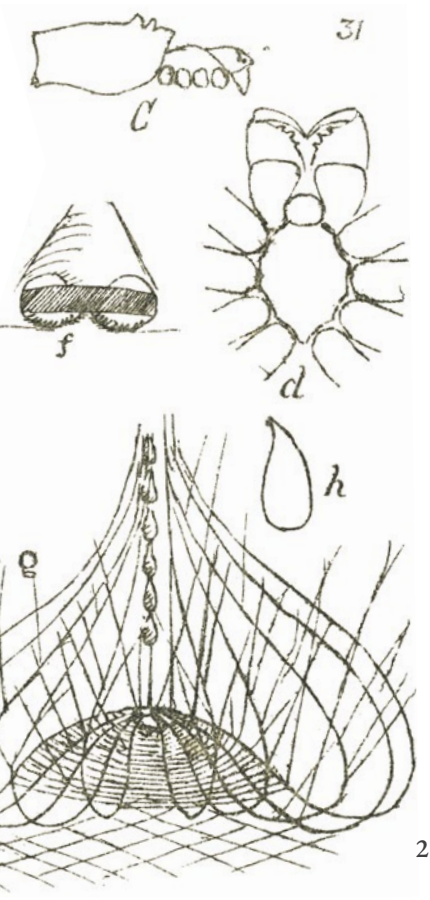
This would be his final trip to the region, as he passed away a year later from illness while traveling in the United States.

Today, a wealth of specimens Workman collected from Southeast Asia is deposited in the NMINH collection. His materials, both historically and taxonomically important, include 38 type specimens from Singapore, several of which have not been recorded again since the late 1800s.

Cyrtophora unicolor



Cyrtophora cicatrosa



WORKMAN SPIDERS: *Psechrus singaporensis* (Singapore lace web weaver)

A single specimen of this species was sent to Thorell, who named it after the place where it was collected. Workman noted that the species' tendency to rapidly retreat into a hole or crevice makes it tricky to collect:

> This spider make[s] a large reticulated snare, about two feet long, in banks or among stones, and generally takes advantage of some hole or crevice, to which one end of the net is fastened, to form a retreat in time of danger. It remains generally in the middle of the snare, but is easily frightened, and runs with great rapidity into its den. Sparsely found in Singapore.

Based on his comments, it is likely that he observed several individuals, but only managed to collect one adult, which was sufficient for Thorell to formally describe the species. This specimen was collected with an egg sac, which females carry in their chelicerae (mouthparts).

STORENA JUVENCA. sp. n.

Description of Plate 75 ♀—*a*, spider, mag; *b*, natural size; *c*, profile; *d*, cephalothorax, underside; *e*, eyes; *f*, epigyne; *g*, ♂ left palpus from outside; *h*, do. in front.

♀ Total length, 5½; cephalothorax, 2½; breadth, 2; abdomen, 3½; breadth, 2½ millim. Leg, i.—8; ii.—6; iii.—6; iv.—9 millim. Patella+tibia, iv.—2¼ millim.

♂ Total length, 5; cephalothorax, 2½; breadth, 1¾; abdomen, 2½; breadth, 2 millim. Leg, i.—9; ii.—6½; iii.—6; iv.—8 millim. Patella+tibia, iv.—2½ millim.

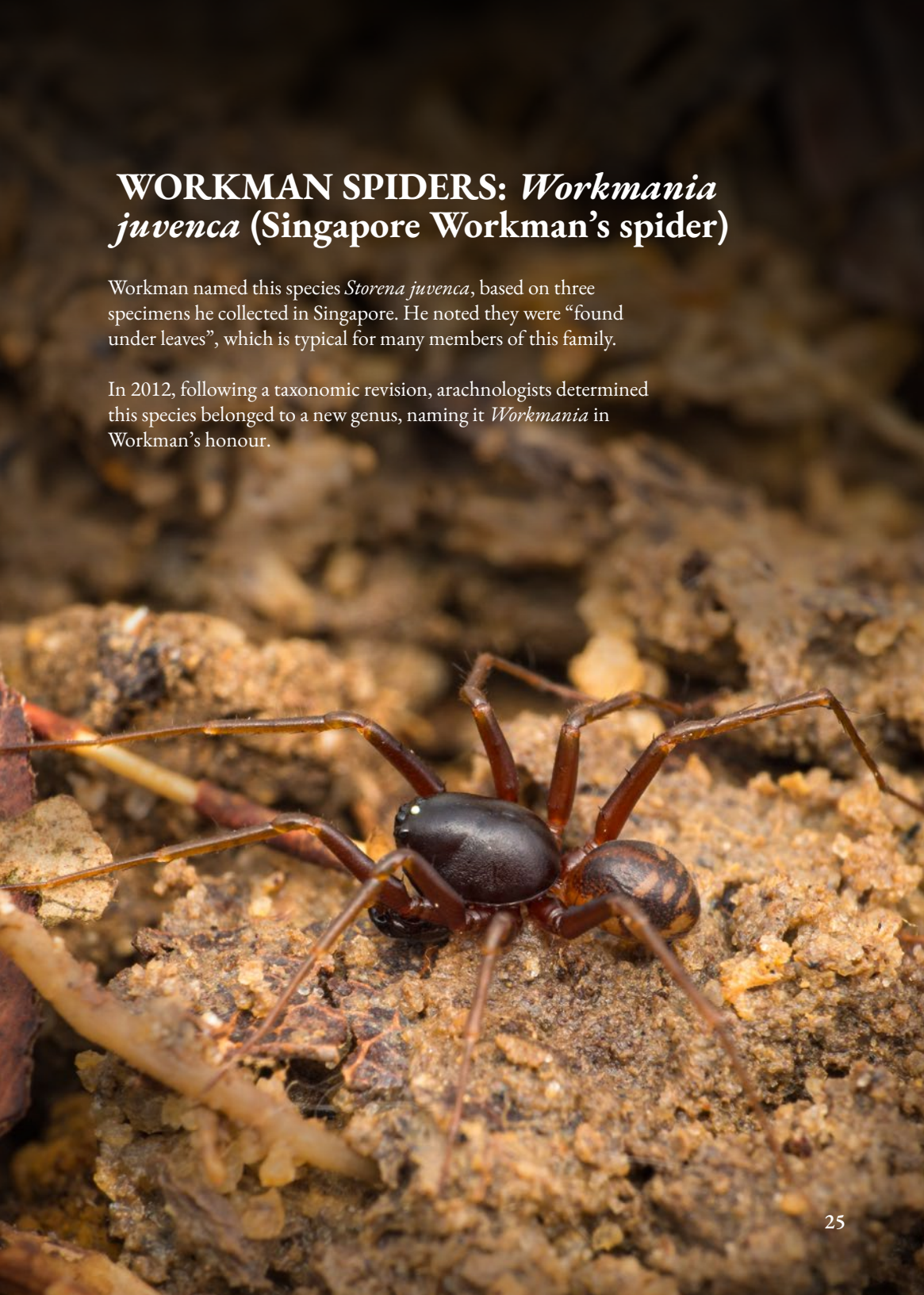
This spider was found under leaves.

Type specimens 2 ♂ and 1 ♀ in my collection.

WORKMAN SPIDERS: *Workmania juvenca* (Singapore Workman's spider)

Workman named this species *Storena juvenca*, based on three specimens he collected in Singapore. He noted they were "found under leaves", which is typical for many members of this family.

In 2012, following a taxonomic revision, arachnologists determined this species belonged to a new genus, naming it *Workmania* in Workman's honour.



WORKMAN SPIDERS: *Hygropoda prognatha* (Common pond flexi-legs)

The genus *Hygropoda* was established by Thorell based on a number of specimens collected by Workman from the Singapore Botanic Gardens. The name is taken from the Greek words ὑγρός (hugrós meaning "wet" or "moist") and πούς (poús meaning "foot"), alluding to the species' aquatic habits.

Workman noted that "this spider was found in considerable numbers on the banks of the pond in the Singapore Botanic Gardens, where it lived under leaves, and when disturbed ran out on the surface of the water".

Though the species has not been found again at the Singapore Botanic Gardens since Workman last collected them in the late 1800s, it has recently been rediscovered in other parts of Singapore.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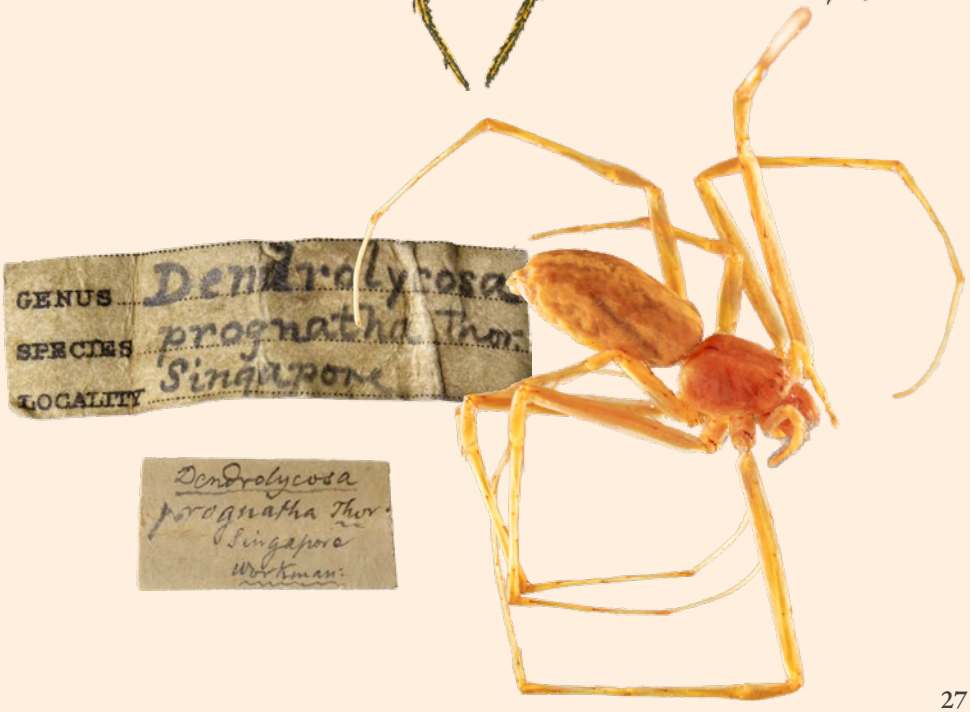
Hygropoda
(= Dendrolycosa Thor.)
Prognatha
Thor.

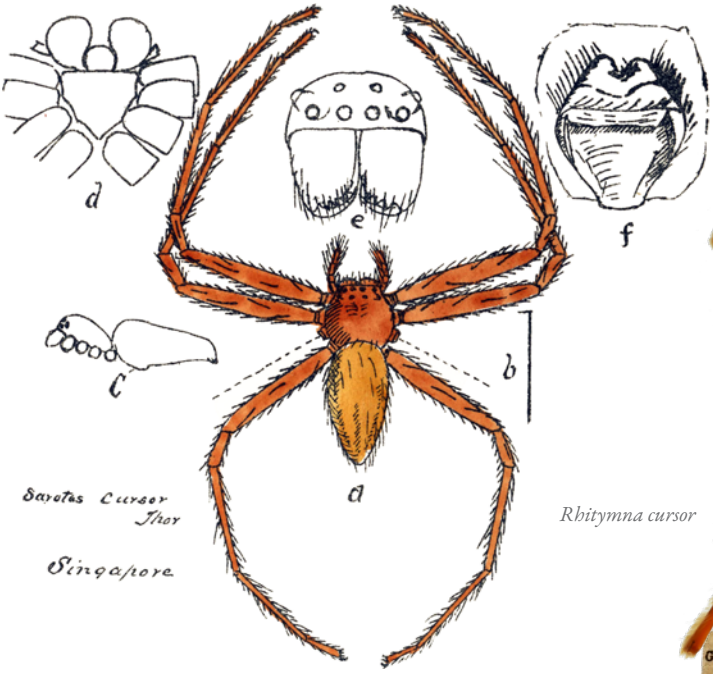

GENUS Dendrolycosa
SPECIES prognatha Thor.
LOCALITY Singapore
Dendrolycosa
prognatha Thor.
Singapore
Workman.

EPEIRA ECZEMATICA. Thor.

Cyrtophora eczematica

TAPPONIA AUSTERA. Thor.

Hamadruas austera



Rhitymna cursor

Drawings and 'lost' species

The illustrations in *Malaysian Spiders* were not the work of Thomas Workman alone. One of his daughters, Margaret Elliot Workman (born about 1874), was credited with several of the illustrations before unfortunately losing her sight. One copy of the book, held in the NMINH library, is unique in having the illustrations fully coloured, likely by Thomas Workman himself.

These colour illustrations are a testament to Workman's attention to detail. Their resemblance to the living spiders is of great importance, as colours on specimens fade quickly after preservation. As some species were never found again, these illustrations provide a glimpse of what these spiders looked like in real life over a century later.

The spider fauna of Singapore is relatively well-studied, yet several of Workman's species remain 'lost' (i.e., not seen again since). The country's landscape has changed greatly since Workman's time, but there remains a possibility that some of these species, albeit rare, still exist today. Some of these 'lost' species are featured here.

BLAND'S BIRDS

Did he ever set foot in Singapore?

Edward Loftus Bland (1829–1923) was born in Belfast and lived at Woodbank in Whiteabbey, in what would become Northern Ireland by the time of his death. Bland was an officer in the Royal Engineers, which were stationed widely all over the world. This possibly explains his diverse bird collection from Singapore, Jersey, Belize and Guatemala. There are, however, no known records of Bland himself being in Singapore to date. The origins of the birds from Singapore in NMINH that are attributed to him are therefore something of a mystery.

Collage of birds from Bland's collection


Science and Art Museum, Dublin.
No. 169. 1899
Singapore
Gen. Bland

Some of the specimens from Bland's collection

Terpsiphone incei

An associate of Bland's may potentially explain the Singapore link. Bland was based in Halifax, Nova Scotia, and is known to have collected birds there. He was associated with Thomas Wright Blakiston (1832–1891), a British officer in the Royal Artillery, who was also in Halifax at the same time. Blakiston was an explorer and ornithologist who is known to have zoological collections from Singapore. He could possibly be the source of Bland's Singapore specimens at NMINH.

Bland's collection of 34 bird specimens originating from Singapore are now housed in NMINH. His collection offers a glimpse into the bird diversity of late-19th century Singapore.

RIDLEY'S MOTHS

His zeal for the natural world

Henry Nicholas Ridley (1855–1956) was an English polymath with interests in geology, botany and natural history, who spent much of his life in Singapore. He was the first scientific director of the colony's botanical gardens at Tanglin (which would eventually become the city's first and only UNESCO World Heritage site), and pioneered a least-damaging method for extracting latex from rubber trees. Ridley was famously given the nickname "Mad Ridley" due to his persistence in developing rubber into a commercial product. In his time as scientific director, he was relentless in persuading planters in Singapore and Malaya to grow and cultivate rubber trees. Ridley's great fervour and dedication saw the establishment of the rubber industry in Singapore and Malaya, where it was grown widely as a major cash crop. By 1920, Malaya was producing over half of the world's rubber.

Erygia spissa

Calliteara horsfieldii

Over his 23 years of service in the Gardens, Ridley devoted much of his time to studying the flora of the Malay Peninsula. Under his directorship, the Singapore Botanic Gardens flourished as a notable centre of botany through its scientific research and publications. Aside from his expertise in the field of botany, Ridley was also interested in zoology and was an avid collector of insects (as well as many other animals). The collection of Ridley specimens in NMINH are not numerous but they do represent a portion of his vast legacy of animal and plants specimens found in collections all over the world.

Portrait of H. N. Ridley (left) with a member of his staff (right) in front of a rubber tree

Collage of butterflies
collected by Kelsall

HARRY JOSEPH KELSALL

A name worth remembering

Harry Joseph Kelsall (1867–1950) is a name often overlooked in the natural history story of Singapore. In the early years of the Singapore Botanic Gardens, Kelsall worked alongside Ridley (who is the subject of the previous section) in making botanical collections. He was an officer in the Royal Artillery and was stationed in Singapore. Kelsall often accompanied Ridley around Singapore, and made several journeys of exploration in the Malay Peninsula.

A naturalist and collector himself, Kelsall kept himself occupied with the study of natural history in his free time. He recounts:

> For any one living in a place like Singapore, and who has any spare time on his hands, it is a great thing to have a hobby ... Such a one is the study of entomology, which has many advantages. It can be carried on at any time; it incurs little expense; it employs both mind and body; and opens up a large field for thought and investigation.

Neocheritra amrita amrita

Ideopsis gaura

Pycnonotus analis egg

Some of Kelsall's diverse lepidopteran (butterflies and moths) collections from Singapore, which are over a century old, are at NMINH. The extensive deforestation and urbanisation that Singapore has undergone means that several species in this collection are listed as Critically Endangered (e.g., *Neocheritra amrita amrita*, also known as the grand imperial) or even Nationally Extinct (e.g., *Ideopsis gaura*, also known as the smaller wood nymph).

Besides the 30 lepidopteran specimens collected from Singapore, there are also, peculiarly, two eggs belonging to *Pycnonotus analis* (known commonly as the yellow-vented bulbul). From Kelsall's scientific publications, it seems likely he was also quite an avid collector of bird eggs!

Eufistulana mumia

PROCEEDINGS

OF THE

MALACOLOGICAL SOCIETY

OF LONDON.

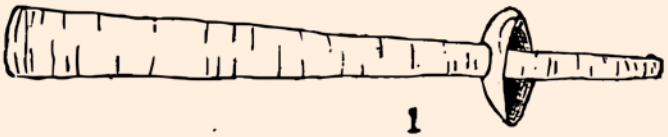
EDITED BY

E. A. SMITH, I.S.O., F.Z.S.

Under the direction of the Publication Committee.

NOTES.

NOTE ON *FISTULANA MUMIA* PERFORATING A VALVE OF A *DOSINIA*. (*Read 14th December*, 1906.)—In the fifth volume of these "Proceedings" (p. 345) Messrs. Sowerby and Fulton gave a brief notice of a specimen of this species, which was shown to have bored its way though a *Mitra*. Another instance of the perforating power of the *Fistulana* has for many years been in the British Museum. A small valve of a species of *Dosinia*, 15 mm. in length, has been bored through by a *Fistulana* (Fig. 1), and is firmly attached to the tube about three-quarters of an inch from the posterior



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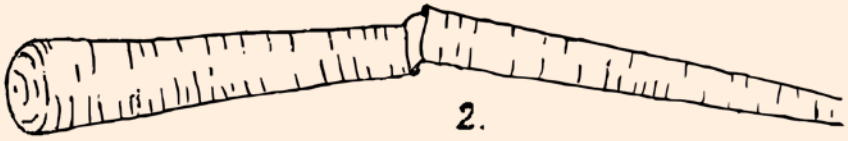


2.

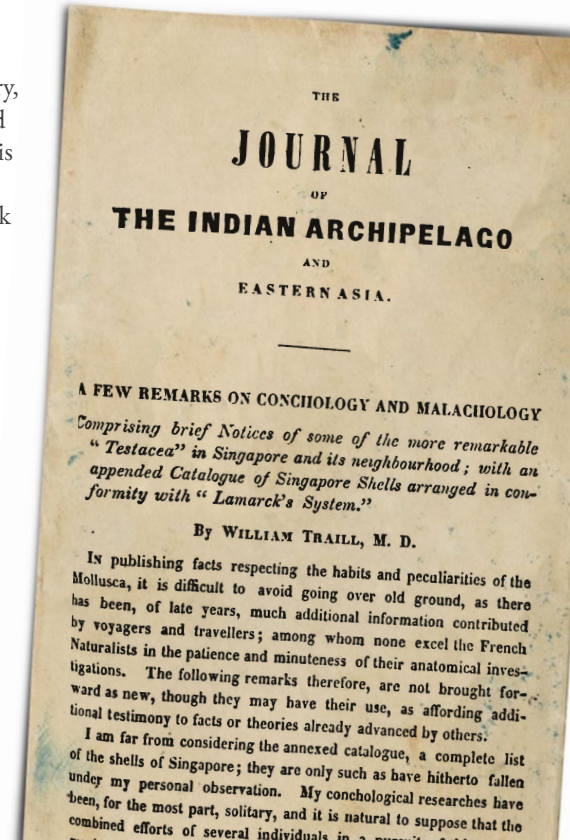
WILLIAM TRAILL

Singapore's earliest mollusc checklist

William Traill (1818–1886) was a distinguished medical surgeon and an avid naturalist. Born in Kirkwall, Scotland, Traill graduated with a medical degree and joined the East India Company as a surgeon in India in 1841. He became Assistant Surgeon in Singapore in the 1840s, where he had the opportunity to further his interest in malacology and made extensive collections of molluscs. His contributions to malacology in Singapore and its surroundings are significant, as he published the first checklist of the malacofauna of the area in 1847.

Traill lamented that his "conchological researches have been, for the most part, solitary, and it is natural to suppose that the combined efforts of several individuals in a pursuit of this nature would have produced more accurate and satisfactory results". Despite this, his work remains noteworthy until today. His 1847 checklist includes the first mention of the giant clam (*Tridacna gigas*) in Singapore, providing possibly the strongest support that this species—absent from 20th century literature—once inhabited its reefs.

NMINH houses a collection of molluscs collected by Traill from Singapore, including a species very rarely encountered in Singapore: *Eufistulana mumia*. Also known as the club-shaped boring clam, and despite its seemingly brittle form, it does exactly as its name suggests—being able to bore through sediments or even other shells!



THE

JOURNAL

OF

THE INDIAN ARCHIPELAGO

AND

EASTERN ASIA.

A FEW REMARKS ON CONCHOLOGY AND MALACHOLOGY

Comprising brief Notices of some of the more remarkable "Testacea" in Singapore and its neighbourhood; with an appended Catalogue of Singapore Shells arranged in conformity with "Lamarck's System."

By WILLIAM TRAILL, M. D.

In publishing facts respecting the habits and peculiarities of the Mollusca, it is difficult to avoid going over old ground, as there has been, of late years, much additional information contributed by voyagers and travellers; among whom none excel the French Naturalists in the patience and minuteness of their anatomical investigations. The following remarks therefore, are not brought forward as new, though they may have their use, as affording additional testimony to facts or theories already advanced by others.

I am far from considering the annexed catalogue, a complete list of the shells of Singapore; they are only such as have hitherto fallen under my personal observation. My conchological researches have been, for the most part, solitary, and it is natural to suppose that the combined efforts of several individuals in

MOLLUSC COLLECTIONS

What the shell?

Molluscs come in a variety of shapes and sizes. While the most recognisable forms include a typical bivalve, or clam (like the depicted *Volachlamys singaporina*), spiralled gastropod, or snail (the photographed *Lambis lambis*), there are groups that appear rather bizarre. For instance, *Verpa penis*, also known as a watering-pot shell, is actually a bivalve despite its appearance (a close look at the "flanged" end of the specimen reveals two valves like those of a clam)!

Verpa penis

Volachlamys singaporina

Lambis lambis

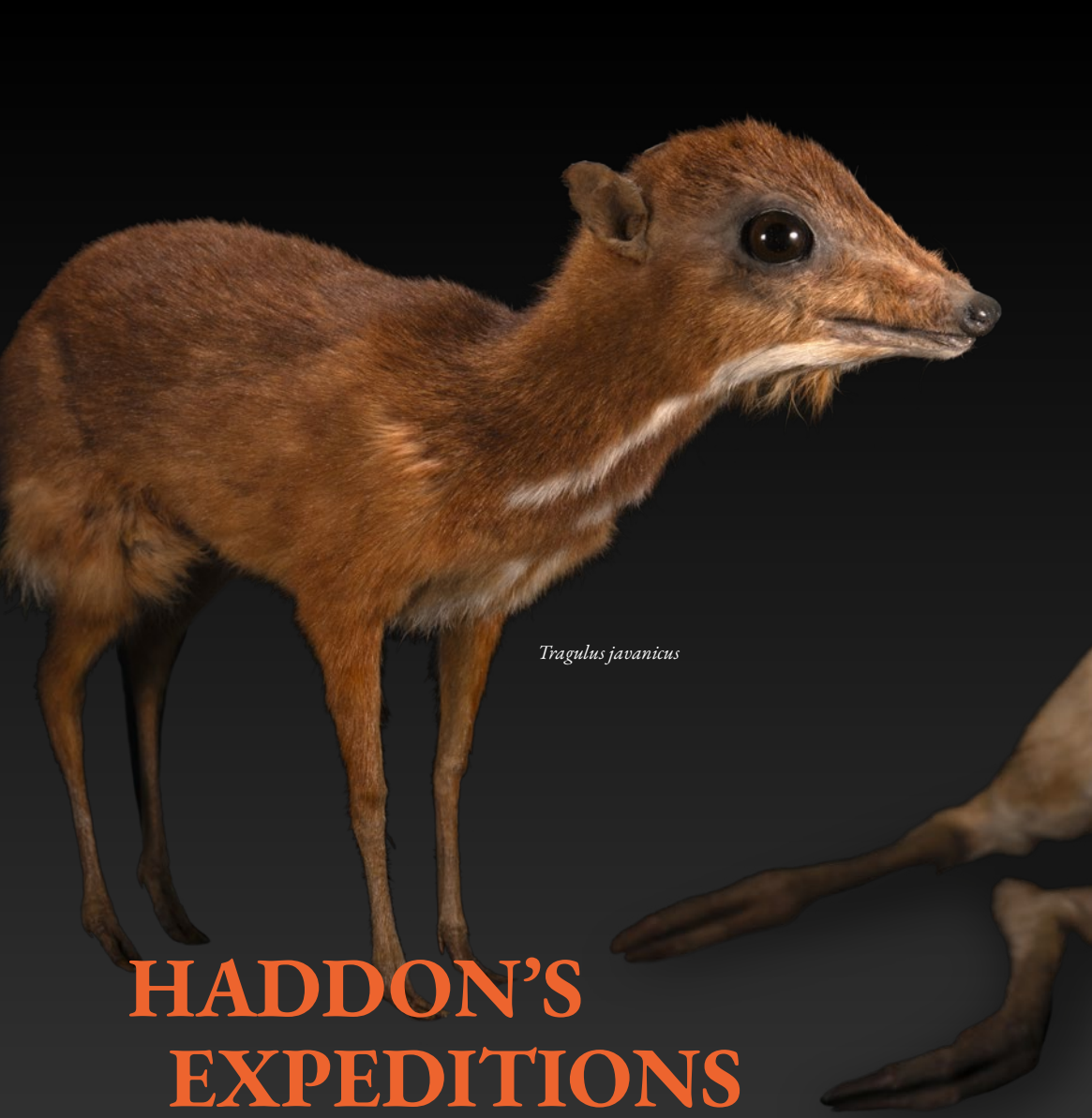
Macrocypraea zebra

Olivia irisans

Also illustrated are some cowries (*Olivia irisans, Macrocypraea zebra*), belonging to a group of molluscs that is typically known and prized among collectors for its intricate and glossy appearance. Cowries are coiled gastropods, though the spiral shape is more evident in juveniles. In fact, the shell first created by a cowrie is that of a narrow spiral, eventually getting covered by its smooth outer shell as it grows.

Potamocorbula nimbosa

Of the variety of shells that are shown, *Potamocorbula nimbosa*, commonly known as the cloudy corbula, is a rare specimen to behold as the species is now extinct in Singapore.



Tragulus javanicus

HADDON'S EXPEDITIONS

The journey of two mousedeers

Alfred Cort Haddon (1855–1940) was a British anthropologist and ethnologist who was influential in the development of both fields in Britain. Haddon's life and legacy are both paradoxical and problematic—he was considered a radical that opposed colonialism and racism, yet his desire to obtain materials led to the theft of skulls from an Inishbofin graveyard in 1890.

Tragulus kanchil

Haddon was also famous for his expeditions and work in the Torres Strait (in 1888 and 1898). In particular, his second expedition in 1898 included several stopovers at Sarawak, New Guinea and Singapore.

From Singapore newspapers reports and the annual report of the Raffles Library and Museum (from which the historical collections of the LKCNHM originate), it is known that Haddon visited the museum in December 1898 on his way to Borneo and was again in Singapore in May 1899 on his way home. NMINH holds two mousedeer specimens "given by Prof. A. C. Haddon" that were collected from Singapore and Borneo (as listed in the accessions register). Both specimens also bear Raffles Museum labels, raising a possibility that Haddon may have been given these specimens or exchanged other specimens for them with the museum in Singapore. The specimens would likely have been transferred to the NMINH by Haddon, who was Professor of Zoology at the neighbouring College of Science at the time.

Map indicating several key stopovers from Haddon's 1898 expedition

Collage of shells collected by Armstrong

ARMSTRONG'S MOLLUSCS

Who was the man behind the collection?

This collection of marine shells that was donated by Miss Elizabeth Armstrong (no dates) on 5 May 1918, was collected by her brother, Lieutenant-Colonel C. J. Y. Armstrong (no dates). Unfortunately, the exact identity of Lieutenant-Colonel Armstrong remains unknown.

Such situations of ambiguity are prevalent especially with old museum specimens. It was not common practice to note (in precise detail) the collector, locality, and collection dates associated with the specimen. Challenges can also arise when specimens are wrongly/improperly labelled, abbreviations are used, spelling mistakes or the information on labels are badly written. Information may occasionally also be lost when specimens are shifted around or moved to other museum(s), and associated labels misplaced or mixed up.

The search for collector information, as in the case of Armstrong, may sometimes lead to a dead end if there are no other historical records.

THE WRIGHT BUSINESS

Two generations of dealers

Bryce McMurdo Wright Senior (1814–1874) and his son Bryce McMurdo Wright Junior (1850–1895) were among the best-known dealers of minerals, fossils, archaeological and ethnographic objects in the 19th century. Wright Senior started his business in 1842 selling minerals and fossils, later owning a shop on Great Russell Street, London, which included archaeological and ethnographic objects, often supplying material to the British Museum.

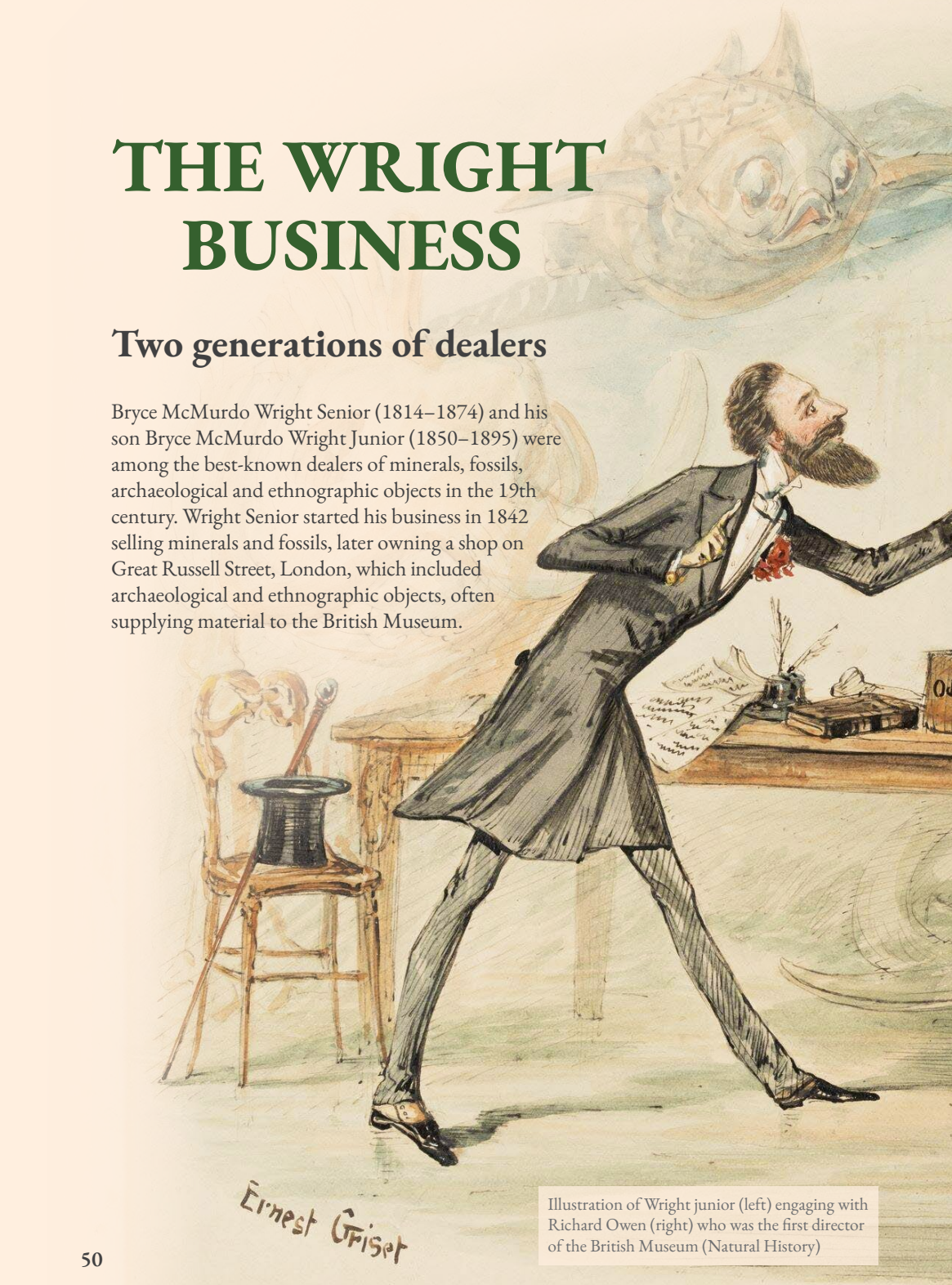


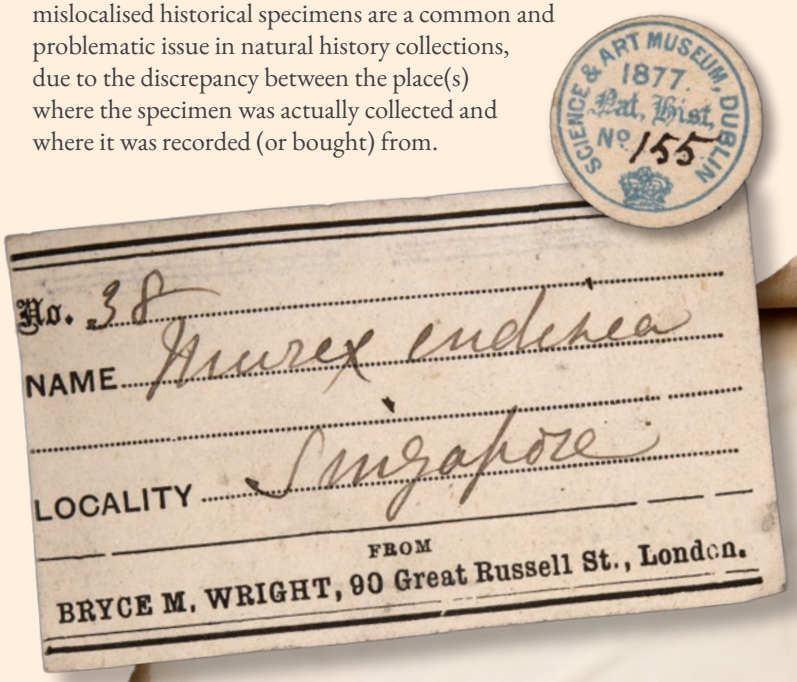
Illustration of Wright junior (left) engaging with Richard Owen (right) who was the first director of the British Museum (Natural History)


Odontopteryx Toliapicus

Shells collected by Bryce Wright (from top to bottom): *Conus betulinus*, *Conus generalis* and *Hexaplex cichoreum*

It was through purchase that some materials collected from Singapore and its surrounding regions ended up in NMINH, accompanied by labels clearly marked “From Bryce M. Wright” (see custom-printed Bryce Wright labels). It is, however, likely that numerous specimens associated with the Wright name were of uncertain/inaccurate origins. These include specimens that are almost certainly mislocalised as they are not (or rarely) known to occur in Singapore. Such is the case with the three species depicted on the left, known also to be prevalent in the shell trade.

As Singapore was situated along bustling trade routes, it is perhaps no surprise that shells from the surrounding region were sold here, likely resulting from the colony’s vast connectivity. Unfortunately, mislocalised historical specimens are a common and problematic issue in natural history collections, due to the discrepancy between the place(s) where the specimen was actually collected and where it was recorded (or bought) from.



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FOREWORDS
Images of the National Museum of Ireland – Natural History and Lee Kong Chian Natural History Museum, from the respective museums.

INTRODUCTION
A brief introduction to the changes to Singapore environment during the 19th and 20th centuries can be found in Low & Pocklington (2019: 34–68). Information on the *SIGNIFY* project can be found at the website (https://signifynaturalhistory.sg/about). Information on NMINH from Murphy (2021).

C. P. W. FLYNN
Information on Flynn from the *Singapore Free Press and Mercantile Advertiser* (13 April 1927, p. 235). Information on Johnson from Desmond (1994: 386). Information on the donation is from the archives of NMINH.

Images: C. P. W. Flynn portrait from the *Straits Budget* (28 April 1927, p. 14); Map from Singapore Sheet No. 7 published in 1924. Courtesy of The National Archives, UK. Accession number: D2019_000033_TNA.

FLYNN'S SELANGOR MUD SNAKE: A very rare species
Information on the Selangor mud snake from Law et al. (2020: 165–167).

WILLIAM JEFFCOTT: Successful lawyer and naturalist
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THOMAS WORKMAN: Dedication to spiders
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Images: Workman portrait from Deane (1924: pl. facing p. 114), illustrations Workman & Workman (1896).

WORKMAN SPIDERS: *Psechrus singaporensis* (Singapore lace web weaver)
Quotation from Workman & Workman (1896: 78). Information on the species from Koh et al. (2022: 318).

Images: Photograph of live *Psechrus singaporensis* from Joseph K. H. Koh, illustration from Workman & Workman (1896).

WORKMAN SPIDERS: *Workmania juvenca* (Singapore Workman's spider)
The quotation on the habitat of *Workmania juvenca* is from Workman & Workman (1896: 75). Information on this species and the genus *Workmania* from Dankittipakul et al. (2012: 310) and Koh et al. (2022: 758, 759).

Image: Photograph of live *Workmania juvenca* from Joseph K. H. Koh, illustration from Workman & Workman (1896).

WORKMAN SPIDERS: *Hygropoda prognatha* (Common pond flexi-legs)
Quotation from Workman & Workman (1896: 95). Information on recent rediscovery of this species from Singapore from Koh et al. (2022: 309).

Image: Photograph of live *Hygropoda prognatha* from Joseph K. H. Koh, illustration from Workman & Workman (1896).

THOMAS WORKMAN: Drawings and 'lost' species
Information on *Malaysian Spiders* (Workman & Workman, 1896) from Pocock (1894: 99, 100) and Murphy & Murphy (2000: 33, 34). Information on Margaret Workman from Census of Ireland (for the year 1911, National Archives) and Finnegan (2016: 73, 74, note 75).

Image: Illustrations from Workman & Workman (1896).

BLAND'S BIRDS: Did he ever set foot in Singapore?
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RIDLEY'S MOTHS: His zeal for the natural world
Information on the history of the Singapore Botanic Gardens, as well as on Ridley and his botanical research from Middleton & Turner (2019: 19–24). Information on Ridley's efforts to encourage rubber planting from Low & Pocklington (2019: 60–65).

Image: Portrait of Ridley and a worker in a rubber plantation in Singapore taken by G.R. Lambert & Co. (ca. 1910). Courtesy of Royal Netherlands Institute of Southeast Asian and Caribbean Studies (KITLV). Accession number: KITLV 1403180.

HARRY JOSEPH KELSALL: A name worth remembering
Information on Kelsall and his work with Ridley is from Kelsall (1894), Steenis (1950: 276) and Desmond (1994: 395). Quote from Kelsall (1890: 325). Conservation status of the lepidopteran species are from Khew et al. (2024: 590).

WILLIAM TRAILL: Singapore's earliest mollusc checklist
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Images: First page of Traill's checklist from Traill (1847: pl. facing p. 236), *Eufistulana mumia* shell perforating a *Dosinia* from Smith (1907: 203).

MOLLUSC COLLECTION: What the shell?
Information on molluscan body structure and shell types from Callomon (2019). Conservation status of *Potamocorbula nimbosa* is from Tan & Tan (2024: 109).

HADDON'S EXPEDITIONS: The journey of two mousedeers
Information on Haddon's travels from Haddon (1901). Haddon's theft of human remains from Inishbofin are discussed in Hussain et al. (2022) and Walsh (2023). Additional information on Haddon's visits to Singapore are from the *Straits Budget* (15 December 1898, p. 6; 4 May 1899, p. 2) and the *Annual Report of the Raffles Library and Museum* (1899, for 1898, p. 14).

Image: Map indicating several stopovers made throughout Haddon's expedition through the Torres Straits by *SIGNIFY*. Map redrawn from *British Imperial Federation Map of the World* by J. G. Bartholomew (1889). Courtesy of National Library of Australia. Accession number: MAP RM 1392.

ARMSTRONG'S MOLLUSCS: Who was the man behind the collection?
Information from the Armstrong donation is from the archives of NMINH.

THE WRIGHT BUSINESS: Two generations of dealers
Information on the Wrights from Cooper et al. (2009). For a discussion on the mislocalisation of mollusc species in the Singapore context, see Low & Pocklington (2019: 90, 91).

Image: Illustration of Wright junior engaging with Richard Owen who was the first director of the British Museum (Natural History) by E. Griset (ca. 1873). Courtesy of the Victoria and Albert Museum. Accession number: E.778-1948.

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In 1796, an Irish botanist named Christopher Smith collected plants in Singapore waters. These are the earliest known natural history specimens from the area. The natural heritage ties between Ireland and Singapore are therefore very old. This connection continues with the specimens collected from Singapore over the past two centuries that are now at "The Dead Zoo" as the National Museum of Ireland – Natural History is affectionately known. This book tells the story of this rich shared history, culture, and science.