



# Journeys of Discovery

## The Life of Alfred Wallace

BY PAUL MASON

The man lies on his bed, bathed in sweat. He is far from home and sick with malaria. His research, his specimen collection, will have to wait. As the fever racks his body, his restless mind returns to the questions that follow him everywhere. Why are there so many species? And how did they all come about? The ideas tumble for hours. Finally, in a flash, it comes to him: a way to explain it all! After his fever breaks, he will begin to write.

### Treasure

Alfred Russel Wallace was born in 1823 and grew up in Wales and rural England. He left school at fourteen after his family fell on tough times, and his first job was as an apprentice surveyor, making maps and charts of the local countryside. In his spare time, Wallace took long walks over the hills, where he developed a passion for the natural world. He would return inspired, his collection box “full of treasures”. Much later, in his memoir, he wrote about the joy he got from “every discovery of a new form of life”.

### Wallace the Naturalist

In 1844, Wallace became a teacher. He used the local library to learn more about the living world, and he met Henry Bates, another keen **naturalist**. Bates encouraged Wallace’s interest in nature, especially his love of beetles. While it amazed Wallace that over a thousand

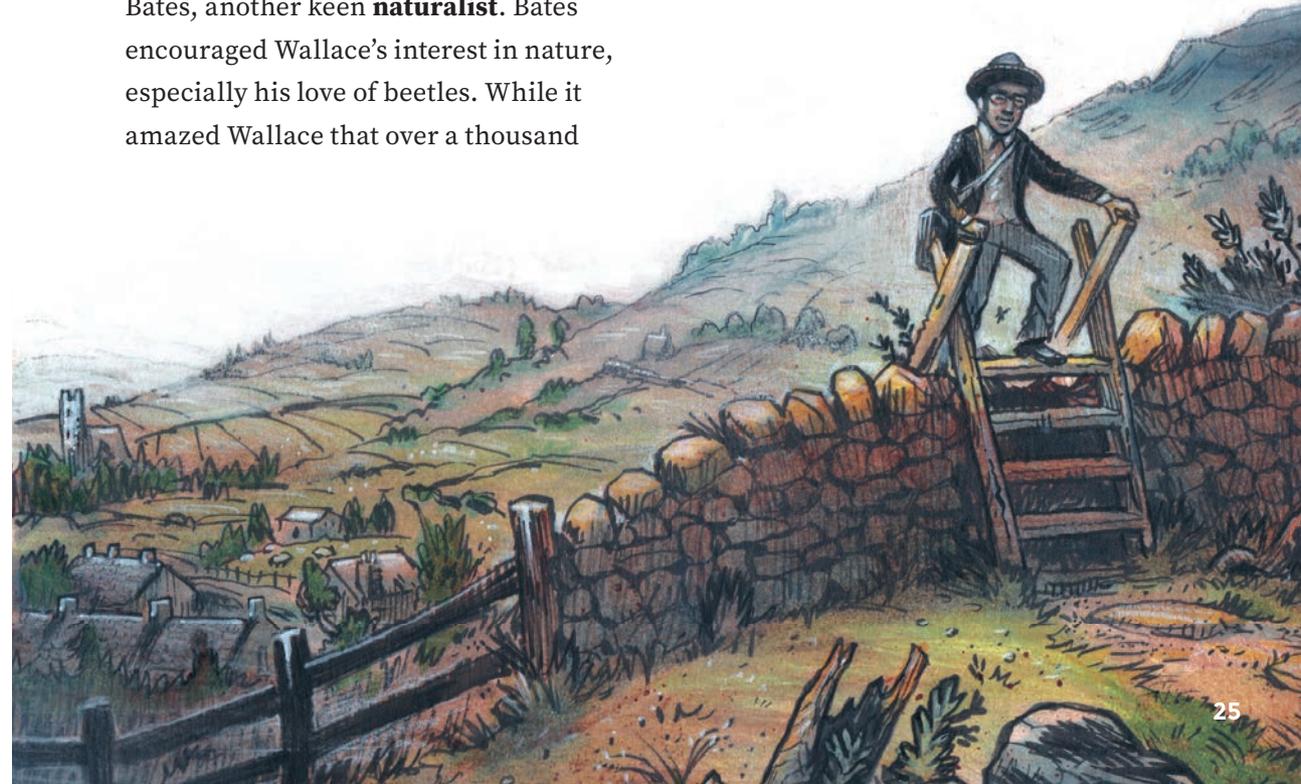
**species** of beetle could be found within a 10-mile radius of his home, he wasn’t content with just a local collection – he said little was to be learnt from it. In 1848, the two friends set off on a life-changing expedition to Brazil. They planned to study and gather wildlife, selling specimens to museums and private collectors to pay for the trip. Wallace was especially eager to study more about the **origin** of species, something he’d been puzzling over for some time. He hoped the expansive rainforest of the Amazon – with its countless plants and animals – held the answer.

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**naturalist:** a person who studies nature

**origin:** the way something begins

**species:** a group of living things that are very similar and can breed with one another



# The Victorians

Wallace lived during the Victorian era, named after Queen Victoria (who ruled the British Empire from 1837 to 1901). During her reign, Britain became a powerful country, intent on expanding its control across the globe. It was also a time of British invention and discovery, especially in the field of natural science, a subject that was newly popular with the British public. Many of them wanted to read about the intrepid journeys made by adventurers like Wallace. It fired their imaginations. Museums and wealthy collectors were interested, too. Museums wanted new specimens to study. Collectors wanted to own something unique, an unusual bird or a stunning butterfly from a distant land.

Many Victorians believed that this exotic life – indeed all life, and the planet itself – had been created by God within the last few thousand years. But some scientists had other ideas. They had recently agreed that Earth was more likely to be millions of years old. Furthermore, **geologists** like Charles Lyell argued that slow geological processes, such as erosion and the formation of mountains, had changed Earth over time. Wallace was greatly influenced by ideas like these – and eager to build on them.

**geologist:** a person who studies the structure of Earth and the processes that made it



## Wallace the Explorer

Wallace would spend the next four years exploring some of the world's most remote places. He stayed in the Amazon region until 1852 – travelling, mapping, drawing, and writing. He also collected thousands of specimens, mostly birds, butterflies, and other insects, to sell back in England. Trouble struck on the return trip, when Wallace's ship caught fire. Along with the crew, he spent ten days in a small boat, waiting to be rescued. Although Wallace lost his work, he still managed to write several articles and two books about his trip. For the first time, his ideas were being read – and noticed – by the scientific world.

In 1854, Wallace set sail again – this time, for the Malay Archipelago. He made scores of journeys around the islands, travelling some 22,000 kilometres. Wallace relied heavily on

the support and knowledge of local people. He also paid assistants to help with his work. One of the most skilled was Ali, a young Malay who was adept at preserving birds and teaching Wallace his language. Ali was also an experienced boatman and skippered many of their journeys.

These trips weren't easy. Wallace caught malaria, which caused bouts of fever, and tropical sores on his legs sometimes made walking difficult. Still, he collected and recorded an incredible 125,660 specimens, finding species such as the golden birdwing butterfly (*Ornithoptera croesus*) and the largest bee in the world (*Megachile pluto*). More than five thousand of these species were new to Western science – and Wallace couldn't explain all of them, or their countless varieties.





## Searching for a Theory

In both the Amazon rainforest and the Malay Archipelago, Wallace paid close attention to not only which new species he found but also where he found them. He believed a species' geographic location could provide important clues about its history. He began to notice patterns. It was almost as if imaginary lines divided species into groups. In the Amazon, for example, he identified different species of tamarin monkeys living on opposite sides of the river. Likewise, travelling between islands, Wallace discovered distinct species of birdwing butterflies from one island to the next. Wallace also noticed that the species within these groups shared many **characteristics** – more than with related species in other places. He realised the closer different species lived to each other, the more closely related they seemed to be.

Wallace had a further thought. Charles Lyell had argued that the geology of Earth had changed incrementally over time – so why not the life on Earth, too? Could it be that, like a branching tree, new species developed from the ones that came before them in the same way that new twigs grew from older branches? Wallace had reached an important conclusion: species were most closely related to others not only near them in space but also in time.

Wallace shared his thoughts in an article called “On the Law Which Has Regulated the Introduction of New Species” (known as the Sarawak Law) in 1855. He wanted to “feel the pulse” of other scientists. What would they make of his startling theory? Sadly, not much. Wallace needed to find the **mechanism** that drove this evolutionary change before any other naturalists would take the idea seriously.

**characteristic:** the features and qualities that make one species different from another  
**mechanism:** a process that allows something to take place

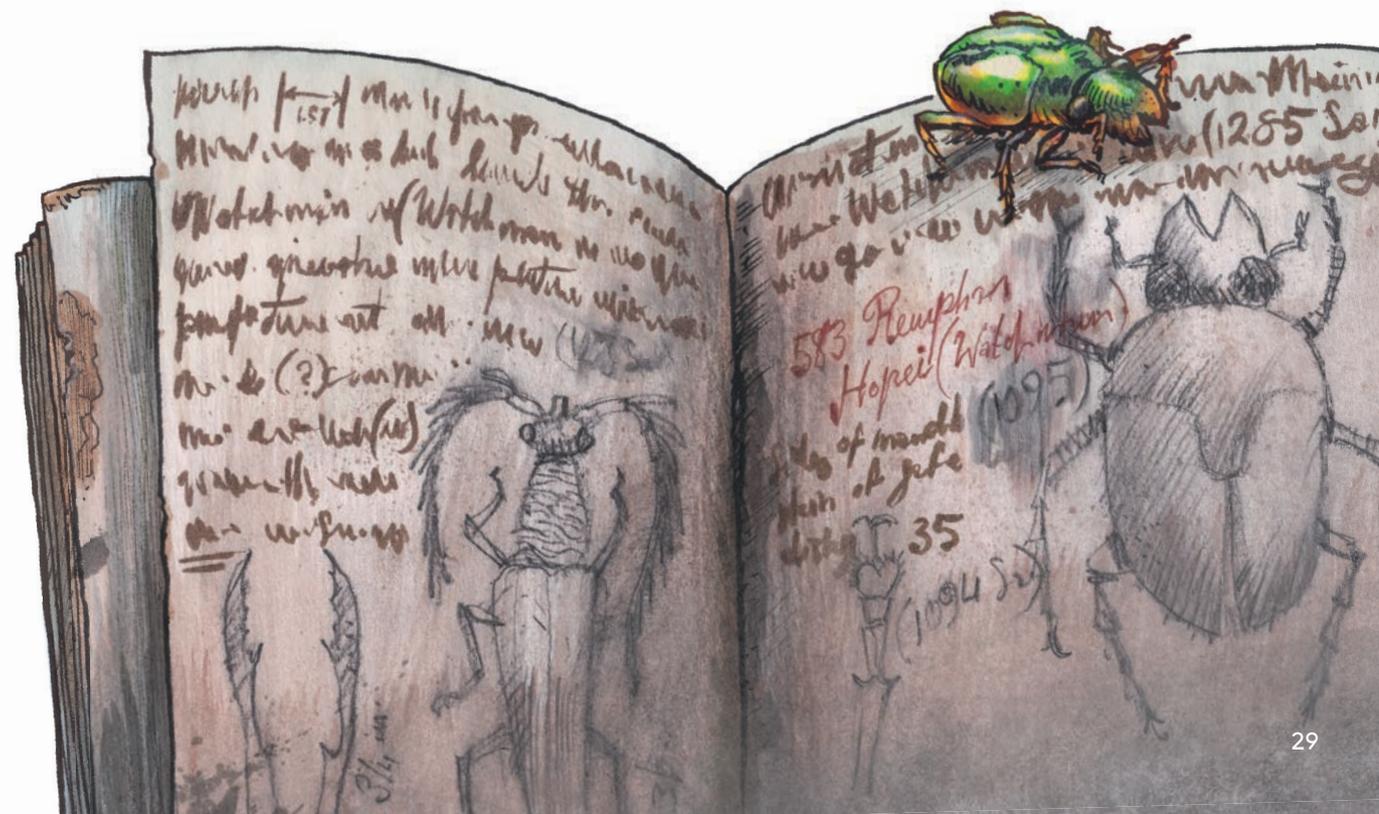
## A Fit of Fever

Wallace was now certain that species evolved over time, but he still couldn't explain how it happened. Then, in 1858, gripped by a fever in the Indonesian village of Dodinga, Wallace lay in his bed consumed by thoughts. Why was it that some species were far more plentiful than others? Why did some die out and others flourish? How did species change?

Suddenly, it came to him: in any animal population, it was the weakest that gave way and the strongest or fittest that carried on. And some were better suited to their environment than others – the ones that could find food, fight off enemies, or use colour for camouflage. These individuals were more likely to

survive, to reproduce, and to pass on the characteristics that made them the most successful. It made sense to Wallace that “useful variations will tend to increase” and “useless or hurtful variations to diminish”. Over a long time, and many generations, this process would lead to the creation of new species, quite different from the ones they had originated from.

That evening, when Wallace had more strength, he sat down to write. His theory, “On the Tendency of Varieties to Depart Indefinitely from the Original Type”, took two days to write. Then he sent the work to Charles Darwin. They had written to each other in the past, and now Wallace wanted the great man's opinion.



## Wallace and Darwin

Charles Darwin had been researching the theory of evolution by natural selection for many years. So far, his work on this hadn't been published. When Darwin received Wallace's paper, he was greatly surprised. Out in the jungle, a young naturalist had thoughts incredibly close to his own. "I never saw a more striking coincidence!" Darwin wrote.

A worried Darwin consulted his friends, scientists Joseph Hooker and Charles Lyell. What should he do? Their solution: Darwin's and Wallace's ideas should be presented together at the next meeting of the Linnean Society, where scientists met to talk about their work. No one consulted Wallace. A month later, the two men's theories were published in the society's journal. When Wallace finally learnt what had happened, he wrote to his mother: "This assures me the acquaintance and assistance of these eminent men on my return home."

Aware that Wallace might bring out a book about evolution before him, Darwin quickly finished writing his own – one he'd started years earlier. *On the Origin of Species* was published in 1859. The book caused an uproar, challenging people's core beliefs – and religion itself. From then on, the theory of evolution would always be linked with the more famous and better-connected Darwin.

## Return

Wallace's role in this work had largely been overlooked, yet the modest man was happy with the results. He returned to England in 1862, well on his way to becoming a widely recognised naturalist – and part of an elite group of scientists that included Darwin. He and Darwin became lifelong friends. For someone who was self-taught and started with few connections, Wallace's achievements were impressive.

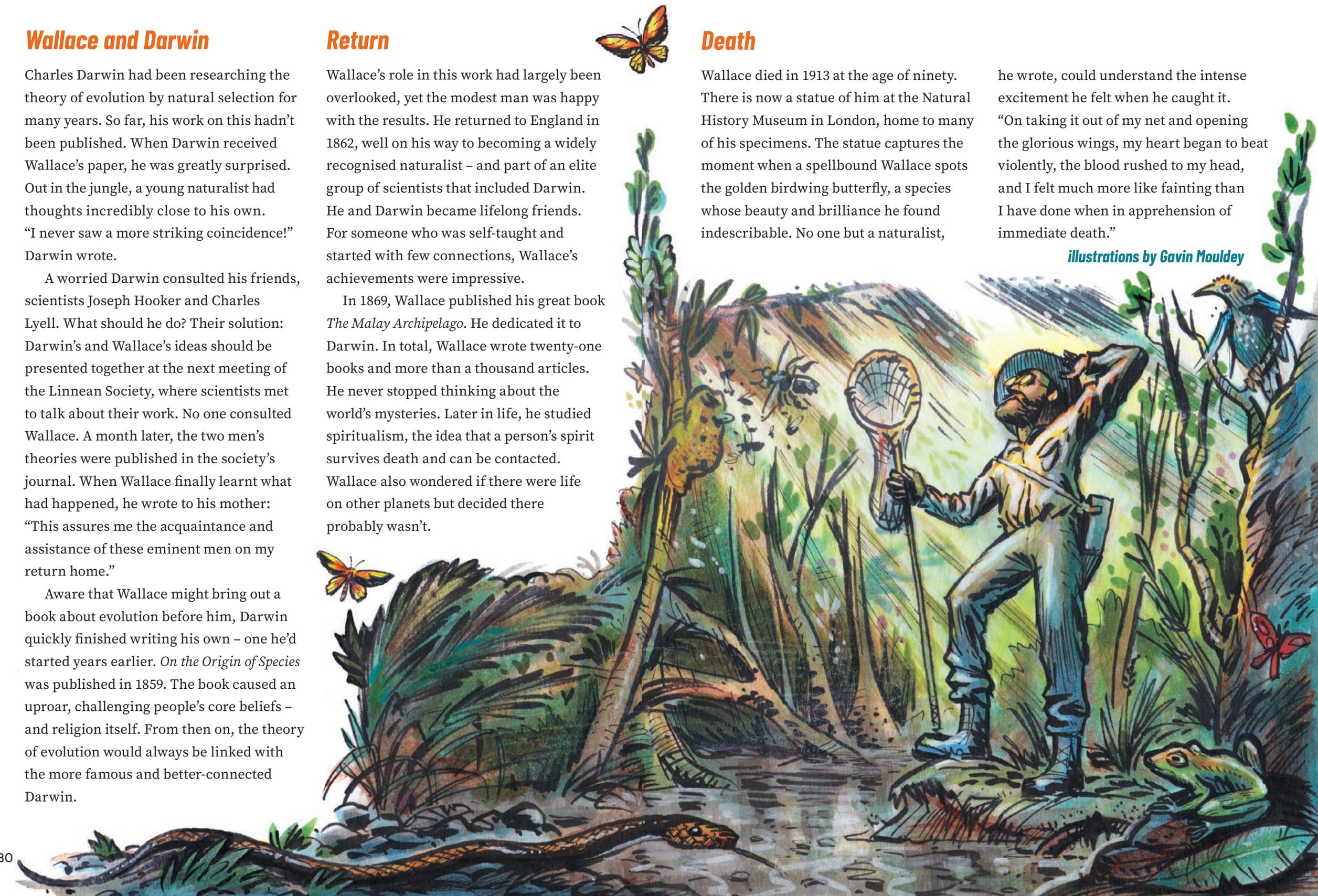
In 1869, Wallace published his great book *The Malay Archipelago*. He dedicated it to Darwin. In total, Wallace wrote twenty-one books and more than a thousand articles. He never stopped thinking about the world's mysteries. Later in life, he studied spiritualism, the idea that a person's spirit survives death and can be contacted. Wallace also wondered if there were life on other planets but decided there probably wasn't.

## Death

Wallace died in 1913 at the age of ninety. There is now a statue of him at the Natural History Museum in London, home to many of his specimens. The statue captures the moment when a spellbound Wallace spots the golden birdwing butterfly, a species whose beauty and brilliance he found indescribable. No one but a naturalist,

he wrote, could understand the intense excitement he felt when he caught it. "On taking it out of my net and opening the glorious wings, my heart began to beat violently, the blood rushed to my head, and I felt much more like fainting than I have done when in apprehension of immediate death."

Illustrations by Gavin Mouldey



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by Paul Mason

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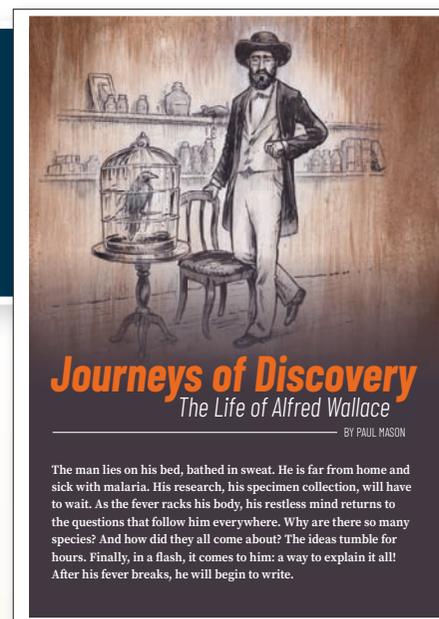
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