



# ***School Journal***

November 2020



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# **School Journal**

Level 4 • November 2020

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# RONGŌĀ

Taipōrutu is a sheep and cattle farm on the Māhia Peninsula. The land has been in the same whānau for twenty generations. It was once covered in native bush: tī kōuka, mānuka, rewarewa, tītoki, kahikatea, nīkau, and kawakawa. These species ensured the health of the land and the health of its people – but then they were cleared for farming. A few years ago, the family who owns Taipōrutu came up with a plan to restore their whenua. They called the plan Ahikāroa.

## BEGINNINGS

Ahikāroa means “long occupation” – when generations of people live on the land and use its resources. This is one of the most important ways Māori connect with their whenua and why the Ahikāroa plan begins with the ancestors. Their knowledge of the peninsula goes back more than eight hundred years.

The history of Taipōrutu starts with the great voyaging waka *Tākitimu*, which landed at various places along the East Coast, including Nukutaurua on the Māhia Peninsula. The waka was one of many that brought people from the homeland of Hawaiki to settle in Aotearoa. Because these migrations were planned, the ancestors travelled with everything they needed to start life in a new land.

## NAMING

One of the most lasting things the first settlers brought was their language, and they used this to name their new home. Oral history tells us that the word “taipōrutu” came from Hawaiki. Some say that Taipōrutu and Taiwānanga (the bay just to the south of Taipōrutu) were two sisters. A second explanation is that “tai” refers to the sea and “pōrutu” to the sound the sea makes when it strikes rocks. A booming noise can often be heard when the swell comes from the south-east and the waves break on the cluster of rocks in Taipōrutu Bay.

Mere Whaanga (left) at Taipōrutu

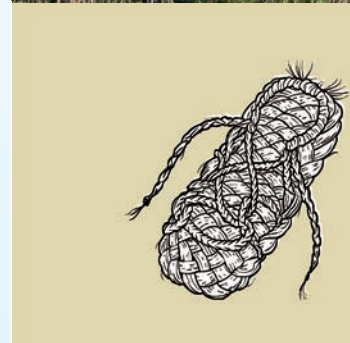
# FOR THE LAND

by Mere Whaanga (Ngāti Rongomaiwahine, Ngāti Kahungunu, Ngāti Pāhauwera)



## THE AHIKĀROA PLAN

Before Taipōrutu was cleared for farming, the 250-acre block of land was home to a large number of native trees and plants. Each species played a crucial role in maintaining the health of the waterways, the land, and the people. Some species prevented erosion or filtered rainwater, and this kept the waterways clean. Others provided a habitat for birds, reptiles, and bees and other insects, many of which helped plants to pollinate. There were also species that allowed the ancestors to survive in their challenging new environment. Many kinds of native trees and plants were vital rongoā (medicine) for the land and people, and the Ahikāroa plan focuses on the most important. These include tī kōuka, tītoki, and mānuka.





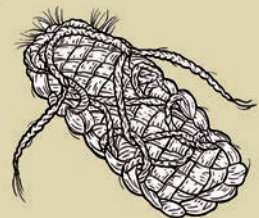
## TĪ KŌUKA

There is a pā above the landing site of the *Tākitimu*, and tī kōuka (*Cordyline australis*) grow on the hillside nearby. These trees were an essential resource for early Māori and had multiple uses. They were especially valued as a source of food and for weaving, which is why they were planted and cultivated. Tī kōuka also have a strong root system that helps prevent erosion.

The growing stem of a tī kōuka is known as the koata. People stripped away the outer leaves to reveal a small white core. Koata was a slightly bitter food whether eaten raw or cooked. Sometimes, the fleshy roots and stems of young trees were baked in an umu – an earth oven. The result was a sweet, fibrous food that was high in starch and sugar. The flowers of the tī kōuka weren't eaten, but they did offer the promise of food. When the flowers were abundant, people said it was a sign of a good growing season ahead.

The tī kōuka's fibrous leaves are tough – perfect for weaving. Māori used the leaves to make cord, rope, kete, sandals, snares, and raincapes. Because the leaves don't shrink in water, they were also used to make anchor rope. Harakeke fishing nets were often made stronger with strips of tī kōuka leaves.

Tī kōuka sometimes grew in pua manu. These groves attracted all kinds of birds, including kererū. Kererū were an important source of protein for the ancestors, and they were useful because they spread seeds, which allowed the forest to regenerate. Most tī kōuka flower in the spring. Their sweet scent attracts flies, native bees, honeybees, bumble bees, moths, and wasps. These insects help with pollination.



## TĪTOKI

Another species the ancestors planted was tītoki (*Alectryon excelsus*), and Taipōrutu has an ancient tītoki grove. The trees grew straight, and their timber was strong, but the ancestors were more interested in the shiny black seeds. These were valued for their high-quality oil. Tītoki oil was scented with leaves from heketara, akeake, hīoi, mānuka, and manakura and used to condition hair and skin. It also had healing properties and was rongoā for sore eyes, wounds, and chapped lips.

Making tītoki oil was hard work. First, the berries were collected in kete and soaked in water (1). The soaked berries were pounded and washed to remove the pulp from the seeds, and the clean seeds were crushed with a tuki (2). The crushed seeds were then put in a finely woven harakeke bag, called a kopa whakawiri tītoki. This bag was either heated in an umu or nestled among hot rocks (3). Finally the kopa was wrung (whakawiri) by placing two sticks at each end and twisting them in opposite directions to squeeze out the oil (4).

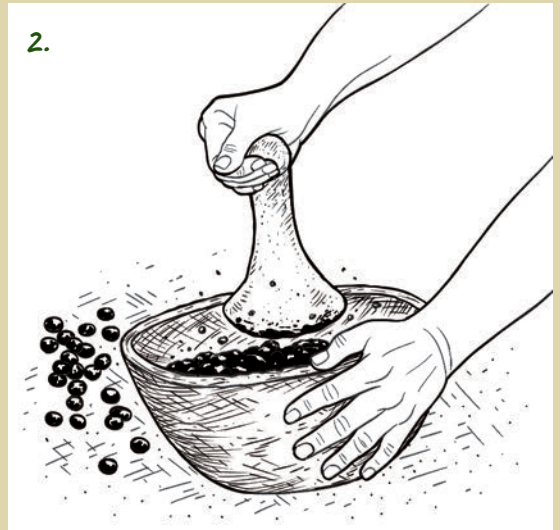
Because tītoki oil was so difficult to extract and most tītoki trees only produce a decent crop of berries every four or so years, the oil was highly prized. Usually it was reserved for rangatira. When Captain Cook's *Endeavour* anchored off the peninsula in October 1769, men rowed a waka out to meet the ship. Three of the men in this waka wore perfumed sachets around their necks that were made using tītoki oil. Some people think the oil may have come from Taipōrutu.

### Making tītoki oil

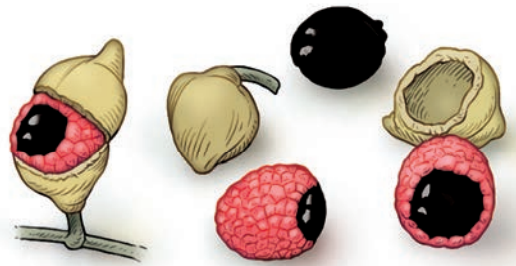
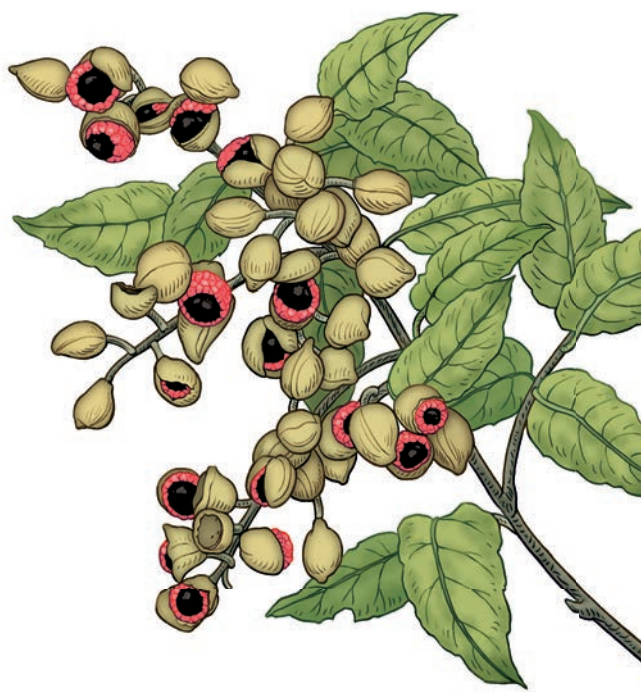
1.



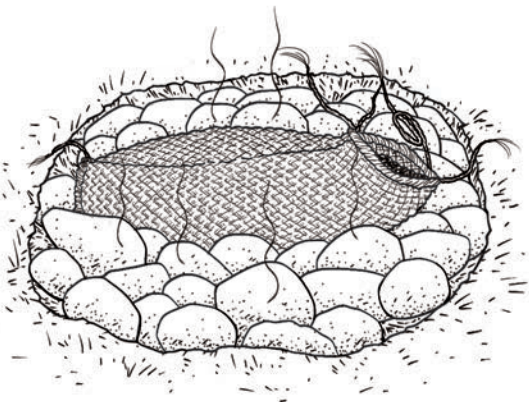
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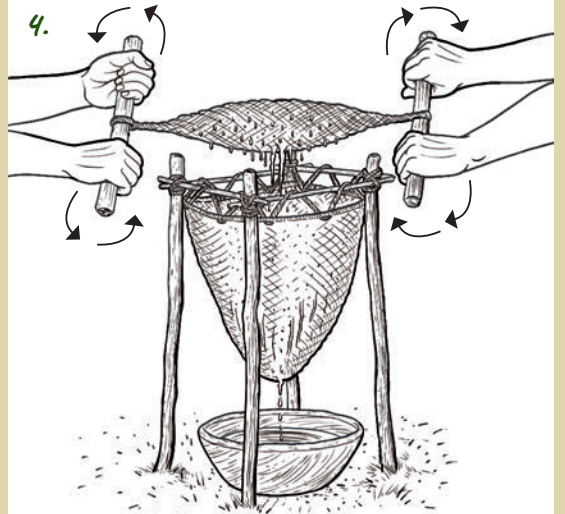




3.



4.





## MĀNUKA

Mānuka (*Leptospermum scoparium*) is a fast-growing native that thrives in all kinds of soils and climates. It does especially well in exposed coastal areas, including the Māhia Peninsula. The trees' roots help to prevent erosion and filter hill country run-off, cleaning the water before it reaches the streams. Typically, mānuka are one of the first trees to grow back when land is left to regenerate, and they provide shelter while other young natives grow.

Mānuka is valued around the world because of the healing power of mānuka honey. The ancestors also knew about the value of mānuka, and they used every part of the plant to make rongoā. They boiled the leaves to make a vapour for treating colds, and they burnt the bark to make ash for treating skin infections and inflammation. Mānuka bark was also used in ointment for burns, and it was boiled to make tea that was drunk as a sedative.

Mānuka wood is strong. The ancestors used it to make all kinds of useful items, including gardening tools (such as kō), weapons (such as pouwhenua), waka paddles (called hoe), and whare. The inner bark of mānuka is waterproof, and this was used to line a whare's roof and walls.

Taipōrutu's wild stands of mānuka flower in November and December. These flowers are loved by bees. It's said that kina are fat when the mānuka are flowering.

1.

2.



1. kō 2. pouwhenua  
3. hoe 4. whare

4.



3.



## HEALING THE LAND

Many more native trees and plants once grew at Taipōrutu. These species were found in the forest's understory and margins, along the coastline, and in planted groves. Their regeneration is being encouraged in all of these places, a process that will speed up once the land is no longer farmed. A wetland has also been fenced off to encourage the birdlife to return. Two breeding pūkeko have already made their nest among the kuta reeds.

The whānau who wrote the Ahikāroa plan have many ambitions. They want plantings along the Taipōrutu stream, harakeke and wharariki fire barriers, and stands of toetoe kākaho to control erosion. The whānau also want to provide resources for artists. This includes timber, such as tōtara and rimu, which can be used by future carvers. The starting point is to heal the land and its waters. Then the health of the people will follow.





*illustration by Sarah Wilkins*

# *Shrinking Violet*

Violet's story started tall.  
Her purple hair impressed us all.

But then her plumage went awry  
and she became extremely shy.

She seemed to have no energy  
despite becoming gluten-free.

Her confidence was infiltrated.  
Her thoughts, she thought, were overrated.

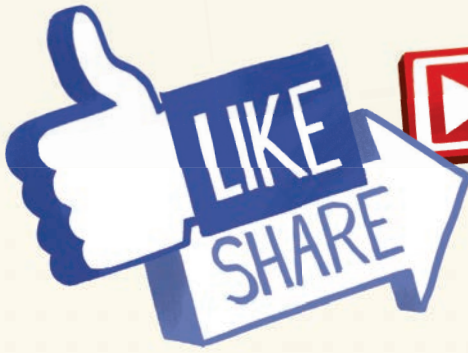
She stopped wanting to have her say;  
folded herself in half each day.

Until she was just two wide eyes –  
her mouth a shrug, her shrug a sigh.

She slid like droplets down a drain,  
her rainbow bow drowned out by rain.

*James Brown*





by Cassandra Tse



**Scene:** A kitchen. **EMMA** and **JAKE** sit at the table, which has a small easel displaying a sign that reads *Family Meeting*. **EMMA** swings her legs impatiently.

**EMMA.** Where are they?

**JAKE.** Dunno. They should be here soon. I texted, emailed, and shouted up the hall. That usually works.

**MUM** and **DAD** enter in a rush. Both are holding phones.

**MUM.** Here I am, sweeties. What's up?

**DAD.** Came as soon as I could ...

**EMMA.** Finally!

**DAD** (to **JAKE**). You mentioned a new recipe for DIY magnetic slime. Sounds amazing!

**MUM** (confused). You told me you wanted a heart-to-heart ...

**JAKE.** Not quite. Sorry, guys, but I had to think of something that would get you both here.

**DAD** (*losing interest*). No slime?

**JAKE.** The slime was a lie. Actually, we wanted to call a family meeting.

*He points dramatically to the sign on the table.*

*EMMA applauds. MUM and DAD groan, turn away, and start tapping their phones.*

**EMMA** (*exasperated*). Oh, come on!

**JAKE.** Can you just give it a chance?

**DAD** (*not looking up*). Sure thing, kiddo. I've just got this one post to schedule ...

**MUM.** I just need to reply to this comment.

**JAKE.** This is exactly what we wanted to talk about.

Mum, how long have you been writing your blog?

**MUM.** *Mummy Musings*? Since I was pregnant with you, of course, honey!

**EMMA.** And, Dad? You've been making YouTube videos for years, right?

**DAD** (*self-satisfied*). That's right! This June, it'll be ten years exactly since I started *Kiwi Dad DIY*.

**JAKE.** Right. So we had a couple of thoughts ...

**EMMA.** Ideas ...

**JAKE.** A few suggestions ... for some new house rules.

**MUM** (*alarmed*). Rules? What kinds of rules?

*EMMA and JAKE look at each other, then both stand.*

*JAKE points to the easel with a ruler.*

**JAKE** (*coughing dramatically*). Ahem. New rule number one!


*EMMA reveals a new sign: No phones at the table.*

*MUM and DAD gasp in horror.*

**MUM.** But, Jake –

**DAD.** My fans! How am I supposed to make a video of “Five vegetarian meals in ten minutes or less” without my phone? I have to film making each one.





**MUM.** How do I finish my blog post about whānau connectedness in the modern world without a photo of my charming family round the dinner table?

**DAD.** Think of the sponsored content, Jake!

**MUM.** Yes. The spon-con!

**JAKE.** That's another thing. You need to stop relying on the free food from advertisers.

**EMMA.** It wasn't so bad when we got that box of potato chips. Or that huge pile of instant noodles. But ten boxes of canned green beans ...

*She looks haunted.*

**JAKE** (*nodding*). Dark times.

**MUM.** Jakey ... sweetheart. You don't understand. Being online influencers is our job.

**DAD.** You've got to take the good with the beans.

**MUM.** And, really, what's so bad about a few photos at the dinner table every night?

**EMMA.** But it's not just at dinner! You're *always* taking photos.

*As she talks, DAD is taking a selfie with the "No phones at the table" sign.*

**EMMA.** See? Dad's doing it right now!

**JAKE.** Dinner time isn't photo time. It's time to eat – and talk! So no pictures, no posting, no hashtags at the table. Is that too much to ask?

*MUM and DAD look at each other sheepishly.*

**DAD.** Fine.

**MUM.** No phones at the table. We can do that.

**DAD** (*doing the thumbs-up*). Old school. I like it.

**JAKE.** OK. Then let's move on to rule number two ...

*EMMA reveals a new sign: Be yourself! Stop trying to be cool.*

**DAD** (*offended*). Hey, just 'cause I'm your dad doesn't mean I'm not hip.

**EMMA.** Dad, you're like thirty-six.

**JAKE.** Super old.

**DAD.** Would a couple of old fogies do this?

*MUM and DAD dab in unison. EMMA and JAKE are unimpressed.*

**EMMA.** That's the kind of stuff we're talking about.

**JAKE.** It's embarrassing.

**EMMA.** For everyone.

**MUM.** But –

**JAKE** (*firmly*). Moving on.



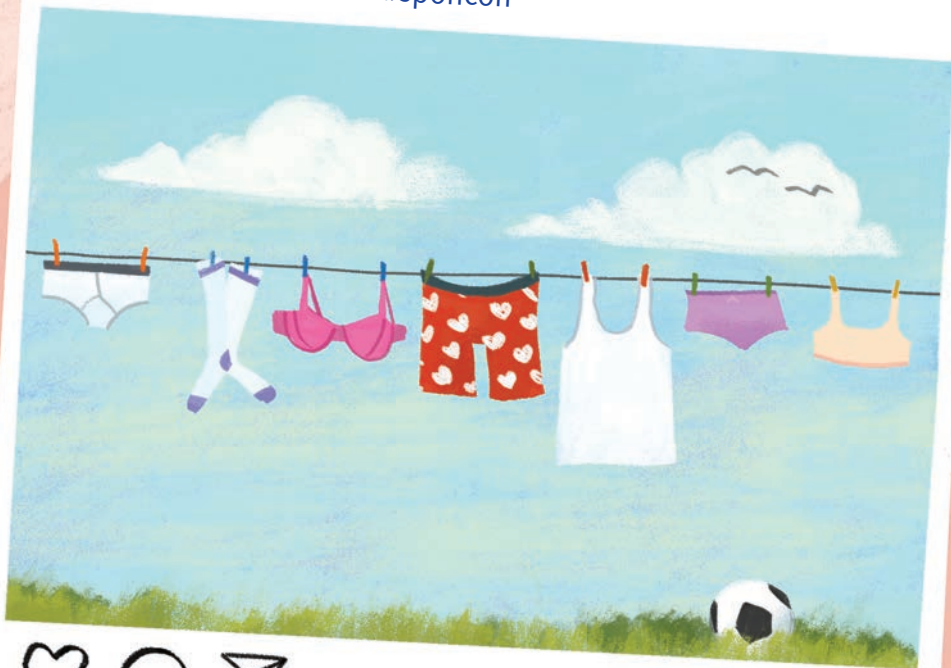




Liked by: **coolmomNZ** and **others**



Loving these green beans from @greenbeancannery  
My kids can't get enough #beansforlife #loveagreenbean  
#gifted #noboundaries #sponcon



Cleaner than clean! Thanks to @sparkles



**EMMA** reveals a new sign: *Respect our privacy!* **MUM** and **DAD** begin to protest, but **JAKE** holds up a finger for silence.

**EMMA** (taking out a notebook). We'd like to share some of the titles from your recent posts.

(reading) "Five pranks to pull on your kids."

**DAD**. You've gotta admit – those were funny.

**EMMA**. "My top toilet-training tips."

**MUM** (dismissively). Oh, you were only two when I wrote that.

**JAKE** (reading from his own notebook). "The dumbest questions my kids have ever asked ... part one!"

**DAD**. Well, perhaps I shouldn't have said "dumbest", but –

**EMMA**. "A daughter's first crush."

**MUM**. Harmless fun!

**JAKE**. "My son's biggest sporting fails."

**EMMA**. "How I cured my nine-year-old's fear of the dark."

**JAKE**. "My son just isn't that popular! Here's how that makes *me* feel."

**EMMA**. "My daughter's hilarious secrets!"

**JAKE**. "Changing bodies: An update."

**EMMA**. "Exclusive birth video!" (She looks at her parents.) Well? Anything to say for yourselves?

**MUM** and **DAD** are silent. They look ashamed. **JAKE** walks over to them.



**JAKE.** I know you guys just want to write about being parents, but we didn't ask for this.

You're stealing our lives, and it's not fair!

**EMMA.** I don't want the whole world knowing everything about me.

**JAKE.** Me neither – and *especially* not the private stuff. I thought that was between us.

**EMMA.** I just want to be a normal family. With boundaries. Some things shouldn't go online.

**MUM** (*sadly*). I'm so sorry. I didn't realise you felt that way. I never stopped to think.

**DAD** (*embarrassed*). I guess ... I guess we got a bit carried away. All those likes and comments and followers ... it gets kind of addictive.

**JAKE.** So you agree? New rule: Only post about us if we say it's OK.

**MUM** (*smiling in agreement*). I think that's more than fair. Come here.

*She opens her arms for a hug. EMMA and JAKE accept it. DAD wraps all three of them in a big bear hug. From within the huddle, JAKE sticks up his hand.*

**JAKE.** Oh! One more thing.

*He breaks from the hug and reveals one last sign on the easel: No more Facebook.*

**DAD** (*aghast*). Jakey! Be reasonable.

**MUM** (*shaking her head at JAKE*). Honey, we need to talk about this ...



# Aunties

by Maria Samuela





## MONDAY

Aunty Moeroa arrives in the morning. She smothers me at the front door, pulling me tight against her chest. “Auē,” she cries. “You’re growing too fast!” She pinches my cheek like I’m three years old and disappears into the sitting room. The house is packed. The aunts are in the kitchen, making food for later. The uncles are outside with Dad. They’re digging an umu pit for Friday. Uncle Tiare has built a table from old crates and a plank so they’ll have a place to prep the meat.

I open tins of corned beef while Aunty Moeroa dishes out orders. “Dust those ornaments on the mantelpiece,” she tells Selina, my younger cousin. “Esther, you can scrub the toilet and mop the bathroom floor. We need clean sheets on the beds. And someone vacuum the hall.” Aunty Teina slices the bread, and I stack the slices in two towers that lean to one side.

Aunty Moeroa brings out the mat from Mum and Dad’s bedroom, the good one we use for visitors. We lay it in front of the couch so my cousins have somewhere to sit during the rosary. “Your mum’s favourite,” she tells me, smoothing down the edges. She admires the geometric patterns, the intricate weaving. “We made this when she was pregnant with you. Isn’t that right, sis?” Once aunty leaves the room, my cousins sit on the mat, cross-legged in a circle to play last card. Mum said that she and her sisters used to play cards sitting like that, too.

There’s a big fuss in the hallway. Aunty Api’i and Uncle Jacob are finally here with their seven kids. Aunty Api’i pulls me towards her. She soaks the crook of my neck with her tears. “Look at you!” she cries. “So *big*.” The last time she saw me I was barely nine. I’m taller now – but I know what she means. I’m growing into a woman. I tug at my jersey, pulling it away from my chest.

By the time Aunty Akaiti gets here, the last of Mum’s sisters, we’re about to start the rosary. “Not a child any more!” she gushes, looking me up and down. My cheeks redden even though Aunty Akaiti is my favourite.

The sitting room’s full of relatives. Heaps of them have caught the bus from South Auckland. I sit at the front for the rosary beside Mum and her sisters. When it’s my turn to lead the Hail Marys, I concentrate on the words, speaking slowly and clearly like Mum taught me.

## TUESDAY

Aunty Api'i and Aunty Akaiti are at the kitchen table, sheets of newspaper spread in front of them. They're laughing and telling stories about Mum and the olden days. Aunty Akaiti rips open a sack of potatoes. "Help us peel the spuds, darling," she says to me, nodding towards a chair.

"Sister!" Aunty Api'i calls to Mum. "Where are all your peelers?"

"We only have one, Aunty," I say. I find a peeler and two knives in the cutlery drawer. Then I pull a handful of potatoes from the sack and sit down and start to peel. Long strips of skin fall in clumps. To keep away the memories, I focus on making a single strip as long as I can.

"You lose," Mum says.

I look up. My aunts aren't there any more; it's just Mum and me. She's smiling. She holds her hand high to show off a long, trailing piece of skin. Mine has snapped and dropped on the paper.

"It's easy when you have a peeler," I say. "Using a knife takes skill." I start another strip. It's good to see Mum happy again.

"Gentle, baby," she says. I press the knife as light as I can, making strips so fine I can see through them.

"Oh," Aunty Api'i teases. "Look at our niece, showing off her spud skills."

Mum's back in the sitting room.





## WEDNESDAY

Uncle Jacob has hung the pigs on the clothesline, carefully spaced to balance the weight. The blood has stopped dripping, but the grass is still red. I watch Dad out the kitchen window. He's wearing his old rugby jersey, the one Mum hates. He looks tired.

Inside, the house is bustling. Aunty Moeroa has us on chores again. I'm meant to be vacuuming, but the vacuum cleaner is kept in Mum and Dad's room, and I haven't been in there since Sunday night. Instead, I grab the kika broom from the cupboard to sweep the rooms. I can hear the aunts in the kitchen, making mainese.

"Cut the potato cubes the same size," Mum would tell me. "Not too big. People want a bit of everything with each bite." Mum always said it was important to take time mixing the potato through all the other vegetables. We'd put the ingredients in her big silver bowl – peas, carrots, beetroot, potatoes – and turn them carefully with the wooden spoon. But the real secret was the dressing. Mum showed me how to drip-feed the oil into the egg yolks, then beat it to perfection. She always made the creamiest dressing. The superglue, she called it.

Later that night, we settle in the sitting room for evening prayers. Flowers in vases and buckets and those little cardboard boxes from the florist fill the room with their sweet smell. I sit between Mum and her sisters. For the third night in a row, the house is packed. Mum's mat is filled with my cousins. Her coffin, open again so we can say goodbye, is at the head of the room where everyone can see. She's the superglue, holding us together.

## THURSDAY

The day before Mum's funeral, everything runs like clockwork. It's good to keep busy, to have a house full of people. Keeps me from thinking.

That evening in the bathroom, I notice blood in my underpants. Mum had promised she'd be there when my time came, that she'd show me what to do. I sit on the toilet seat, feeling the heat rise in my face. Angry tears land on my cheeks. Soon my shoulders are shaking. My sobbing is so loud I don't hear my aunties knocking. They wait for me to come out, but I ignore them when I do. I go straight to Mum and Dad's bedroom. I open the drawer where Mum keeps her sanitary pads. Buried beneath them is a small, woven basket. I recognise the geometric patterns around the rim. They're the same as the ones on the mat – the one Mum wove with her sisters thirteen years ago.

I run my fingers over the basket, feeling the dry, plaited flax. Then I pry it open. Inside are Mum's keepsakes: a pair of booties, a lock of hair, the first card I made for Mother's Day. At the bottom of the basket is a photograph. It shows me and Mum the day I was christened. There's no one else in the photo, just us. I'm wearing a long, white gown. I look like a baby princess.

"Your mum was the best seamstress in the family," Aunty Api'i says over my shoulder. All of my aunties have come into the room.

"Excuse me?" says Aunty Moeroa. "But I supervised the making of that gown." She turns to me. "I taught your mother how to sew. That's how she got so good."

The aunties start bickering about who taught who what and who's the best at mainese and who was Papa's favourite daughter, and it makes me laugh so hard my belly hurts. But when Aunty Akaiti notices the sanitary pads, I stop.

"It's OK, girl," she says, putting her arm round me. "We're here."

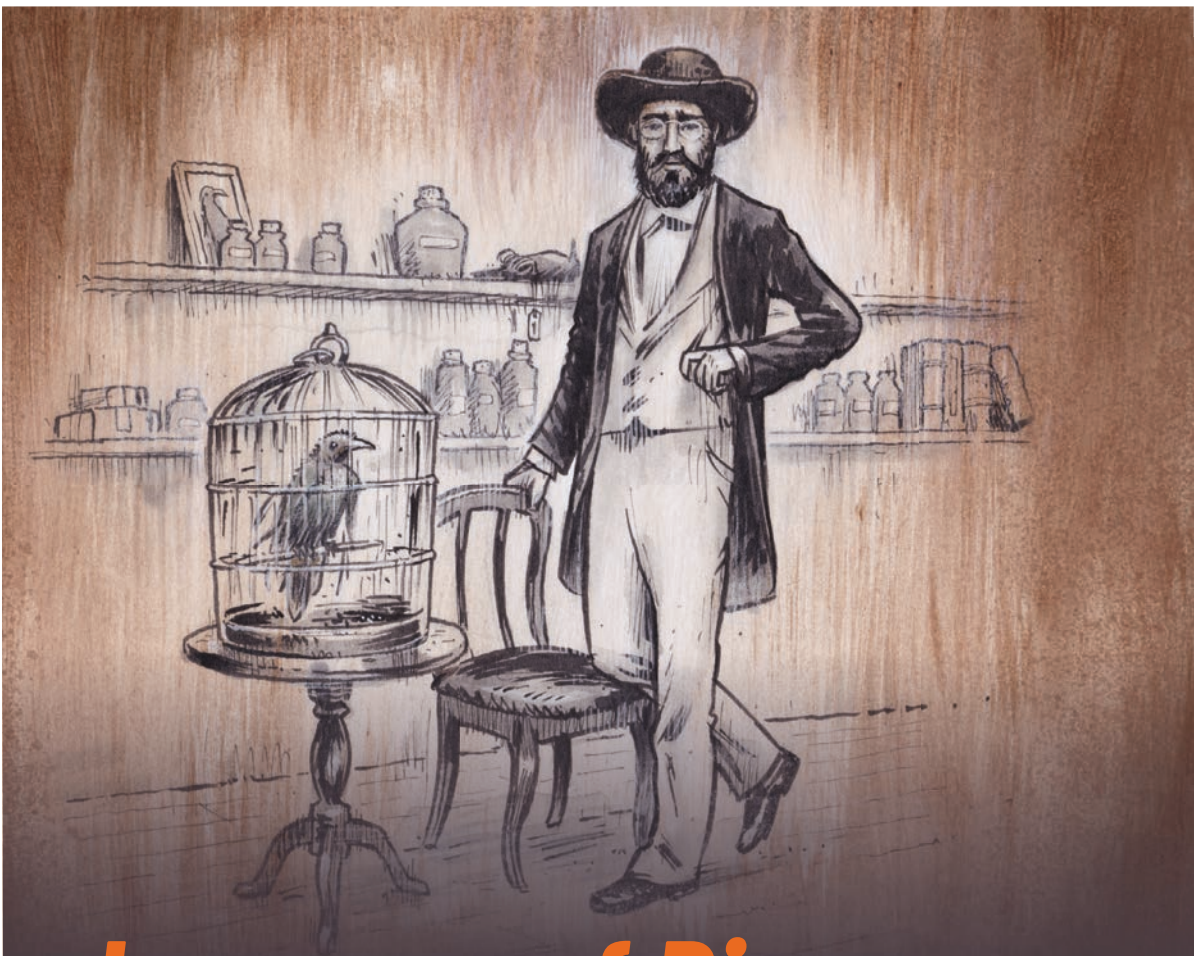
We decide to bury Mum with her keepsakes. That night, I sleep in the sitting room with her one last time. I tuck the photo of us under my pillow.







ILLUSTRATIONS BY LEILANI ISARA



# ***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

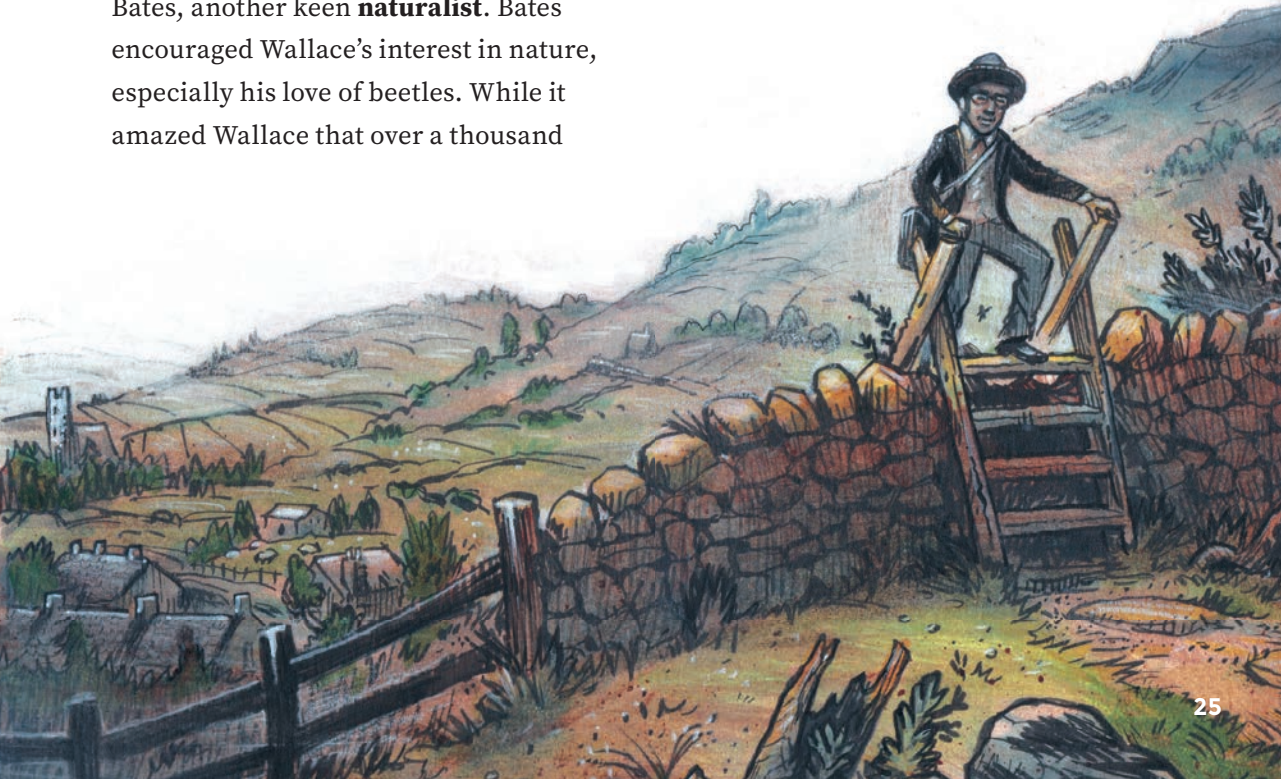
**species** of beetle could be found within a 10-mile radius of his home, he wasn’t content with just a local collection – he said little was to be learnt from it. In 1848, the two friends set off on a life-changing expedition to Brazil. They planned to study and gather wildlife, selling specimens to 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.

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



## THE MALAY ARCHIPELAGO

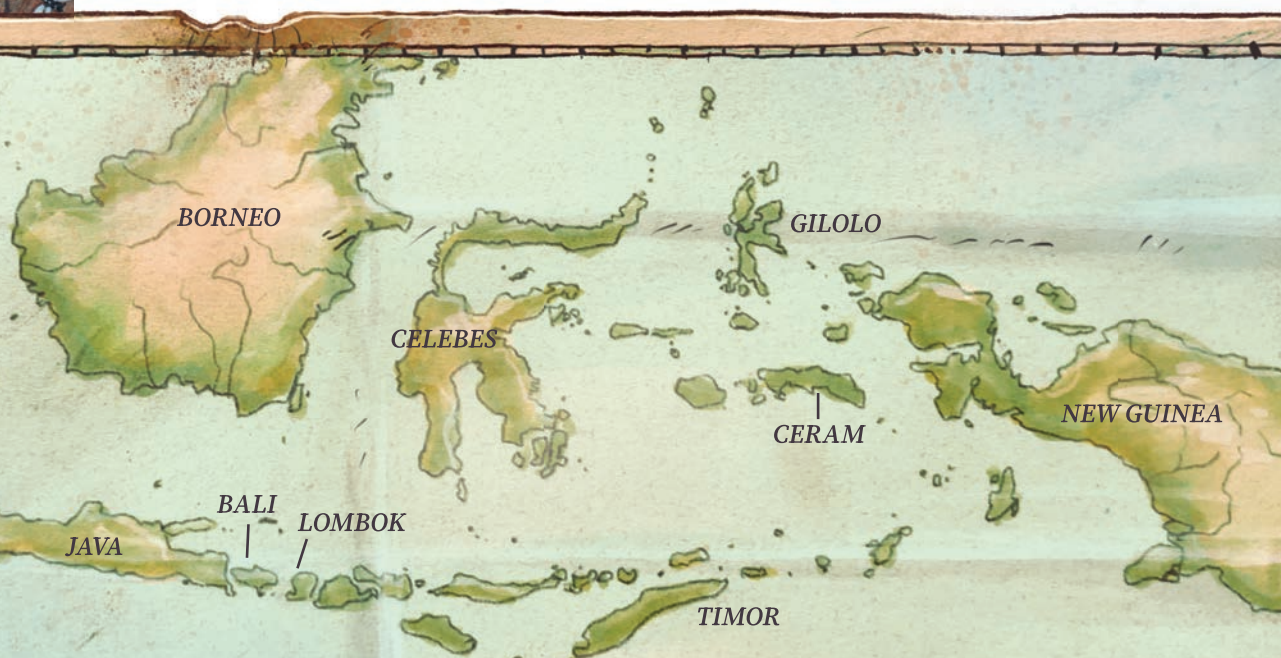
## Wallace the Explorer

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.

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**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.







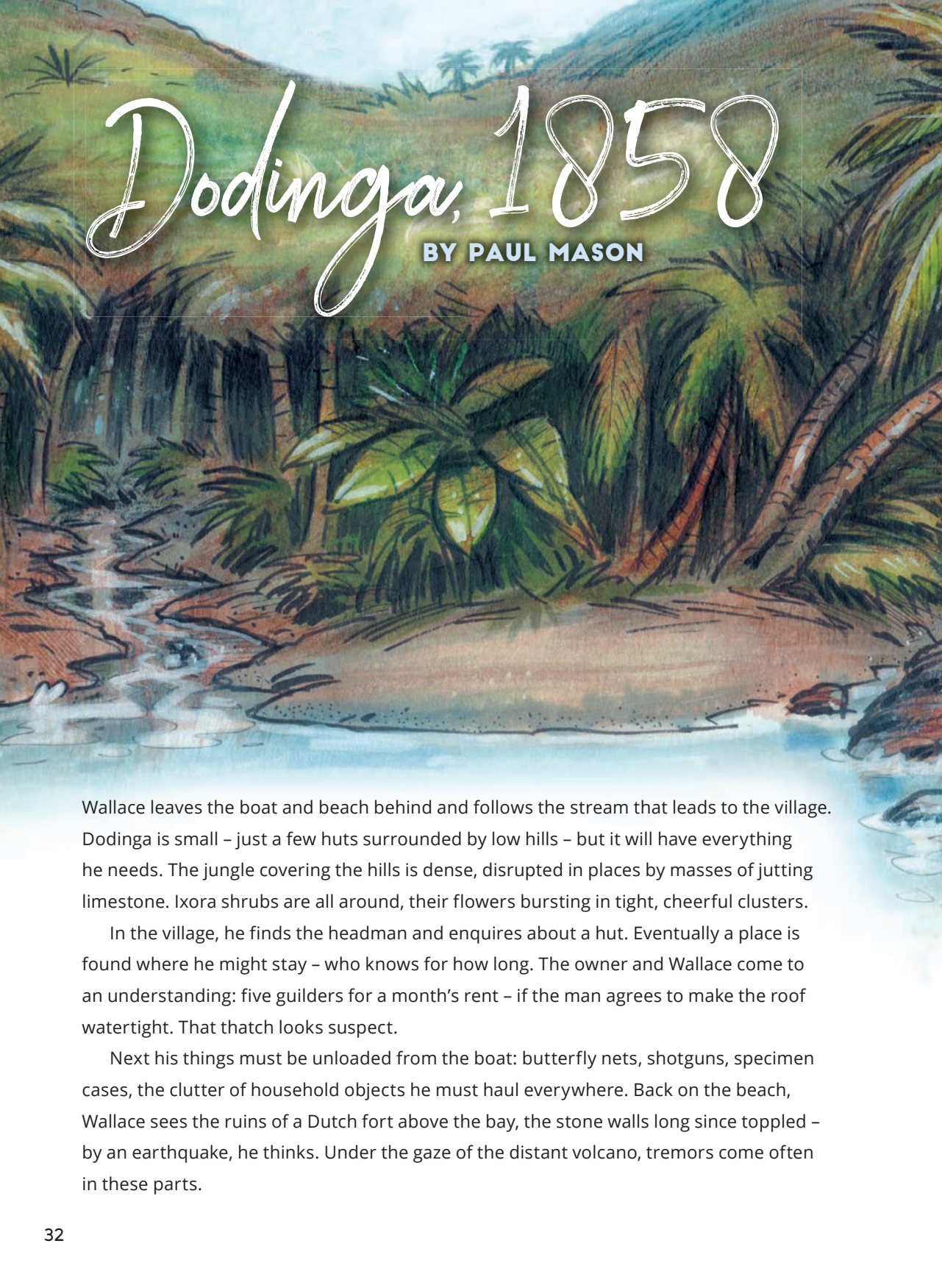
## Death

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*





# Dodinga, 1858

BY PAUL MASON

Wallace leaves the boat and beach behind and follows the stream that leads to the village. Dodinga is small – just a few huts surrounded by low hills – but it will have everything he needs. The jungle covering the hills is dense, disrupted in places by masses of jutting limestone. Ixora shrubs are all around, their flowers bursting in tight, cheerful clusters.

In the village, he finds the headman and enquires about a hut. Eventually a place is found where he might stay – who knows for how long. The owner and Wallace come to an understanding: five guilders for a month's rent – if the man agrees to make the roof watertight. That thatch looks suspect.

Next his things must be unloaded from the boat: butterfly nets, shotguns, specimen cases, the clutter of household objects he must haul everywhere. Back on the beach, Wallace sees the ruins of a Dutch fort above the bay, the stone walls long since toppled – by an earthquake, he thinks. Under the gaze of the distant volcano, tremors come often in these parts.



Wallace finishes the fetching and carrying, then rests in the shade of his new home. The air about the hut is heavy, the sunlight glaring, but a familiar chill grows in his bones. He shivers. Though birdsong calls him to the jungle, there will be no collecting today. New specimens will have to wait. He shuffles inside to collapse on the bed, limbs aching, annoyed – but he knows to let the illness run its course. When the fever takes hold, he can do little more than lie there and wait for it to pass.

Fever isn't the only thing that has kept him bedridden on his travels. Mosquitoes and sandflies attack his legs. Their angry bites become sores and then ulcers. In the heat, they sometimes grow so awful he cannot walk. More than once he has crawled on hands and knees. But these toils are worth it – for the butterflies alone. Each one is a treasure: the *Nymphalis calydonia*, pale blue and black, fluttering softly among the groves; the velvety darkness of the *Ornithoptera brookiana*, rare as a jewel, decorated with metallic green; the *Ornithoptera remus*, spotted with white, yellow, and fiery orange.

*A rustling wakes him. Something is in the roof ... a large animal, crawling across the thatch. Wallace is sure of it. Dark, with splashes of yellow. A tortoise? On the ceiling? Then he sees bright eyes, a blunt head. Thick coils wrapped around a beam. A python!*

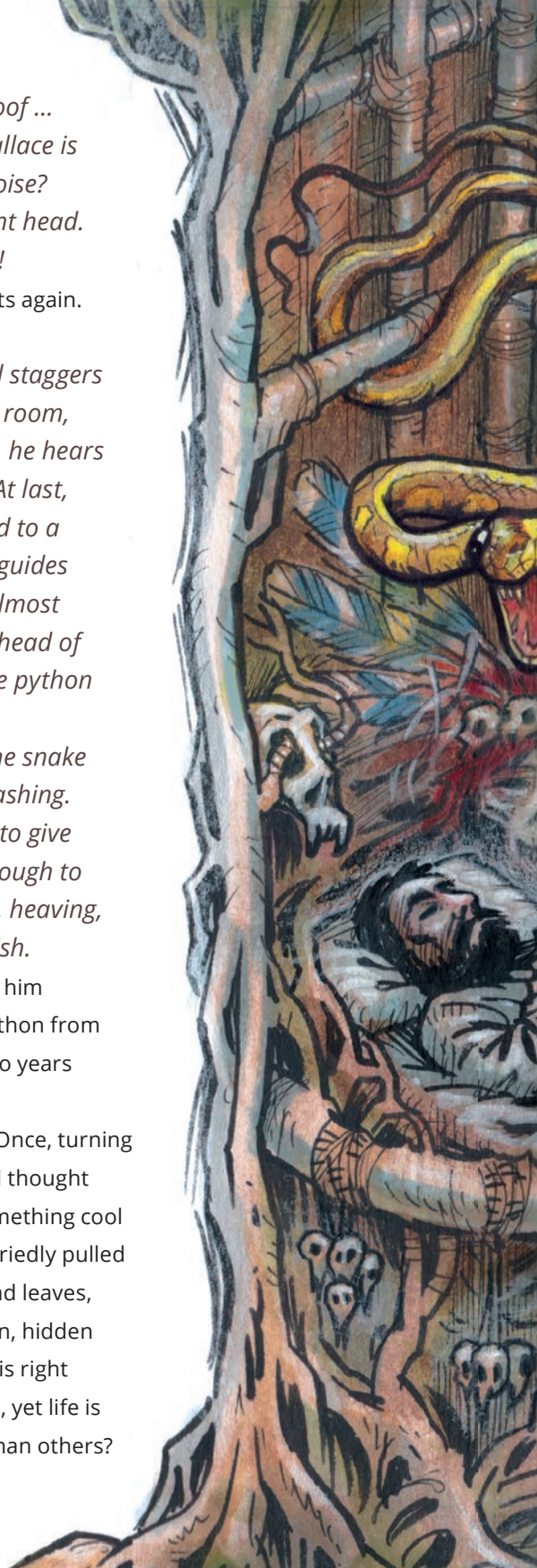
Wallace calls out, "Here's a big snake." He shouts again. "A snake! A snake in the roof!"

*A villager rushes in. He sees the python and staggers back to the door, begging Wallace to leave the room, too, but he doesn't have the strength. Outside, he hears confusion, a jumble of voices in consultation. At last, a brave villager appears with a noose attached to a bamboo pole. Wallace watches as his rescuer guides his stick towards the rafters, his movements almost imperceptible. Then all at once, he snares the head of the great snake. With a violent tug, he pulls the python cascading to the hard floor.*

*The stillness of the room is transformed. The snake thrashes, coils around a chair, and sends it crashing. It wraps itself around another beam, refusing to give quarter. Wallace can see the monster is big enough to consume a dog, a child. But the man holds on, heaving, heaving, until suddenly, he and the snake vanish.*

Now Wallace understands. The fever is making him delirious. He has pulled the brave man and the python from his memory. It was never in this room at all but two years ago in Amboyna.

Other snakes rest in the shadows of his mind. Once, turning in for the night, Wallace had reached for what he'd thought was his handkerchief. His fingertips had found something cool and smooth that moved under his touch. He'd hurriedly pulled back. And there are often snakes the colour of dead leaves, gathered by mistake in his net; coils of bright green, hidden in the foliage, which Wallace does not see until he is right there. The snakes in the archipelago are abundant, yet life is a struggle. Why are some species more plentiful than others?





Wallace props himself up and reaches for his cup. He takes a thirsty gulp of water. The act of sitting drains him, and he is grateful to lie back down. He studies the roof. It reminds him of the roundhouse in the Dyak village, deep in the jungle of Borneo. There, he had made his bed with half a dozen human skulls hanging above his head. Wallace manages a smile. He'd slept very comfortably that night! He remembers the Dyak women, their arms and legs covered in jangling brass rings, the men in blue cotton cloths that hung from their waists. The orang kaya of the village had worn a regal, velvet jacket.

It was in the jungle by a Dyak village that he found the strange tree. It seemed almost to hang in the air, raised up by a labyrinth of roots. Straining for light and warmth and air, the stems had grown to clasp and then destroy the tree that once grew there before it. Even for plants, life was a battle.

As his temperature climbs again, Wallace begins to drift.

*Monstrous plant tendrils force their way through the thatch overhead, writhing and twisting behind his closed eyes. He breathes deeply. Roses. He detects their sweet scent, he is sure of it. There is a rambling country lane, and now he is pressing the petals of Rosa canina into the leaves of a book. Is he home in Wales?*

Wallace scolds himself with an irritated mutter. It is just the fever, playing tricks again.



Maybe he smells a *Therates labiata* out in the trees, flying from leaf to leaf? One can catch the beetle's scent long before spying its brilliant purple-black body. Wallace wonders if the rose smell of the beetle attracts the insects on which it feeds. Does it give the beetle an advantage? He takes another breath, decides there is no smell after all. Besides, that particular beetle is found on Ké, not on this island. So many different species in so many different places. *Why* is there so much variety?

*A man brings him a prize in steady hands: a large tree frog, deep shiny green. "It flew from a high tree!" the man tells him. Wallace thinks the man's imagination has got the better of him, but he spreads out the frog's toes and is astonished by what he finds.*

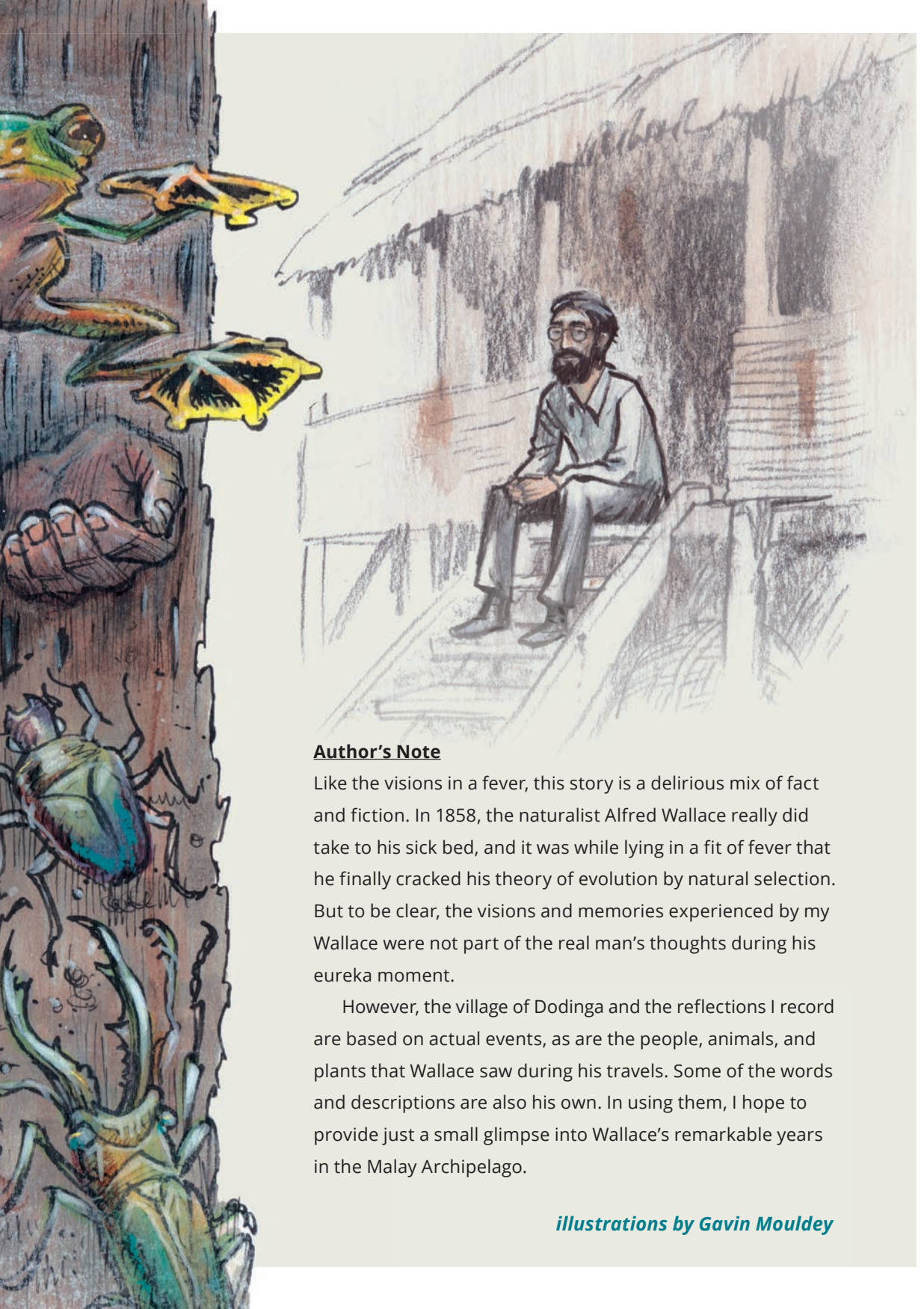
*Stretched out, the webbing on its feet is like sails, black with rays of yellow and wider than the frog itself. Wallace has never seen the like before. It is such an unexpected variation! How did it come to be? The man is right after all. This remarkable frog can fly! Just as webbed feet help others to swim, the webbing on this frog allows it to glide through the air from branch to branch.*

A sudden thought strikes him, and Wallace pulls himself up. His notebook isn't there, and he is too weak to look for it. Surely gliding would give a frog that lived high in the trees an advantage – to escape the clutches of an enemy, the predatory claws of a bird? And the frogs with that advantage, those that can fly, would be more likely to survive than those that couldn't ...

Wallace is shaken from his thoughts. The bed trembles. The wood of the hut creaks and groans. Are these tremors another fantasy? He can hear the shouts of the village children as they run from their homes. Then the quaking stops almost as soon as it starts.

For now, he will remain in bed with just the fever and his thoughts. Wallace longs for the cool of the evening. If the illness loosens its grip, maybe he can work. He has so many ideas, so many questions. And now the answers start to tumble through his head like beetles.





### **Author's Note**

Like the visions in a fever, this story is a delirious mix of fact and fiction. In 1858, the naturalist Alfred Wallace really did take to his sick bed, and it was while lying in a fit of fever that he finally cracked his theory of evolution by natural selection. But to be clear, the visions and memories experienced by my Wallace were not part of the real man's thoughts during his eureka moment.

However, the village of Dodinga and the reflections I record are based on actual events, as are the people, animals, and plants that Wallace saw during his travels. Some of the words and descriptions are also his own. In using them, I hope to provide just a small glimpse into Wallace's remarkable years in the Malay Archipelago.

*illustrations by Gavin Mouldey*

# FAR FROM HOME

BY HEIDI WANG, KOHIA TERRACE SCHOOL • WINNER OF THE ELSIE LOCKE WRITING PRIZE 2020





Maddison was picking at her salad again. The lettuce, once crispy and green, had gone yellow and mushy from her fork's constant prodding. The carton of milk lay undrunk, and her orange was only half finished. The rest of the kids were playing hopscotch or tag with their friends. No one bothered to pay any attention to the figure hunched in the pōhutukawa tree. Occasionally, a pair of curious eyes would skim over the new girl, but no one invited her to play with them – or even said hi. Despite how thick-skinned Maddison appeared to be, after a month of this frosty behaviour, she felt hurt.

Mary, Maddison's mum, was planting kūmara in the backyard when Maddison's clumpy school shoes appeared next to the weed pile. "How was school?" she asked.

"Fine," Maddison muttered.

Mary huffed. "Come on, Maddie. Don't speak to me like that." Maddison didn't answer, and her mum sighed. It had been hard moving, but she had hoped her daughter would have started to enjoy her new school by now.

Mary tried again. "Honey, I'm sorry those girls at school are being mean to you, but we can't help being different. Grandma said she's going to try and call, but she's having trouble with the Interweb."

Maddison smiled at the memory of her crazy grandmother, but her smile faded at the thought of homework. "I'm gonna try to make a dent in our assignment," she said.

Mary's hopeful look slipped as she watched her daughter trudge to the house. Children could be so frustrating sometimes!

Maddison had barely written three words when her mother appeared at her bedroom door. "She's done it!" exclaimed Mary. "Grandma's connected."

Ignoring her work, Maddison flung herself to Mary's side as they accepted the call. "Grandma!" Maddison cried.

A beaming, wrinkly face with blue eyeshadow appeared on the phone. "Maryanne, you've cut Maddison's hair too short again!" Grandma grumbled.

Laughing, Maddison kissed the screen.

"So, what have my favourite girls been up to? Is New Zealand gorgeous? Is school great? Maryanne, how's your new job?" demanded Grandma. Maddison was about to give a cheery reply but felt her voice seizing up. "Maddison, is everything all right?" Grandma asked in a softer tone.

Maddison swallowed to get rid of the large lump in her throat.

"It's been lonely. No one will hang out with me just because I look different. The teachers are nice, but if a student comes too close, they get a funny look on their face, and ..." Maddison couldn't continue. She blinked hard. "I just hate being weird."

Grandma scoffed. "So what? Be weird and proud of it! Can you imagine a world where everyone was the same? If someone is being horrible just because of your skin colour, then they're not worthy of your attention, so don't let them affect you!"

Maddison opened her mouth and closed it again. What more was to be said? "Thanks, Grams," was all she could choke out.

"Just remember, Maddison. You're as good as any of those other students." Smiling, the old lady was just about to say something else when the screen went blank.

"Out of power," Mary laughed. "She's having trouble using her tablet again."

Maddison smiled. "You know what, Mum? I don't care about those people any more. Grandma's right. Everyone is different, and that's what makes us special! I don't care that my skin's green."

Mary whooped. "That's the spirit! When we next visit Zentoun, you'll have great stories to tell your friends."



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