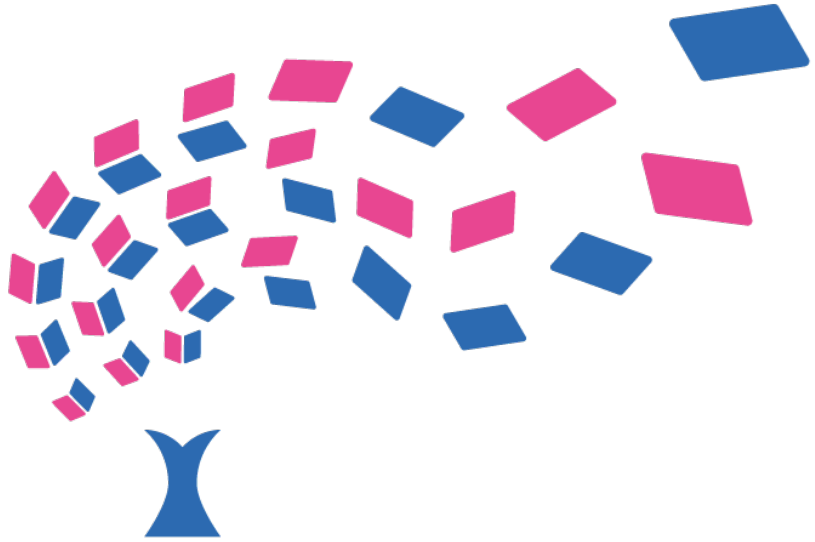

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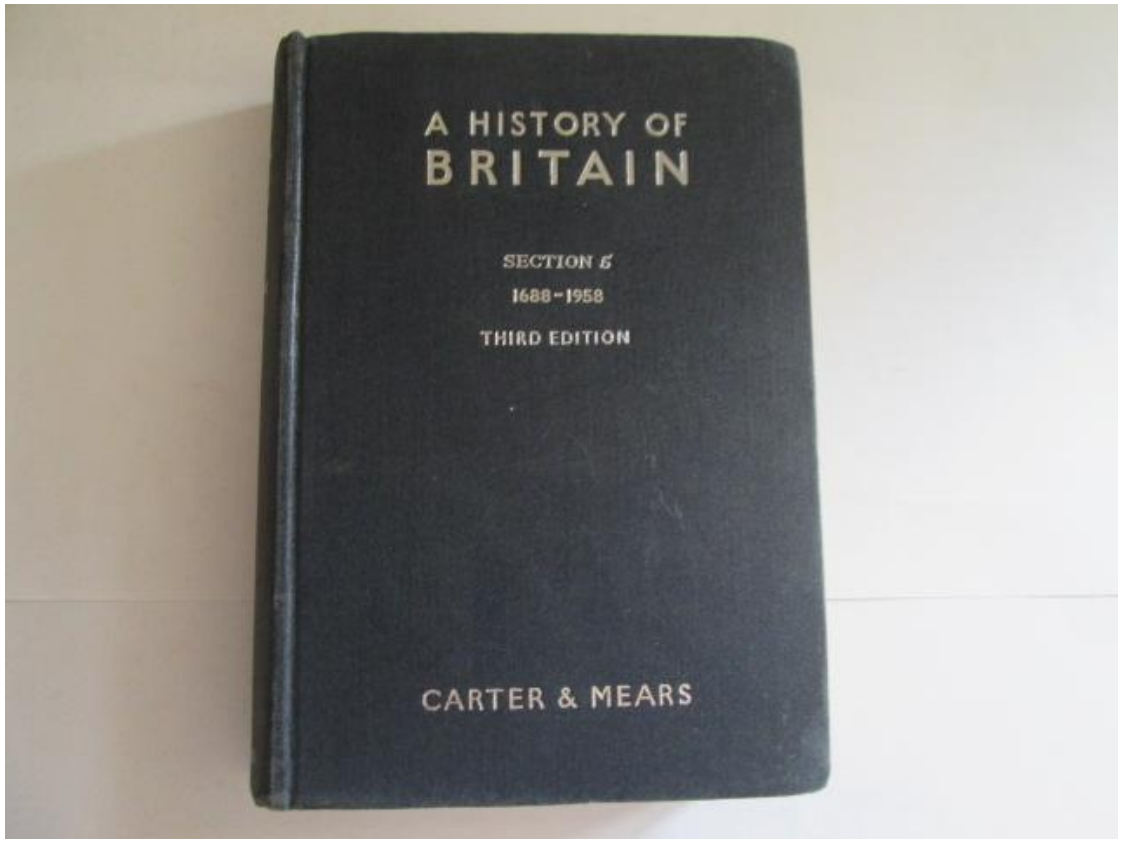
A Golden Age of Nonfiction?

Choosing and using books for the classroom

Nikki Gamble


Are we in a golden age
of children’s nonfiction?

A brief history of nonfiction for children


A HISTORY OF
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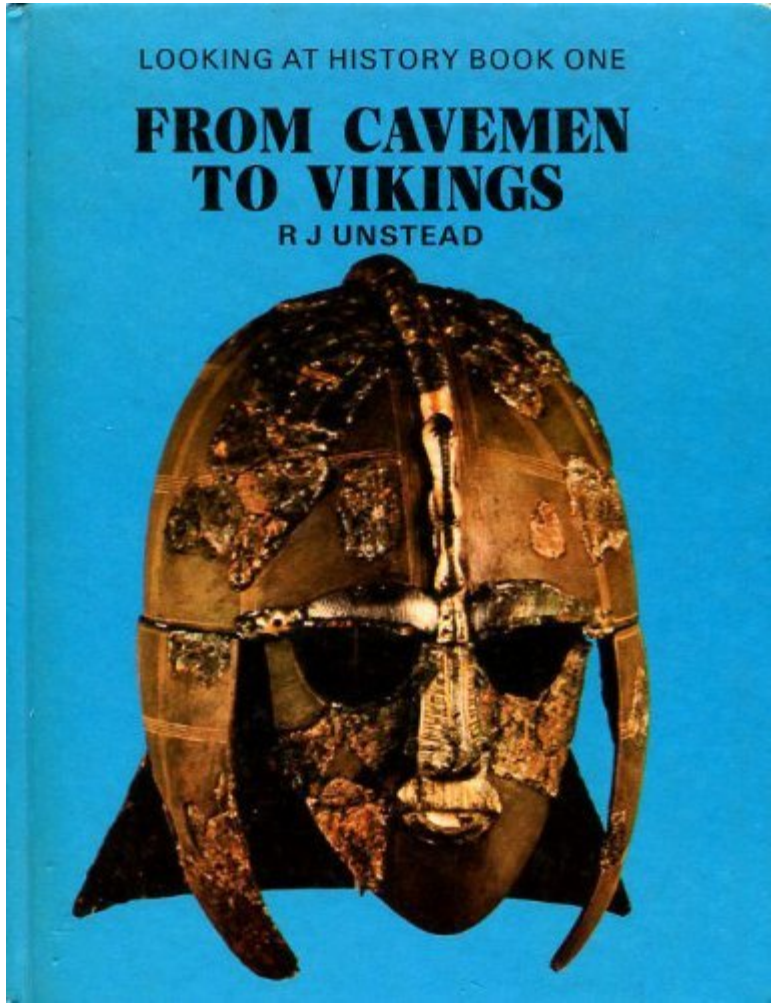
SECTION 6
1688-1958
THIRD EDITION
CARTER & MEARS


LOOKING AT HISTORY BOOK ONE
FROM CAVEMEN TO VIKINGS
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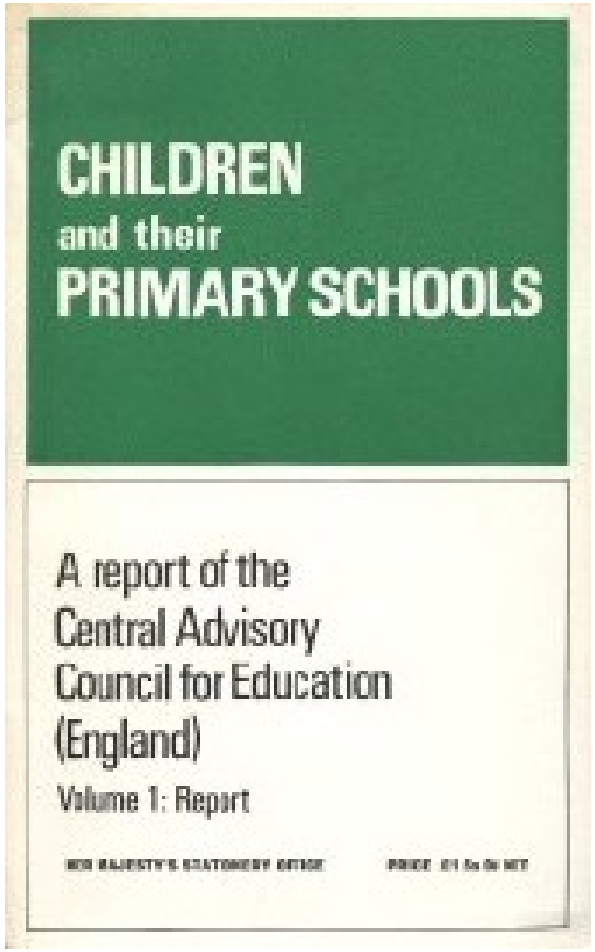
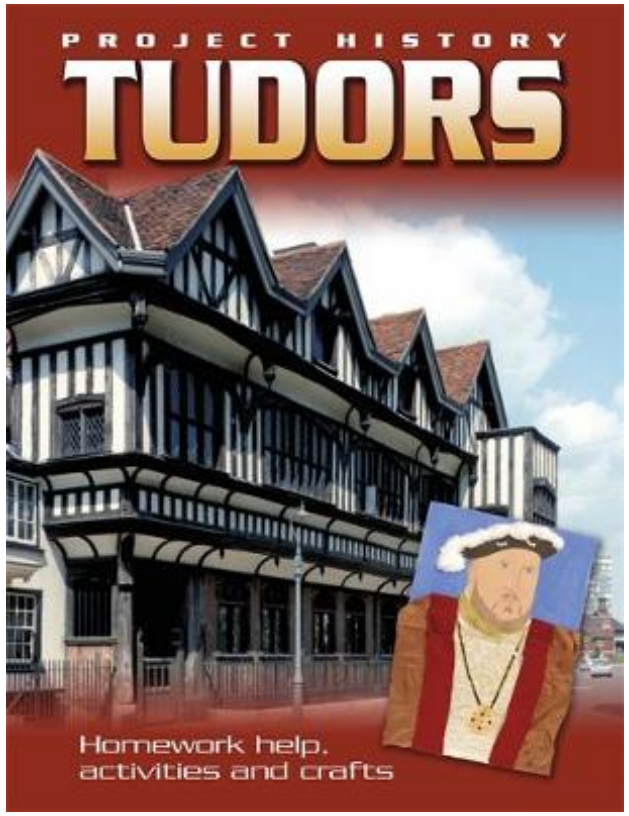
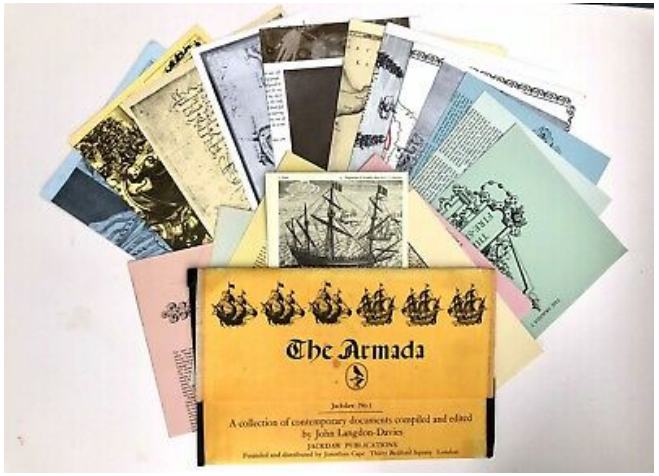
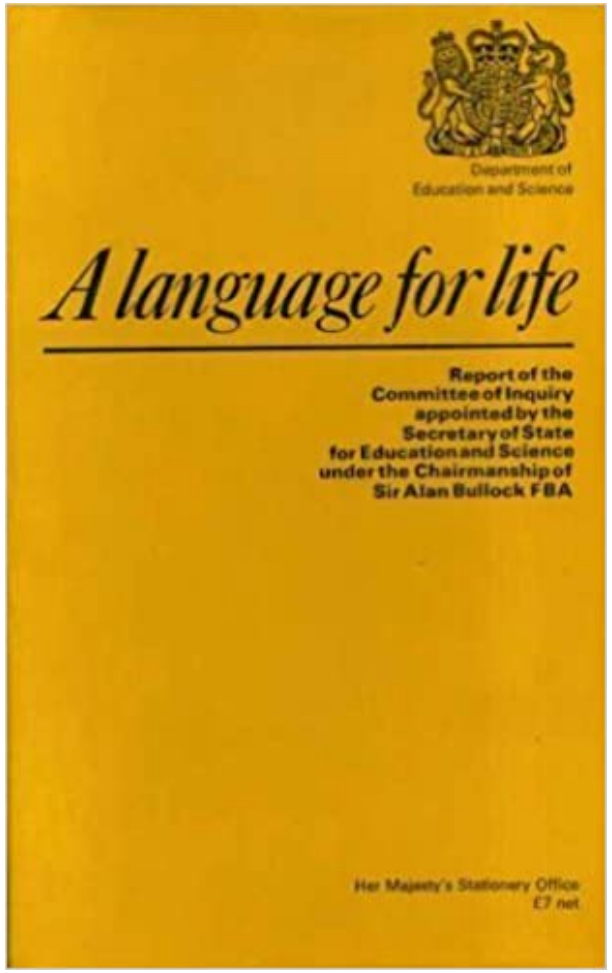
Projects and Topics

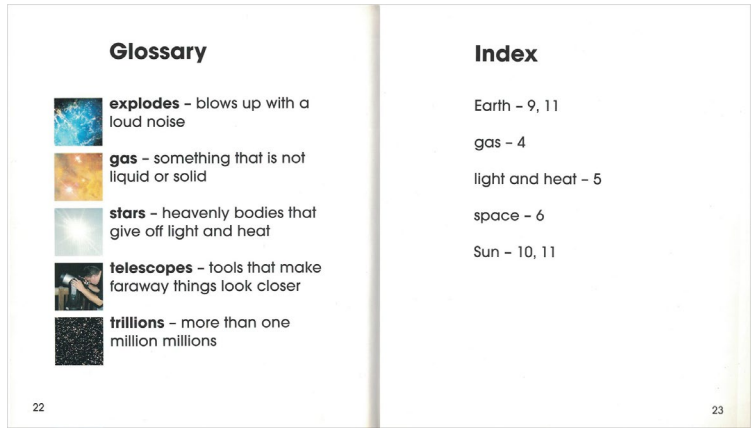






Research Skills





Glossary

explodes – blows up with a loud noise

gas – something that is not liquid or solid

stars – heavenly bodies that give off light and heat

telescopes – tools that make faraway things look closer

trillions – more than one million millions

22

Index

23

Blue whales are the biggest animals of all. You'll find one on pages 34 and 35.

Gardens are busy places. Pages 36 and 37 show you what might live there.

Pigs are just one of the animals you can see on pages 38 and 39.

Find out how a shingle-backed skink gets rid of enemies on pages 32 and 33.

Contents

Bright flame shrimps live on the Barrier Reef, on pages 30 and 31.

Tigers hunt in the thick jungles of India. Find out what else lives there on pages 28 and 29.

Snow leopards hunt in the highest places. Turn to pages 26 and 27 to find out where.

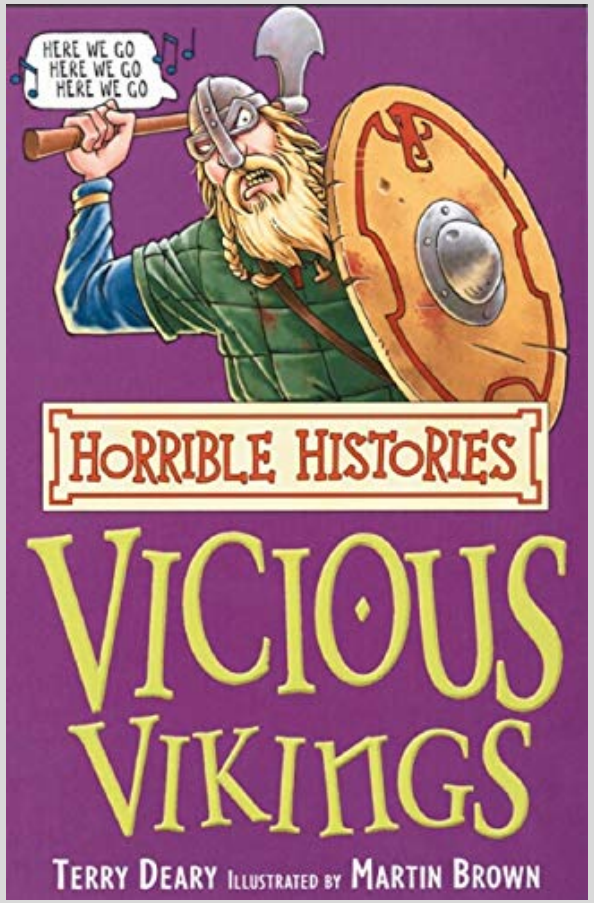
Starfish live on the seashore. Find out what else does on pages 24 and 25.

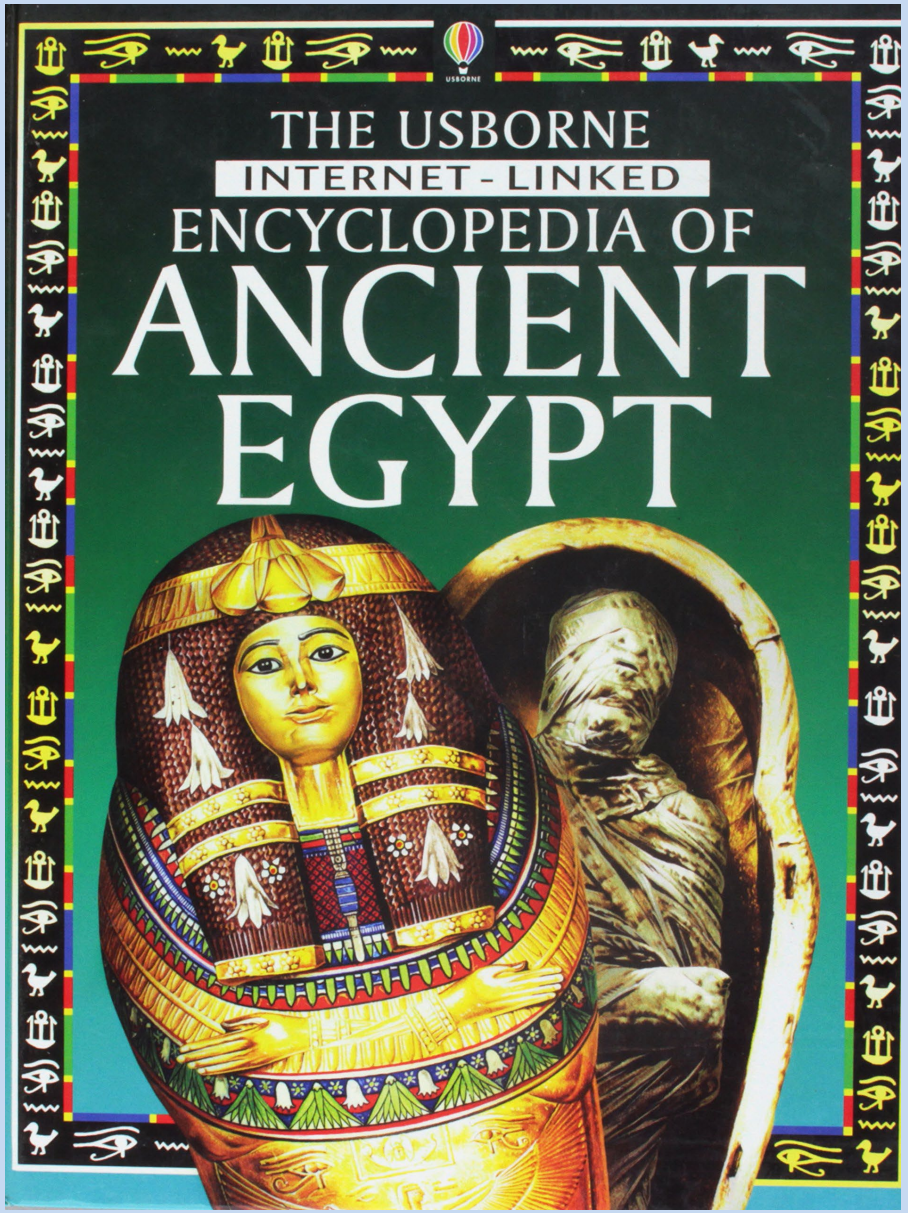
Squirrels are just one of the animals living in woods like the one on pages 22 and 23.

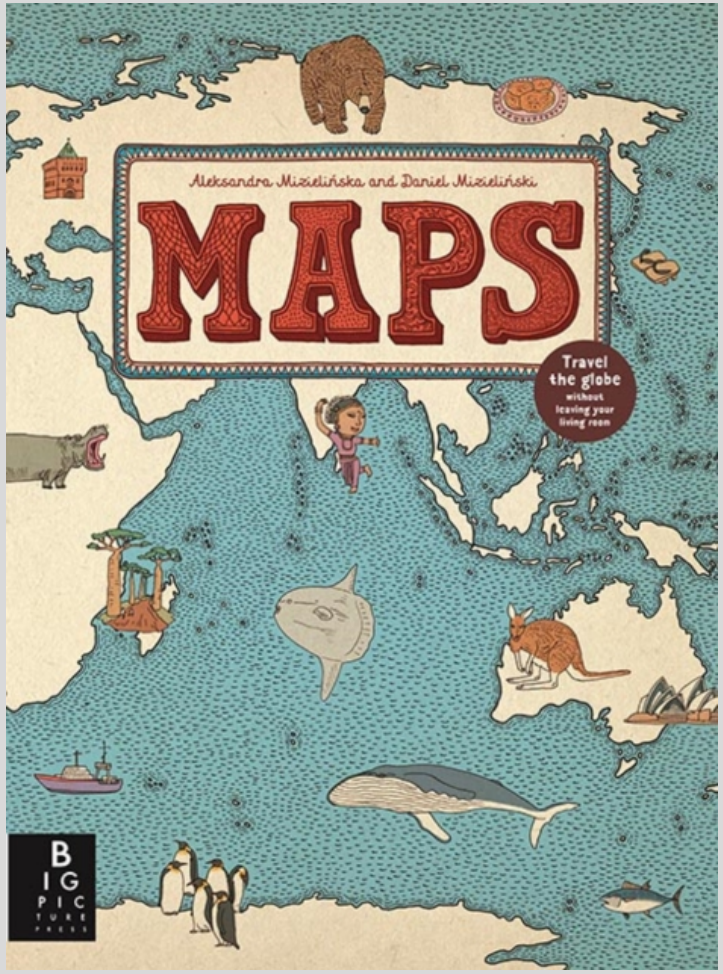
The huge African plains on pages 20 and 21 are home to fast-running cheetahs.

2


Viking warriors
THE TRUE SPIRIT OF THE VIKING AGE was daring courage. To the Viking warrior, honour and glory in battle were the only things that lasted forever. A warrior had to be ready to follow his lord or king into battle or on a raid or expedition. As a member of a loyal band of followers, known as a *lith*, he could be called up to fight at any moment. In the later Viking Age, kings had the power to raise a force (or *leithang*) of ships, men, supplies, and weapons. The kingdom was divided into small units, and each unit provided one warrior. Groups of units donated a ship to carry the warriors on a raid to faraway lands.
ARCHER IN ACTION
Vikings were skilled with bow and arrow, both in battle and hunting. A well-preserved bow was found in Hedeby, the great Danish Viking town (now in Germany). It was made of yew wood. A rich boat-burial in Hedeby contained a bundle of arrows with bronze mounts. They probably belonged to a nobleman.
Bow made of flexible wood such as yew
Fur hat
Shaft of flexible birch wood
Flights, pieces of bird feather added to stabilize the arrow in the air
Sharp iron arrowhead
Bear-tooth pendant
Bowstring of twisted fibres
Bundle of arrows
Leather quiver, a pouch for holding arrows
Leather sheath for knife
BOUND FOR GLORY
In this romantic engraving, warriors fight with axe and sword. The Viking poem *Hávamál* says: "Cattle die kindred die, every man is mortal: but I know one thing that never dies, the glory of the great dead."
STONE WARRIOR
This Viking warrior was carved in the 10th century on a stone cross in Middleton, Yorkshire, England. His weapons are laid out around him, as they would have been in a traditional burial (pp.54–57). The Anglo-Saxon poem *The Battle of Maldon* describes the noise and fury of a battle between Danish Vikings and the English: "Then they let the spears, hard as a file, go from their hands; let the darts (arrows), ground sharp, fly; bows were busy; shield received point; bitter was the rush of battle."
Conical helmet
Round shield
Sword
Spear
Axe
12
THE LATEST FASHION
Vikings usually fought on foot. Fashions changed in the late 11th century, at the end of the Viking Age, when cavalry began to be used in battle. This mounted warrior comes from a tapestry woven in Baldishol, Norway, in around 1200. He is wearing a helmet and chain-mail tunic, and carrying a kite-shaped shield. Against an opponent on foot, these longer shields gave better protection to the cavalryman's lower body.
Iron helmet with a noseguard
Wooden shaft
Chain mail to protect the neck
Brooch
ONE HEAVY SHIRT
These fragments of a chain-mail shirt come from Gjermundbu, Norway. Making chain mail was a slow job. Each iron ring had to be forged separately. Then it was linked to the last one and closed with a rivet or welded in place. It took thousands of rings to make one shirt.
Sword guard to protect the hand
Chain-mail tunic, long enough to cover the waist
CASUAL DRESS
Unlike Roman legionaries or modern soldiers, Viking warriors didn't wear uniforms. Every soldier had to dress and arm himself. Iron helmets were worn by chieftains, but poor warriors had to make do with leather caps, which didn't offer as much protection. Some warriors wore leather tunics instead of chain mail. Wooden shields were held up against arrows and blows from axes or swords.
Iron sword
Sheath for sword
Leather shoes, often made of goatskin
Iron spearhead
Iron plates welded together
Chain mail may have hung from the back to protect the neck
REAL HELMET (NO HORNS)
Viking helmets did not have horns. This example comes from Gjermundbu in Norway. It has a goggle-like eye guard.
Padded leather tunic
Baldric, a strap used to carry a sword
Tweed trousers
Wooden shield with an iron boss
Men probably wore long woollen socks
13


HERE WE GO
HERE WE GO
HERE WE GO
HORRIBLE HISTORIES
VICIOUS VIKINGS
TERRY DEARY ILLUSTRATED BY MARTIN BROWN


THE USBORNE
INTERNET-LINKED
ENCYCLOPEDIA OF
ANCIENT
EGYPT


Aleksandra Mizielińska and Daniel Mizieliński
MAPS
Travel the globe
without leaving your living room
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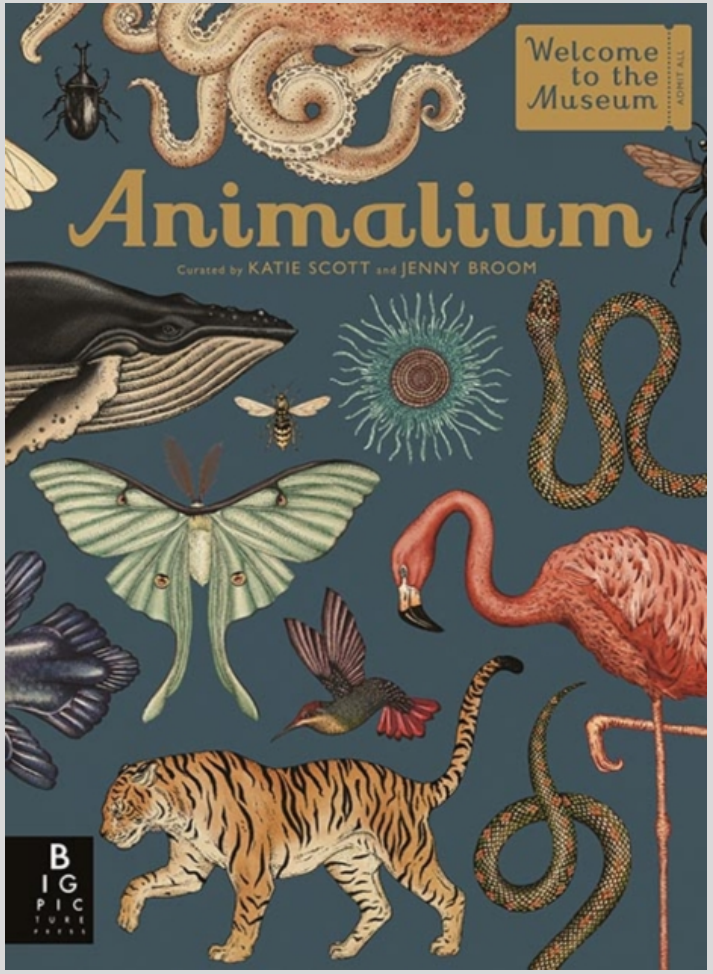
Peter Goes
TIMELINE
A Visual History of Our World
GECKO PRESS


Welcome to the Museum
Animalium
Curated by KATIE SCOTT and JENNY BROOM
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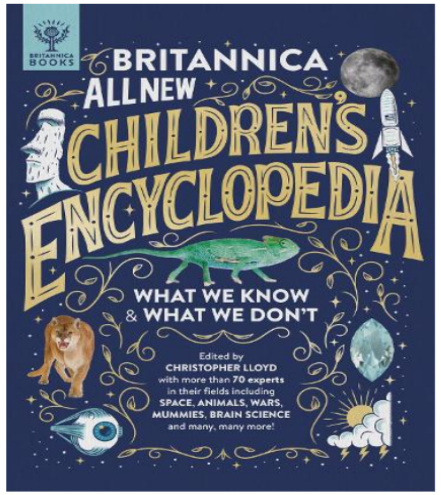
Choosing Nonfiction for the Classroom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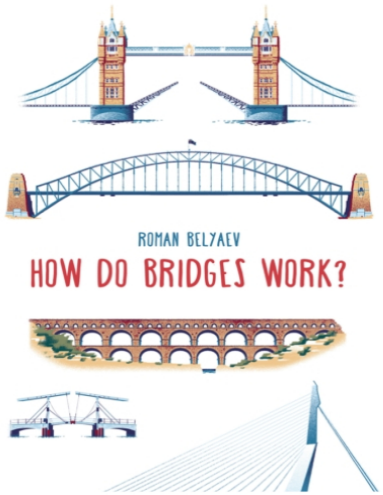
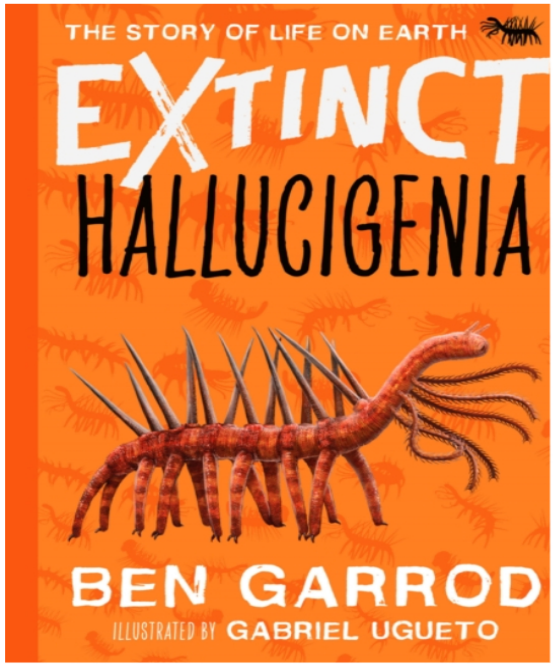
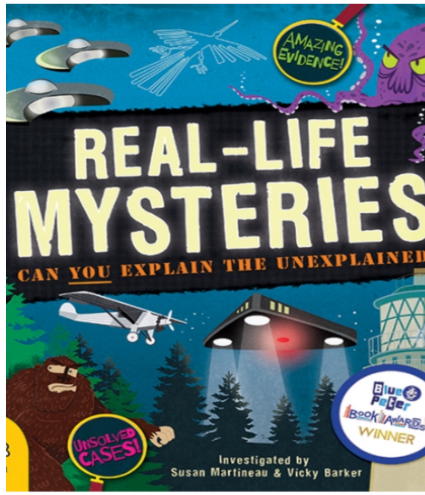
BRITANNICA ALL NEW CHILDREN'S ENCYCLOPEDIA
WHAT WE KNOW & WHAT WE DON'T
Edited by CHRISTOPHER LLOYD with more than 70 experts in their fields including SPACE, ANIMALS, WARS, MUMMIES, BRAIN SCIENCE and many, many more!


ROMAN BELYAEV
HOW DO BRIDGES WORK?


THE STORY OF LIFE ON EARTH
EXTINCT
HALLUCIGENIA
BEN GARROD
ILLUSTRATED BY GABRIEL UGUETO


Gut Garden
A journey into the wonderful world of your MICROBIOME
Katie Brosnan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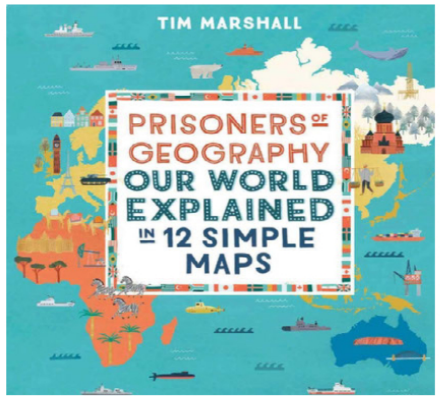
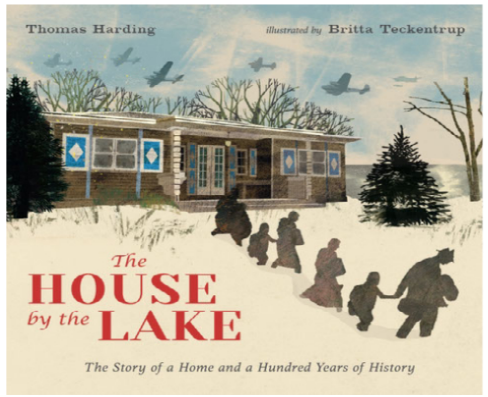
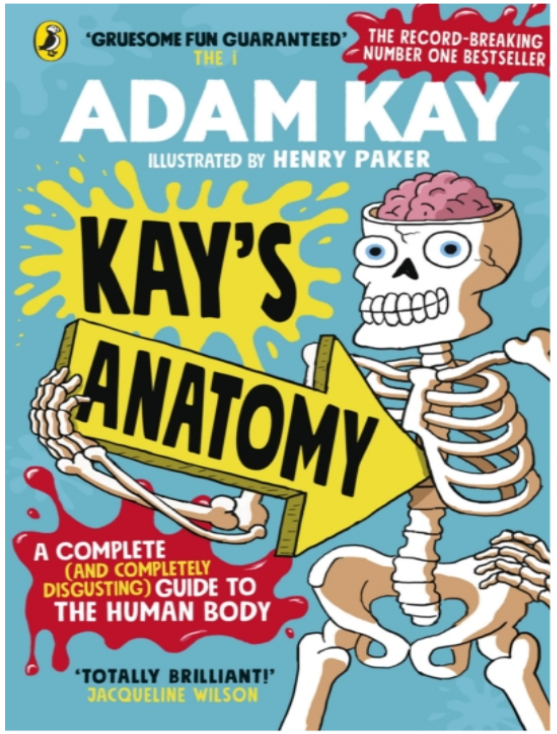
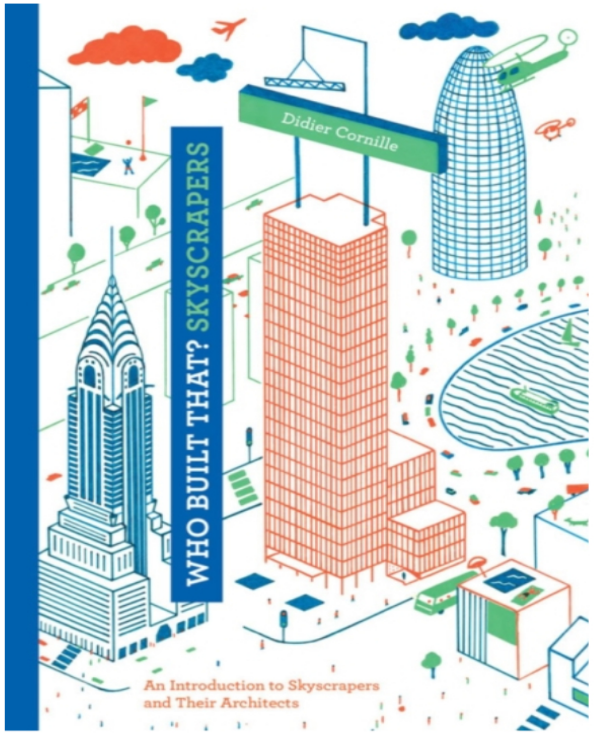
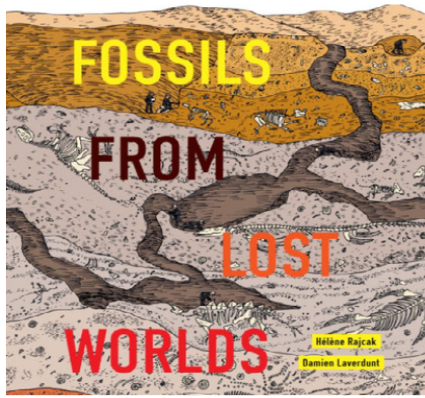
CAN YOU EXPLAIN THE UNEXPLAINED
UNSOLVED CASES!
Blue Peter Book Awards WINNER
Investigated by Susan Martineau & Vicky Barker

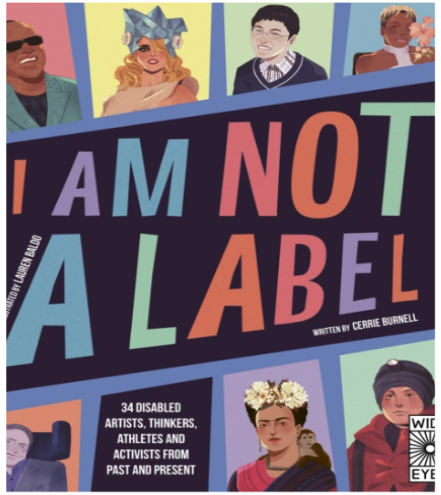

TIM MARSHALL
PRISONERS OF GEOGRAPHY
OUR WORLD EXPLAINED IN 12 SIMPLE MAPS

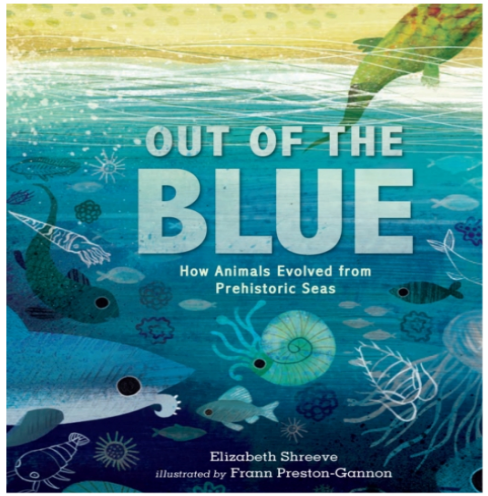

Thomas Harding
illustrated by Britta Teckentrup
The HOUSE by the LAKE
The Story of a Home and a Hundred Years of History

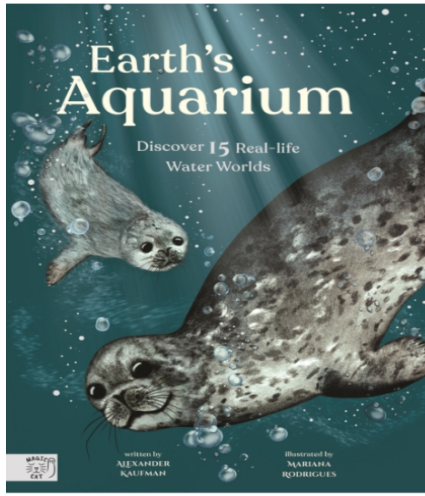

'GRUESOME FUN GUARANTEED' THE I
THE RECORD-BREAKING NUMBER ONE BESTSELLER
ADAM KAY
ILLUSTRATED BY HENRY PAKER
KAY'S ANATOMY
A COMPLETE (AND COMPLETELY DISGUSTING) GUIDE TO THE HUMAN BODY
'TOTALLY BRILLIANT!' JACQUELINE WILSON

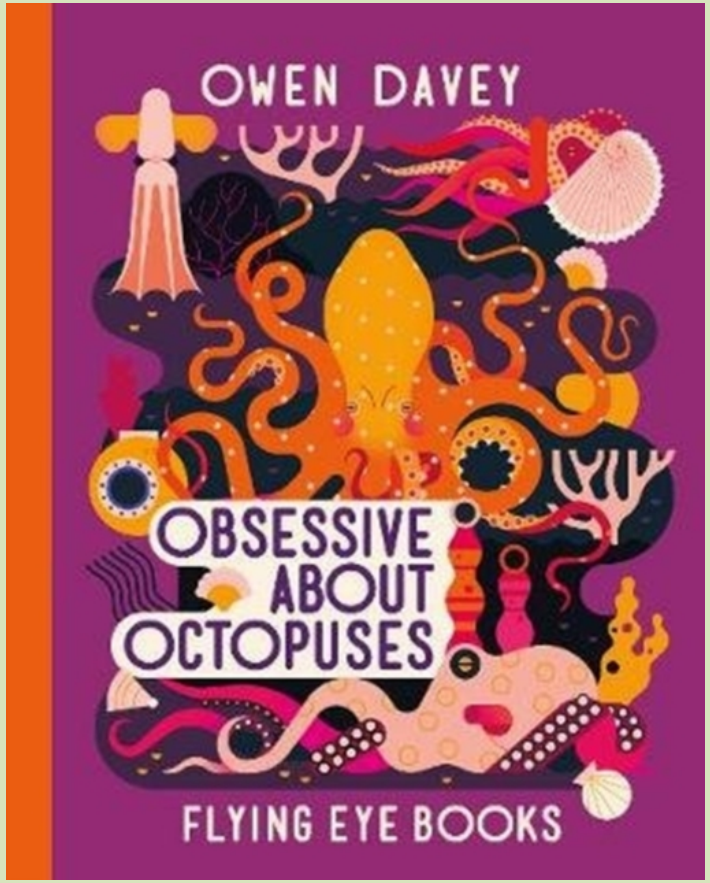

Didier Cornille
WHO BUILT THAT? SKYSCRAPERS
An Introduction to Skyscrapers and Their Architects


FOSSILS FROM LOST WORLDS
Hélène Rajcak
Damien Laverdunt

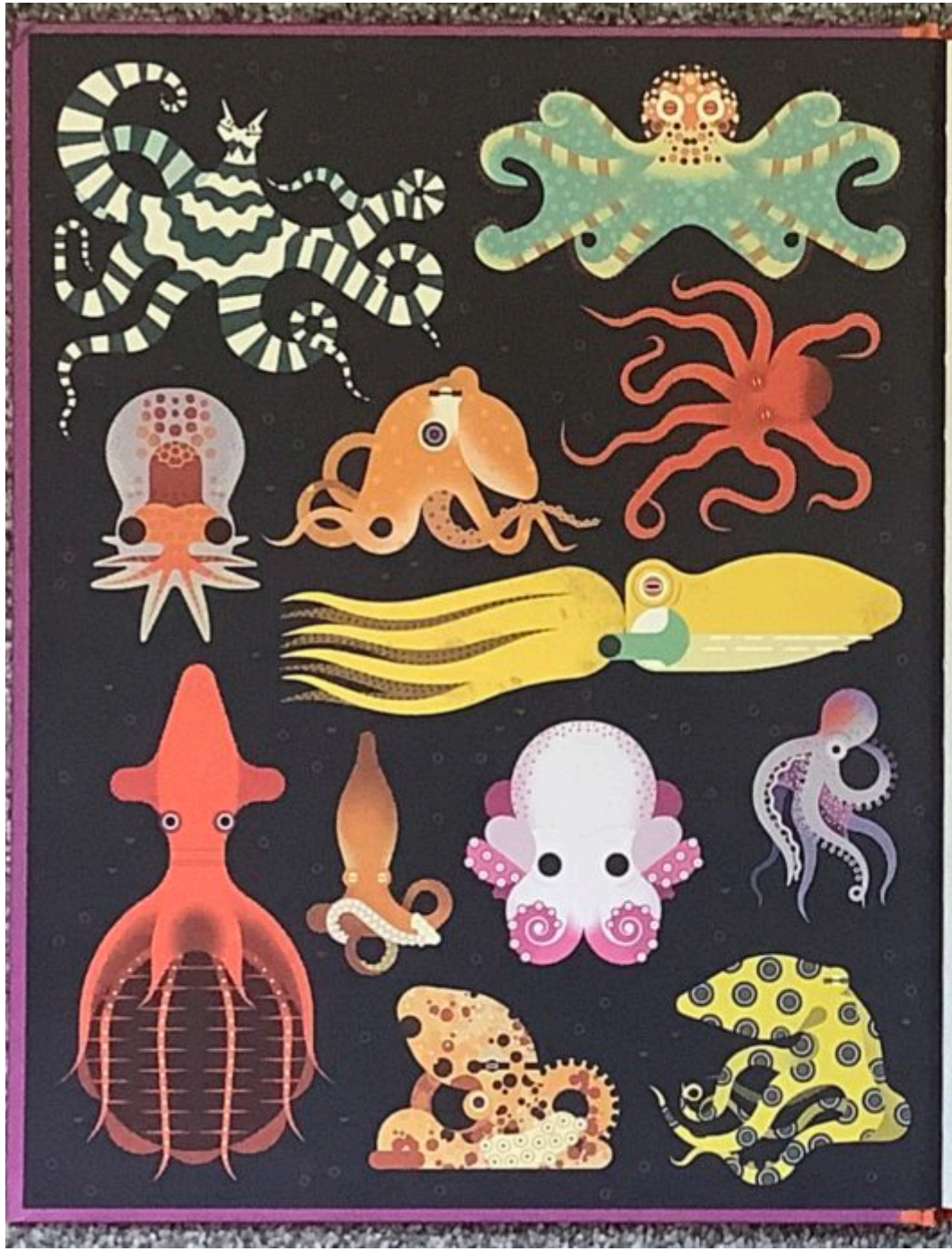

I AM NOT A LABEL
WRITTEN BY CERRIE BURNELL
34 DISABLED ARTISTS, THINKERS, ATHLETES AND ACTIVISTS FROM PAST AND PRESENT


OUT OF THE BLUE
How Animals Evolved from Prehistoric Seas
Elizabeth Shreeve
illustrated by Frann Preston-Gannon


Earth's Aquarium
Discover 15 Real-life Water Worlds
written by ALEXANDER KAUFMAN
illustrated by MARIANA RODRIGUES

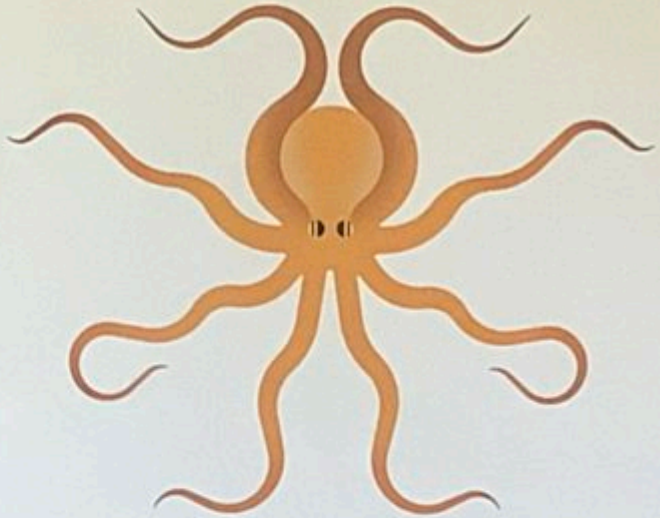


We need to engage critically



OWEN DAVEY

OBSESSIVE ABOUT OCTOPUSES

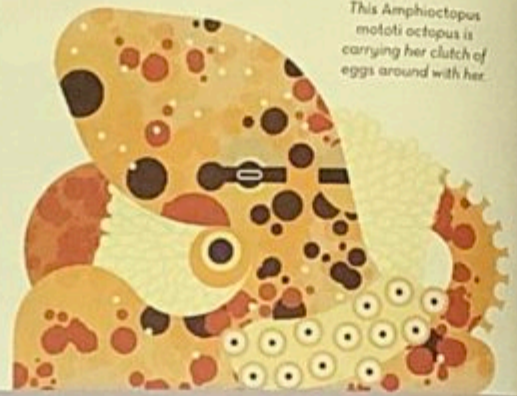


FLYING EYE BOOKS

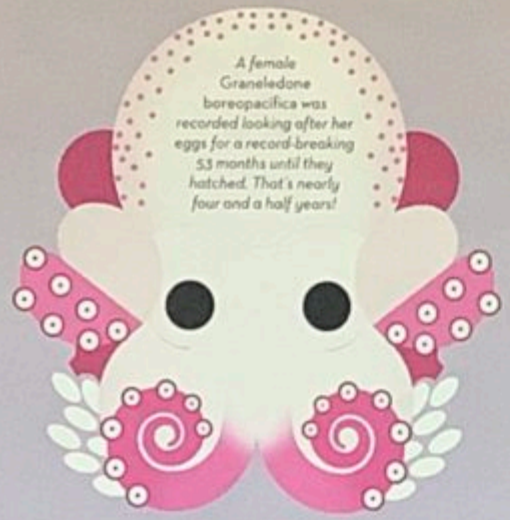
London–New York

BORN THIS WAY

Baby octopuses are called 'hatchlings'. This is for the simple reason that they hatch from eggs. Some octopuses can produce up to a million eggs in one go. Many species attach these to hard surfaces and guard them until they hatch. Other octopuses keep their eggs inside part of the reproductive organs or hold them in their mantle until the hatchlings emerge. Most octopuses are 'semelparous' animals, which means they reproduce once and then they die.



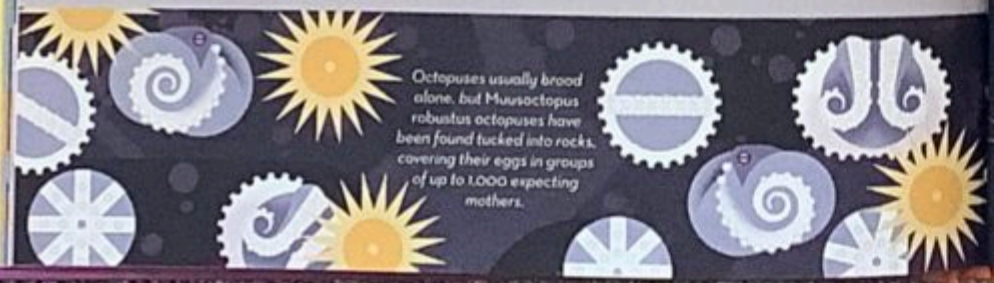
This Amphioctopus mototi octopus is carrying her clutch of eggs around with her.



A female Graneledone boreopacifica was recorded looking after her eggs for a record-breaking 53 months until they hatched. That's nearly four and a half years!

Baby Love

Octopuses sacrifice a lot to bring life into this world. Male octopuses have an arm called a 'hectocotylus', which in many species is detached and given to the female for her to fertilise her eggs. Males also tend to die shortly after mating – and in some cases, they are even eaten by the female! It's not much better for the females either. Most female octopuses stop eating after producing hatchlings, and instead 'brood', spending time blowing water over their eggs to keep them safe, clean and the correct temperature. Once the eggs hatch, in many species the female's body begins to shut down and she dies shortly after.



Octopuses usually brood alone, but Muusoctopus robustus octopuses have been found tucked into rocks, covering their eggs in groups of up to 1,000 expecting mothers.

All Your Eggs

Some octopus species carry their eggs with them in their arms or on structures they create, but none do it with quite as much style as argonauts (also known as paper nautiluses). Female argonauts secrete beautifully intricate paper-thin egg cases, where they store their tiny eggs. Females then live inside these 'shells' with their heads and arms exposed. Unlike most octopuses, female argonauts do not die after brooding and can produce offspring several times in their lives. The males are very tiny in comparison to the females and do not produce shells. They only mate once before death.

The greater argonaut is the largest of the paper nautilus species with the most impressive egg case.

This Caribbean dwarf octopus hatchling hunts and catches an opossum shrimp.

Start Small

Hatchlings tend to grow to adult size in a short space of time. This is unsurprising, given that many octopuses live for just a few months – the longest-living species only reaching about 5 years old. Some hatchlings are large and look like miniature versions of their adult selves. These may take up a benthic lifestyle and begin hunting immediately or rise to the surface to hunt plankton. Others hatch as tiny 'paralarvae', which are only around the size of a grain of rice. These become planktonic, which means they drift in the ocean's currents for several weeks, feeding on other plankton until their adult bodies develop.

Look how adorable these common octopus paralarvae are!


TARDIGRADE
LAMPREY
HYDRA
AXOLOTL
JAEKELOPTERUS
TRIOPS
TYLOMELANIA

Hunting birds

Often called "birds of prey", this group contains many different species. They are all predators, but have varied diets. Females are usually bigger than males and can hunt larger prey.

Philippine eagle

As its name suggests, this eagle mainly eats snakes.

Also known as the **monkey-eating eagle,** this giant is the largest eagle on the planet.

Short-toed snake eagle

This ferocious hawk feeds on small woodland animals.

Northern goshawk

Hunting techniques

Predators have **different hunting styles.** Some chase or pounce, while others search for dead animals.

Lappet-faced vulture

Habitats

Birds of prey live in many habitats, from **Arctic regions to tropical jungles.** You'll find them in our own concrete jungles, too!

Secretary bird

This long-legged hunting bird kills reptiles by **stamping** on them!

Steppe buzzard

This bird **migrates long distances** from eastern Europe and China to spend winters in Africa.

Bateleur

Little owl

An opportunistic hunter, this owl attacks any bird or small mammal that crosses its path.

Ural owl

Spectacled owl

Eastern screech owl

This owl can be found in wooded areas even in the middle of cities.

Lesser kestrel

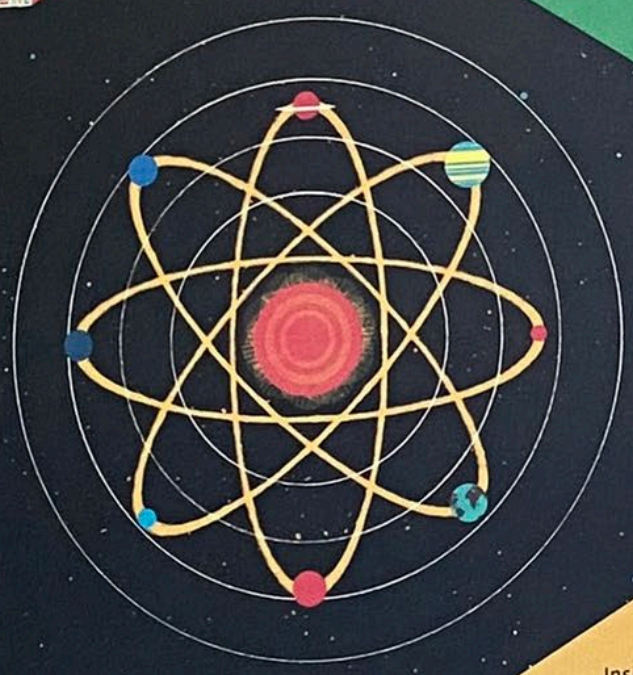
Lesser kestrels **hover in groups** looking for large insects.

People versus hunting birds

Unfortunately, birds of prey are often killed by humans because **they are seen as being a threat** to our domestic animals and livestock.

Everything we see around us is made up of **tiny building blocks** called **ATOMS**. In your body alone there are several billion billion billion of them. In the whole Universe, we think there are one with 80 zeroes after it! It looks like this:

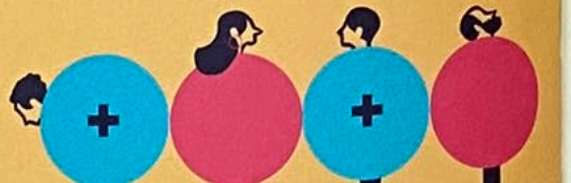
100, 000, 000, 000, 000, 000, 000, 000, 000, 000,
000, 000, 000, 000, 000, 000, 000, 000, 000, 000,
000, 000, 000, 000, 000, 000, 000, 000.

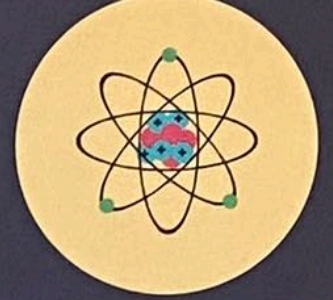


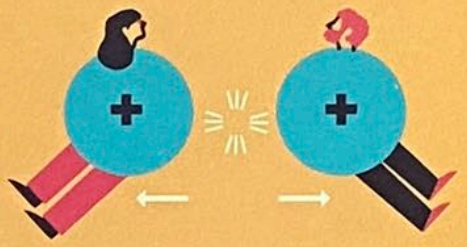
The Atom

You can think of an atom as a bit like a mini version of the Solar System. There is a **NUCLEUS in the centre** in place of the Sun and **negatively charged ELECTRONS** whizzing around the outside like little planets.

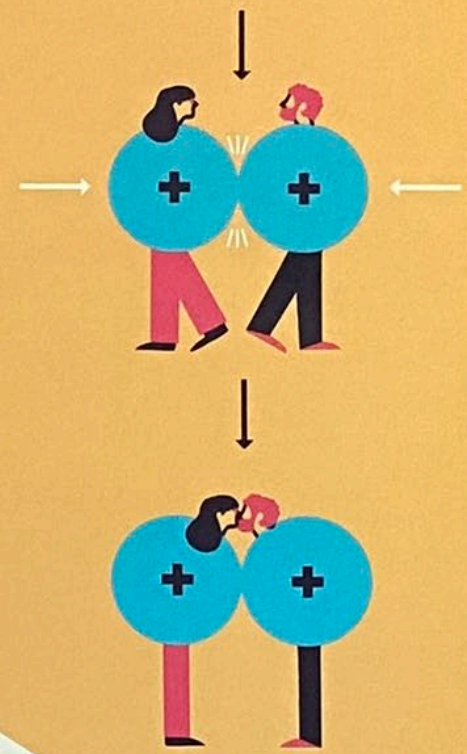
Inside the nucleus you'll find **positively charged PROTONS** along with **NEUTRONS** which **have no charge**. The electrons stay stuck to the nucleus because they are attracted to the protons by the electromagnetic force.



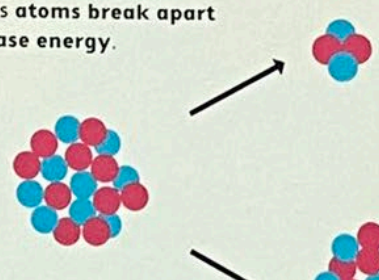


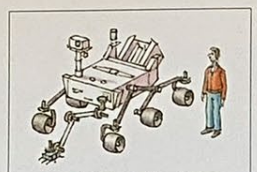


But why don't the protons in the nucleus repel each other? They are all positive after all, and like charges repel as much as opposites attract. The answer is that there's another, even stronger force at work – the **STRONG NUCLEAR FORCE**. This force **keeps the protons held closely together.**

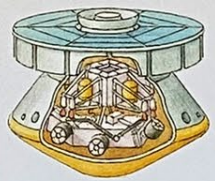


That leaves us with one more big force – the **WEAK NUCLEAR FORCE**. This force is important in the process of **RADIOACTIVE DECAY** which sees **atoms break apart and release energy**.





To travel to Mars, the Rover folds up neatly and pack inside the cruise stage.



Radio antenna for communicating with orbiting spacecraft

Micro-imager telescope for recording flares from laser beam

Navigation camera (1 of 4)

Camera with 100 mm lens

Telephoto camera

Remote sensor mast

Tool for monitoring weather

Funnel (for feeding samples into sample analysis box)

Box (for checking for organic matter)

Sample observation tray

Laser beam

Spare drill bit

Flare from rock made by laser beam

X-ray spectrometer

Device for sorting samples

Drill for extracting powder from rocks

Sample analysis box

Robotic arm

Mobile "hand" for collecting samples

Close-up camera

Cleaning brush

Scoop

Funnel (for feeding samples into chemistry and mineralogy box)

Sundial

Inlet for soil samples

Chemistry and mineralogy box

Independently geared aluminium wheel (1 of 6)

Cooling fin on generator

Plutonium dioxide power generator

Radio antenna for communicating with Earth

Hazard-avoidance camera

Neutron detector (to look for ice and water below the surface)

Tracks in sand (used by cameras to judge distances)

Radiation detector

Titanium springs to cushion shocks

A ROBOT ON MARS

It might look like a glorified beach buggy, but the Mars *Curiosity* Rover is one of the most sophisticated pieces of machinery ever. It's a mobile laboratory, weather station, camera and communications centre, capable of analysing samples of Martian rock and soil and sending the results millions of kilometres back to Earth. Its discoveries have revolutionised our understanding of our chilly, barren neighbour.

1. *Cruise stage separates as spacecraft enters Martian atmosphere.*

2. *Supersonic parachute activated.*

3. *Heat shield and backshell separate.*

4. *Descent vehicle uses retrorockets for controlled descent.*

5. *Touchdown! Curiosity's wheels snap into place.*

6. *Tethers are cut. Descent vehicle flies off to crash.*

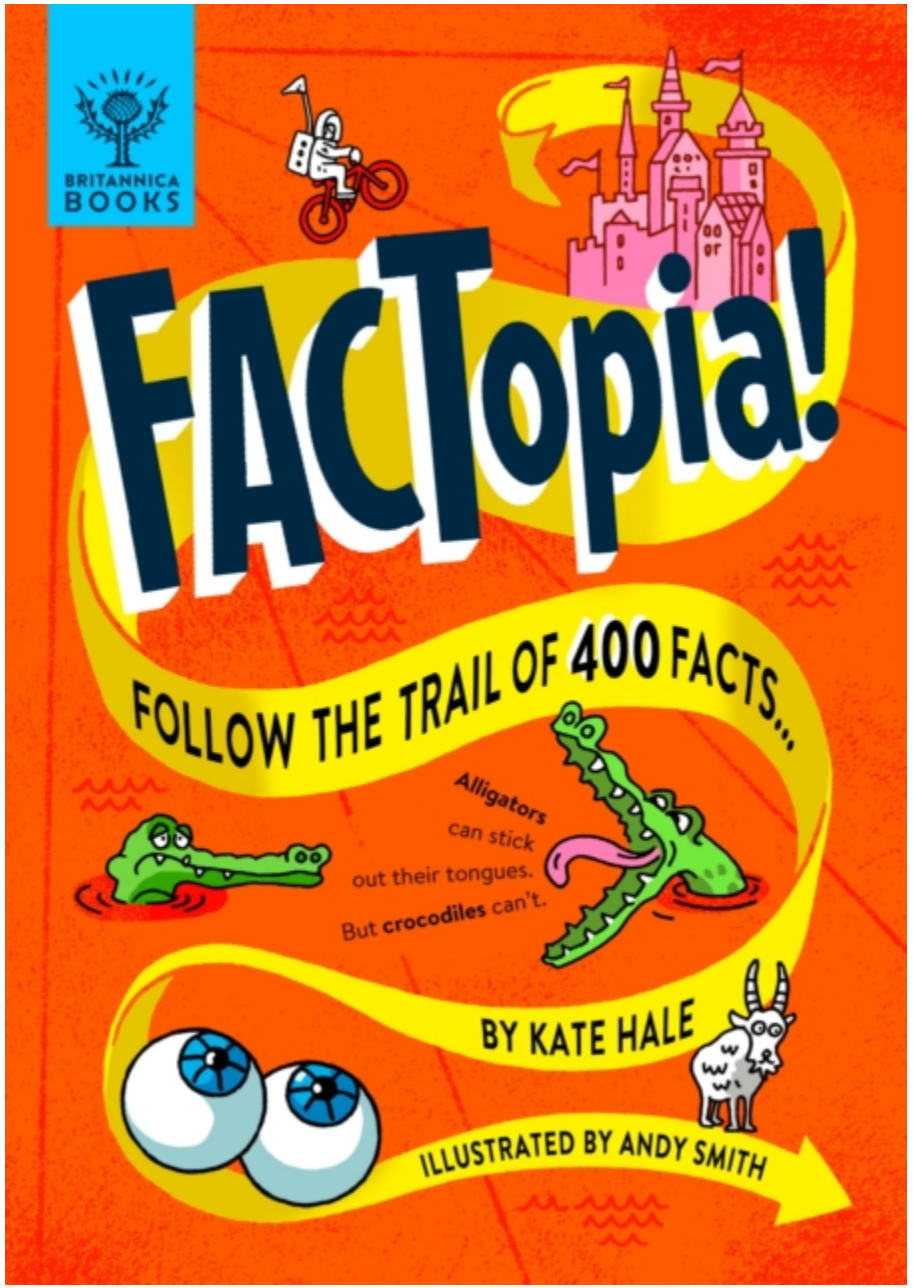
Backshell

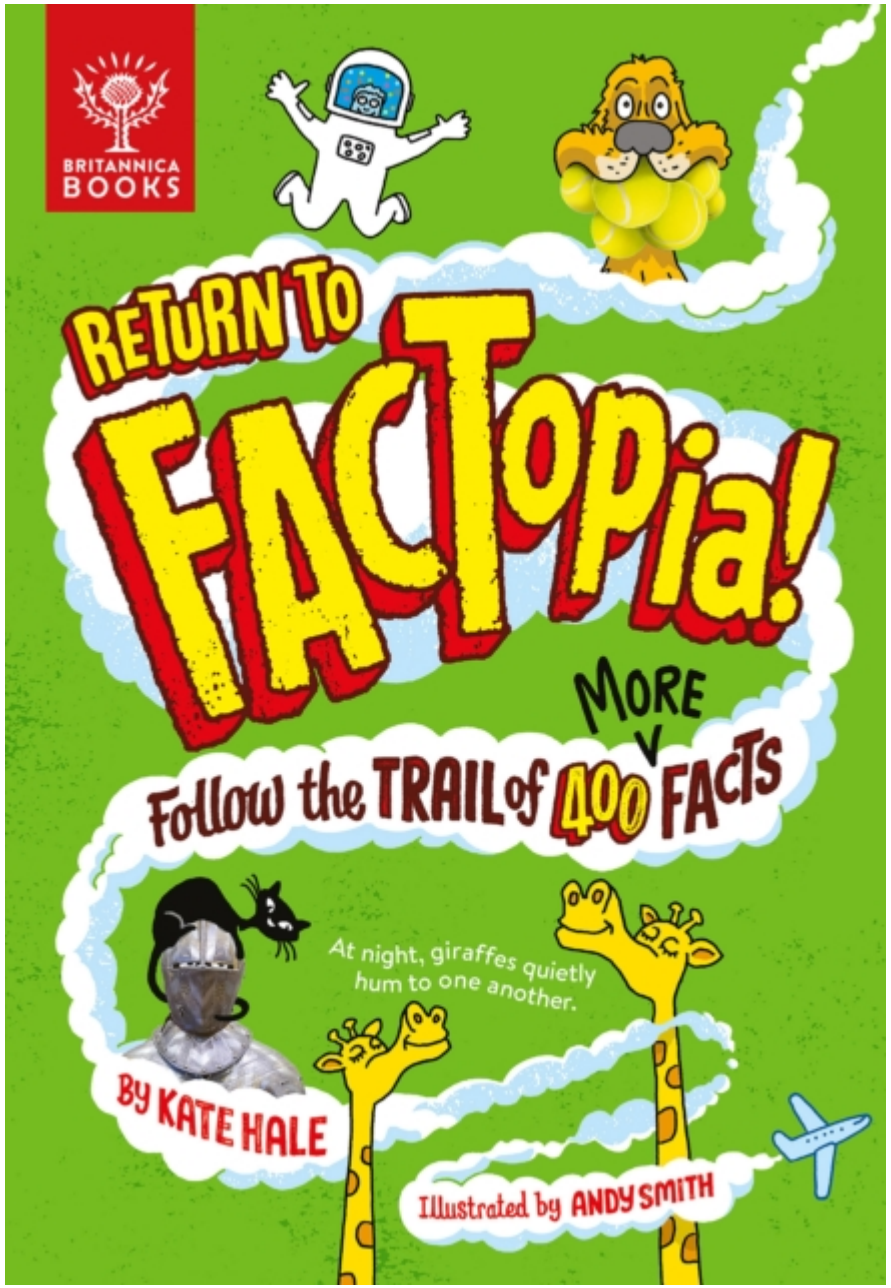
Heat shield

Tether

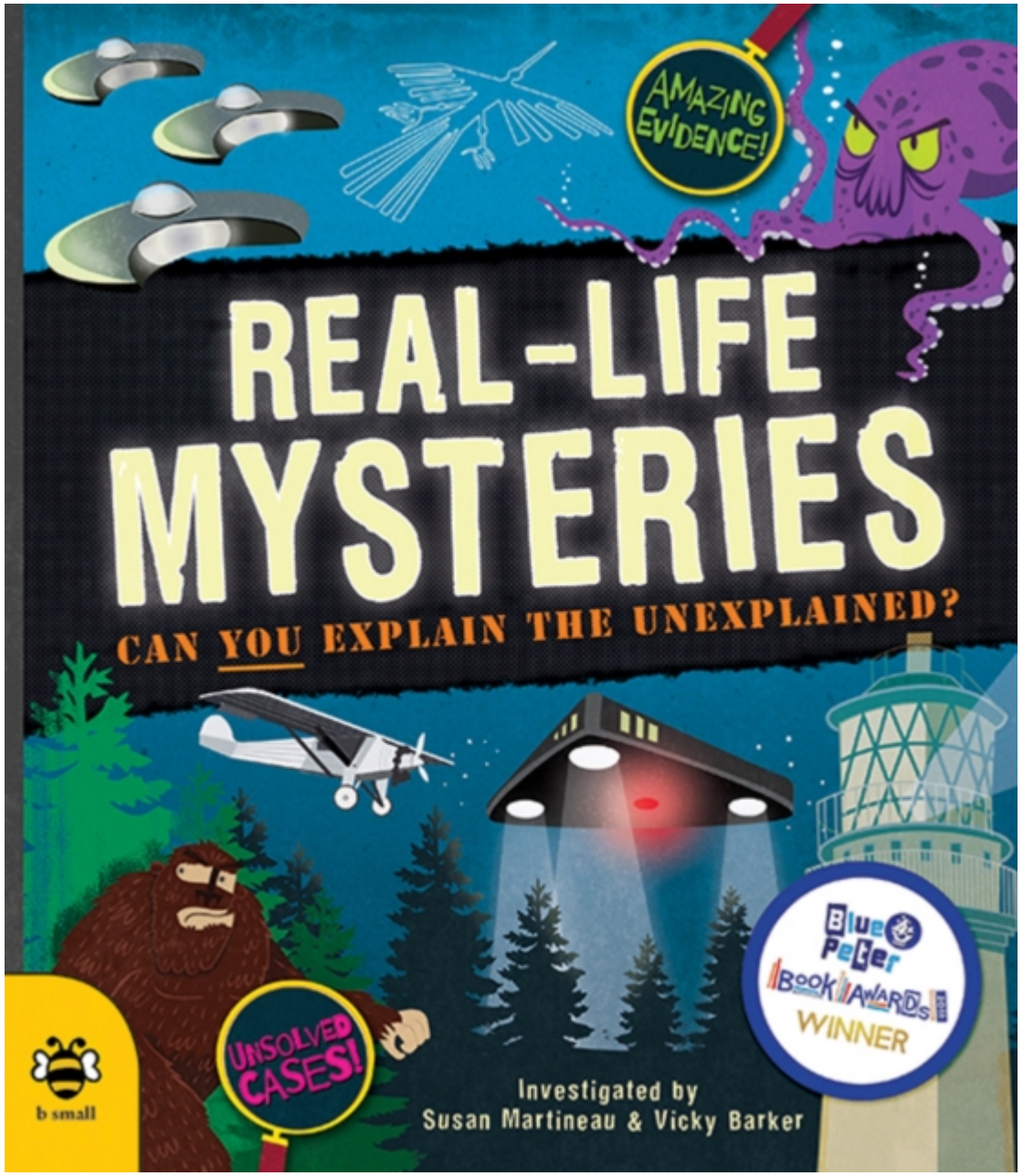
Developing Teacher (and pupil) Knowledge of Nonfiction Books

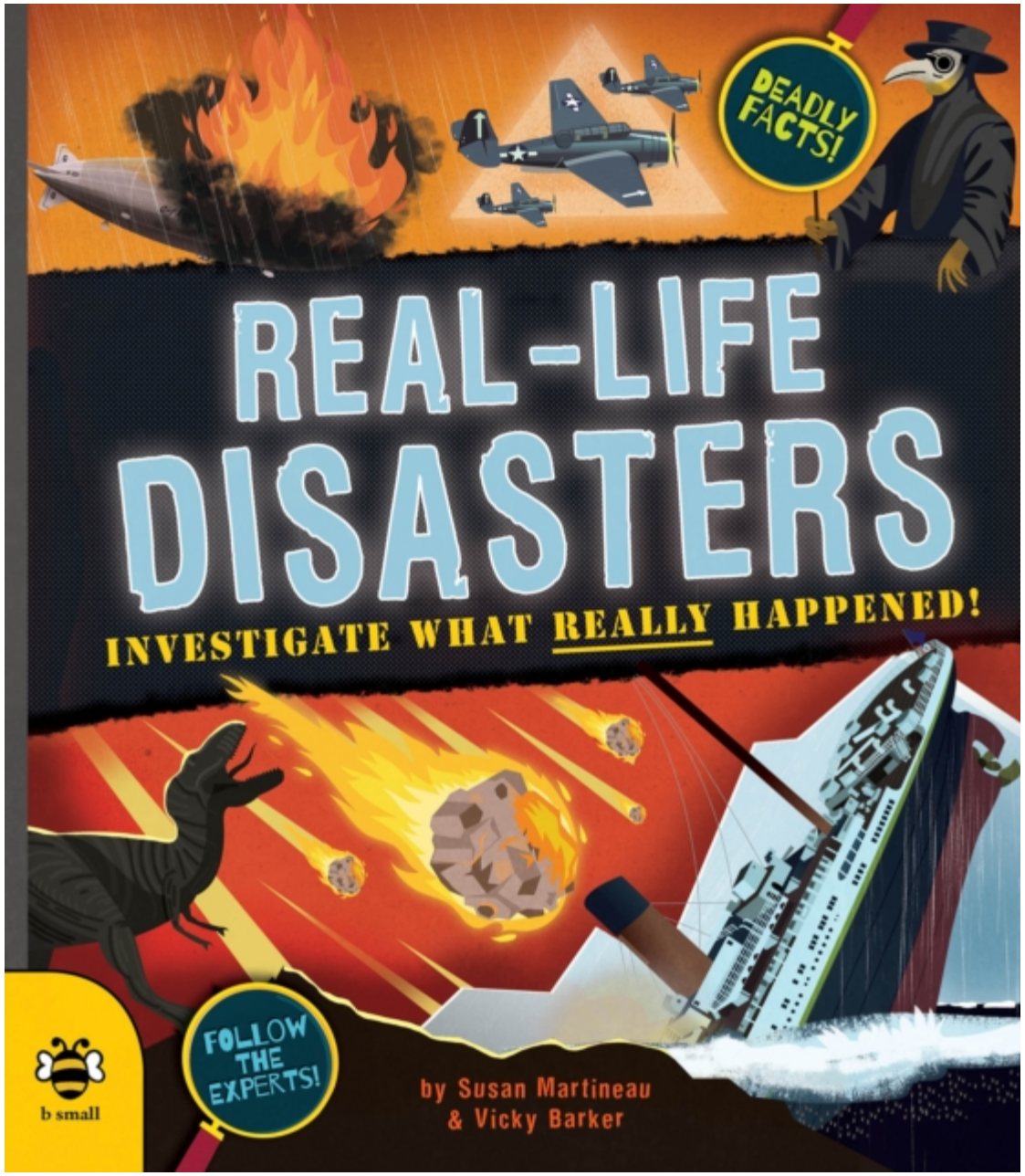
- Does this book engage you? How?
- Is the voice speculative/thoughtful/didactic? Does it avoid a patronising tone?
- What assessment can you make about the authority of the writer?
- How up-to-date is the book? Does this affect the way the book presents its subject?

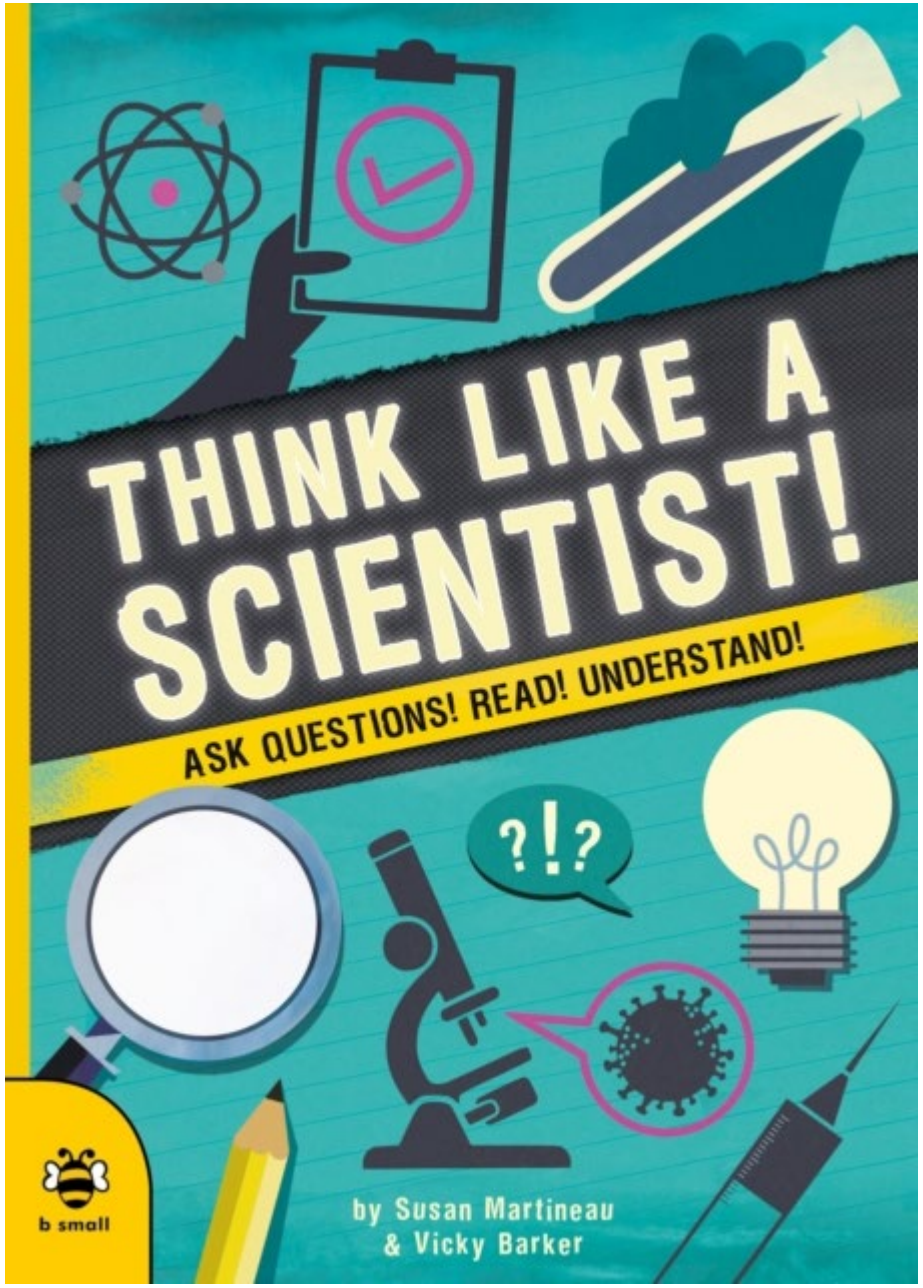

BRITANNICA BOOKS
FACTopia!
FOLLOW THE TRAIL OF 400 FACTS...
Alligators can stick out their tongues. But crocodiles can't.
BY KATE HALE
ILLUSTRATED BY ANDY SMITH


BRITANNICA BOOKS
RETURN TO
FACTopia!
MORE
Follow the TRAIL of 400 FACTS
At night, giraffes quietly hum to one another.
BY KATE HALE
Illustrated by ANDY SMITH


Tall
prairie grasses can have 4-metre-long root systems that extend into the dirt.
Scientists think that trees use the roots of fungi, called mycelium, to send signals to other trees.
How far down can we go?

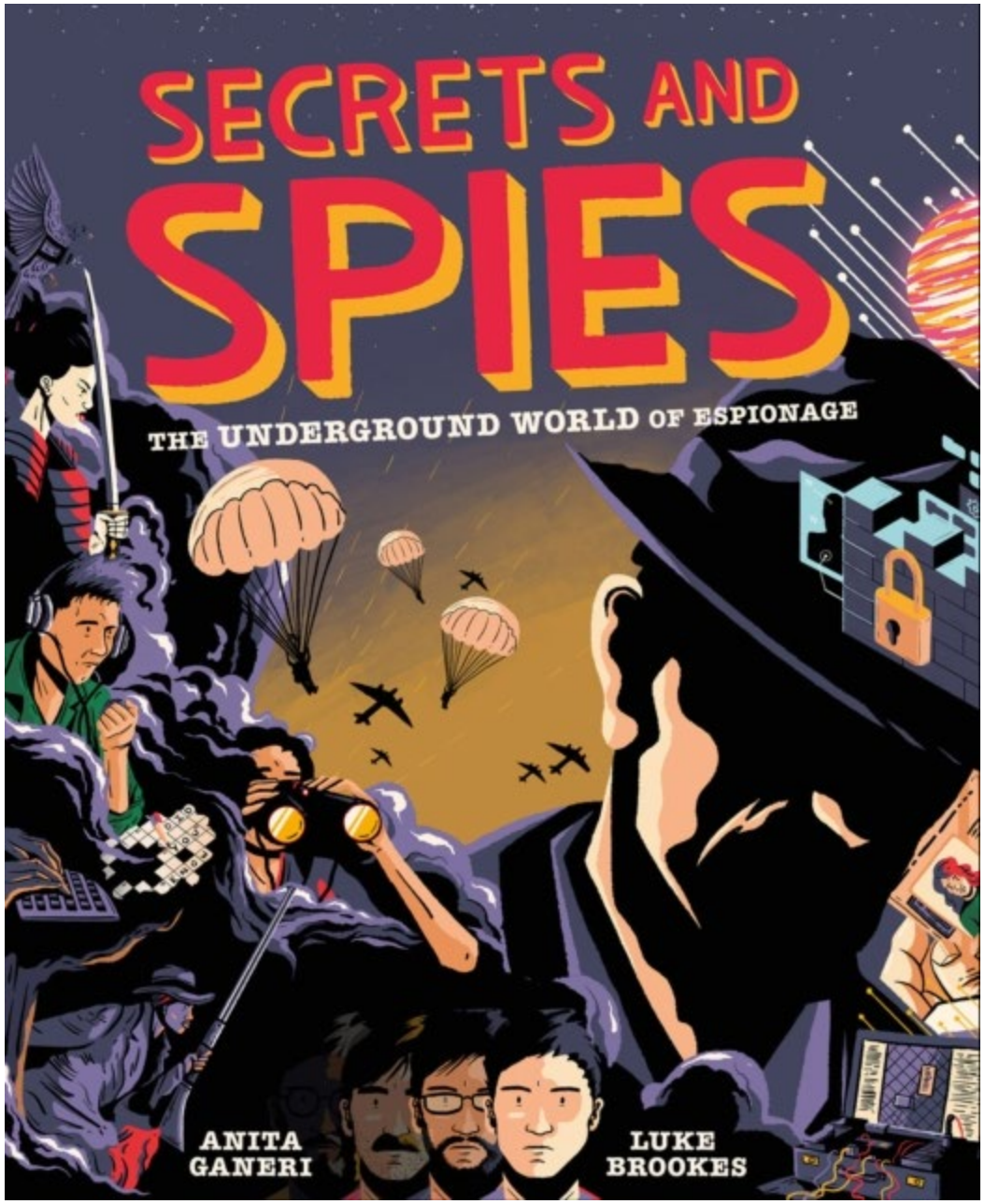

AMAZING EVIDENCE!
REAL-LIFE MYSTERIES
CAN YOU EXPLAIN THE UNEXPLAINED?
Blue Peter Book Awards WINNER
UNSOLVED CASES!
b small
Investigated by
Susan Martineau & Vicky Barker

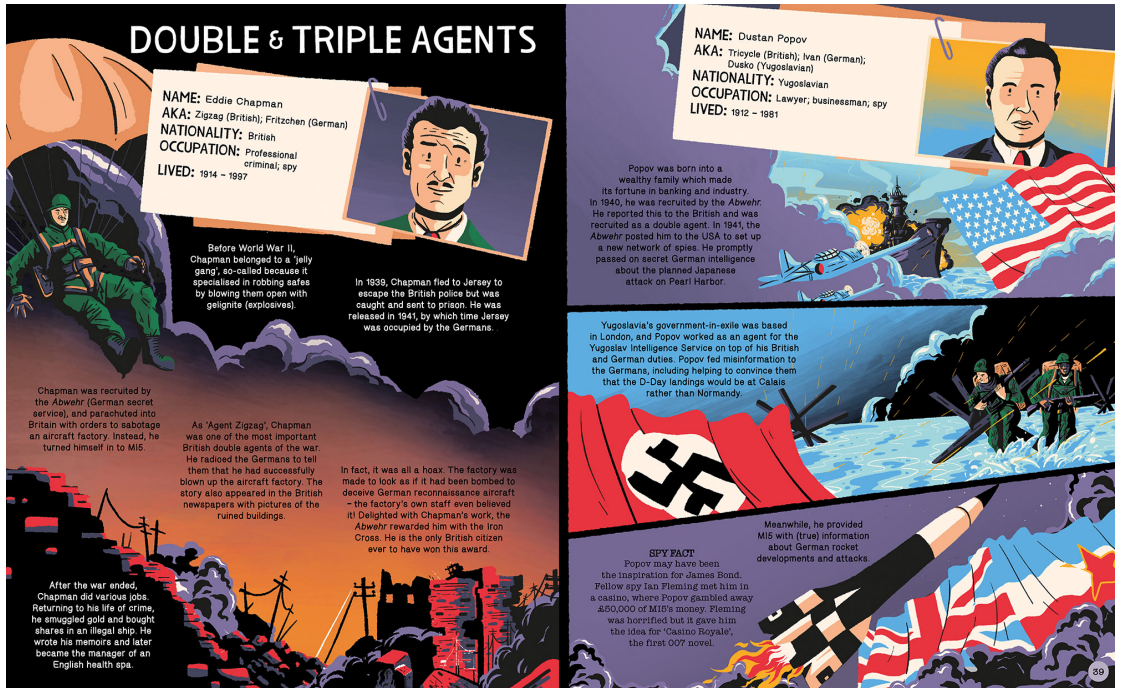

DEADLY FACTS!
REAL-LIFE DISASTERS
INVESTIGATE WHAT REALLY HAPPENED!
FOLLOW THE EXPERTS!
b small
by Susan Martineau
& Vicky Barker

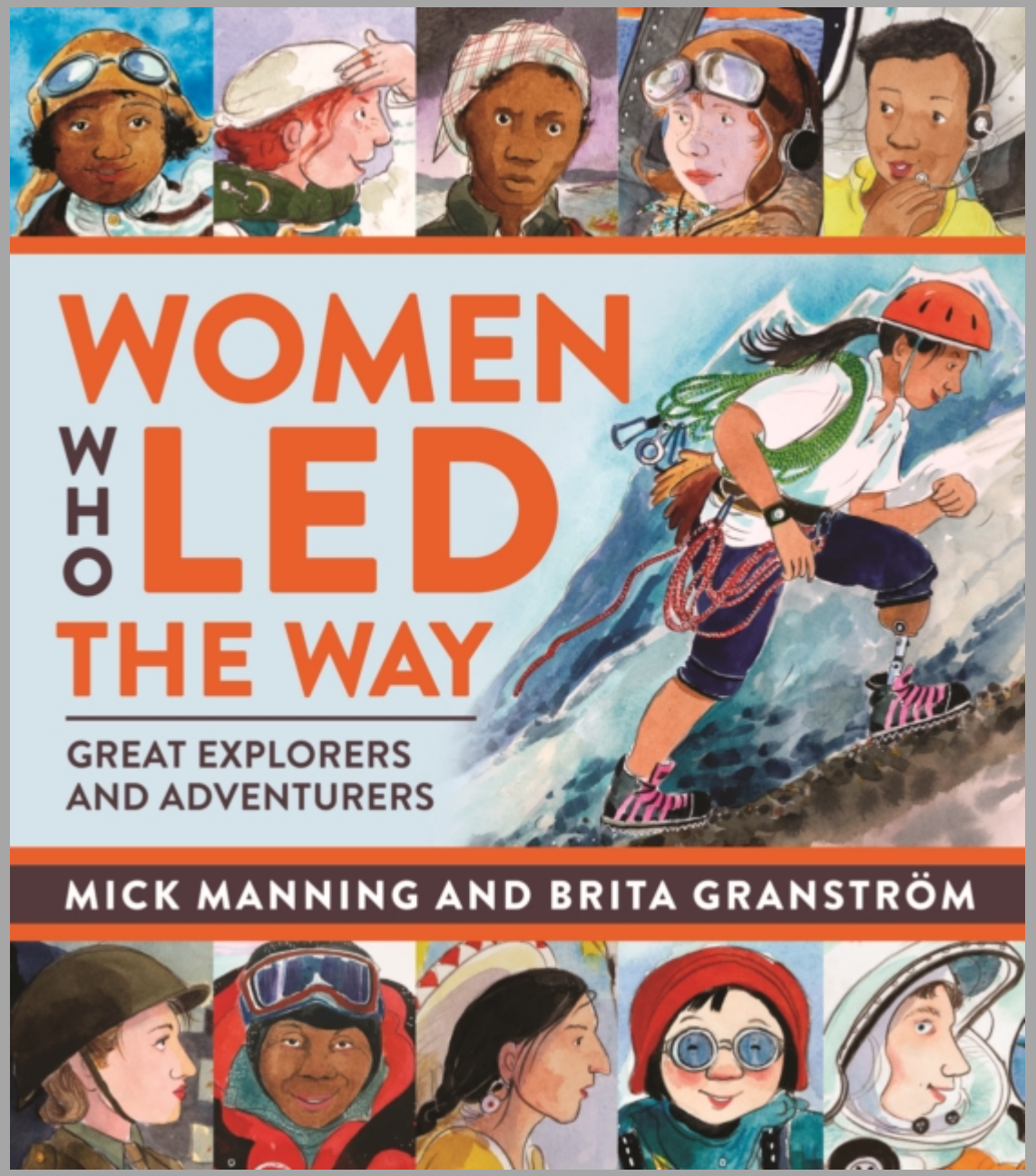


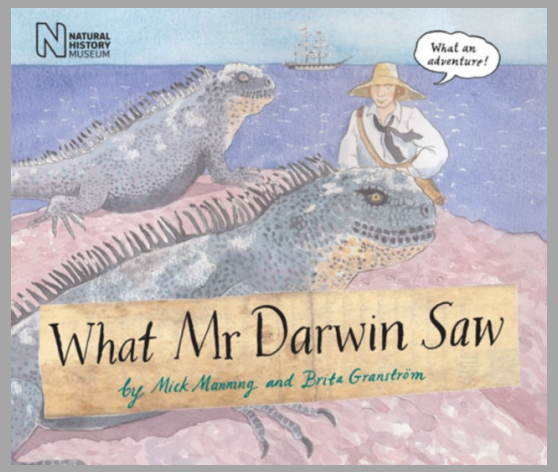
critical literacy

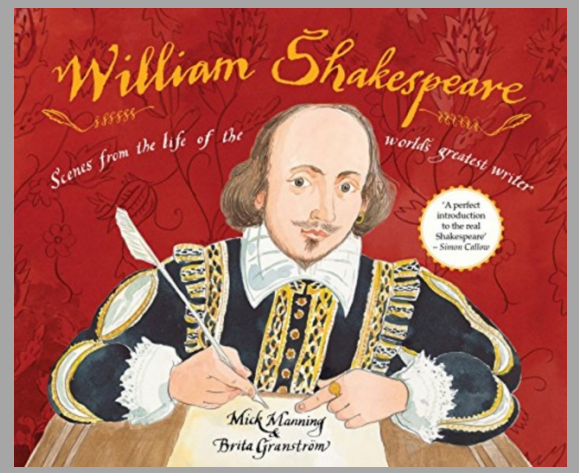
thinking skillls

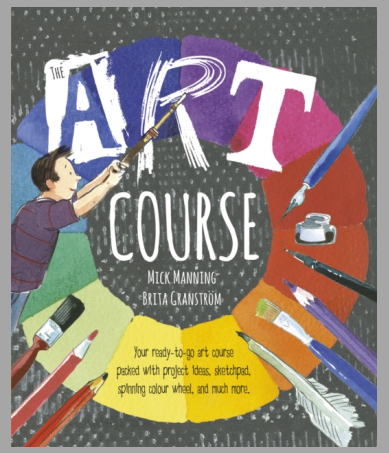

SECRETS AND SPIES
THE UNDERGROUND WORLD OF ESPIONAGE
ANITA GANERI
LUKE BROOKES

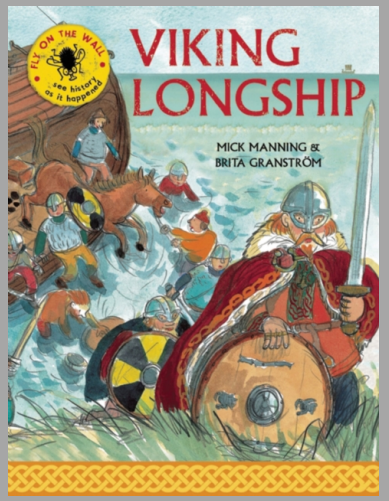

DOUBLE & TRIPLE AGENTS
NAME: Eddie Chapman
AKA: Zigzag (British); Fritzchen (German)
NATIONALITY: British
OCCUPATION: Professional criminal; spy
LIVED: 1914 – 1997
Before World War II, Chapman belonged to a 'jelly gang', so-called because it specialised in robbing safes by blowing them open with gelignite (explosives).
In 1939, Chapman fled to Jersey to escape the British police but was caught and sent to prison. He was released in 1941, by which time Jersey was occupied by the Germans.
Chapman was recruited by the Abwehr (German secret service), and parachuted into Britain with orders to sabotage an aircraft factory. Instead, he turned himself in to MI5.
As 'Agent Zigzag', Chapman was one of the most important British double agents of the war. He radioed the Germans to tell them that he had successfully blown up the aircraft factory. The story also appeared in the British newspapers with pictures of the ruined buildings.
In fact, it was all a hoax. The factory was made to look as if it had been bombed to deceive German reconnaissance aircraft – the factory's own staff even believed it! Delighted with Chapman's work, the Abwehr rewarded him with the Iron Cross. He is the only British citizen ever to have won this award.
After the war ended, Chapman did various jobs. Returning to his life of crime, he smuggled gold and bought shares in an illegal ship. He wrote his memoirs and later became the manager of an English health spa.
NAME: Dustan Popov
AKA: Tricycle (British); Ivan (German); Dusko (Yugoslavian)
NATIONALITY: Yugoslavian
OCCUPATION: Lawyer; businessman; spy
LIVED: 1912 – 1981
Popov was born into a wealthy family which made its fortune in banking and industry. In 1940, he was recruited by the Abwehr. He reported this to the British and was recruited as a double agent. In 1941, the Abwehr posted him to the USA to set up a new network of spies. He promptly passed on secret German intelligence about the planned Japanese attack on Pearl Harbor.
Yugoslavia's government-in-exile was based in London, and Popov worked as an agent for the Yugoslav Intelligence Service on top of his British and German duties. Popov fed misinformation to the Germans, including helping to convince them that the D-Day landings would be at Calais rather than Normandy.
Meanwhile, he provided MI5 with (true) information about German rocket developments and attacks.
SPY FACT
Popov may have been the inspiration for James Bond. Fellow spy Ian Fleming met him in a casino, where Popov gambled away £50,000 of MI6's money. Fleming was horrified but it gave him the idea for 'Casino Royale', the first 007 novel.
39

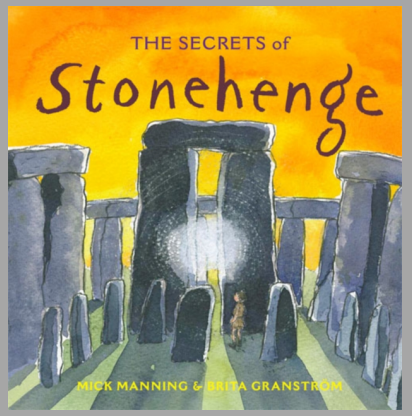

WOMEN WHO LED THE WAY
GREAT EXPLORERS AND ADVENTURERS
MICK MANNING AND BRITA GRANSTRÖM

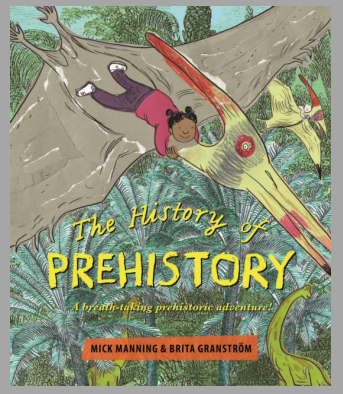

NATURAL HISTORY MUSEUM
What an adventure!
What Mr Darwin Saw
by Mick Manning and Brita Granström


William Shakespeare
Scenes from the life of the world's greatest writer
'A perfect introduction to the real Shakespeare' – Simon Callow
Mick Manning & Brita Granström


THE ART COURSE
MICK MANNING BRITA GRANSTRÖM
Your ready-to-go art course packed with project ideas, sketchpad, spinning colour wheel, and much more.

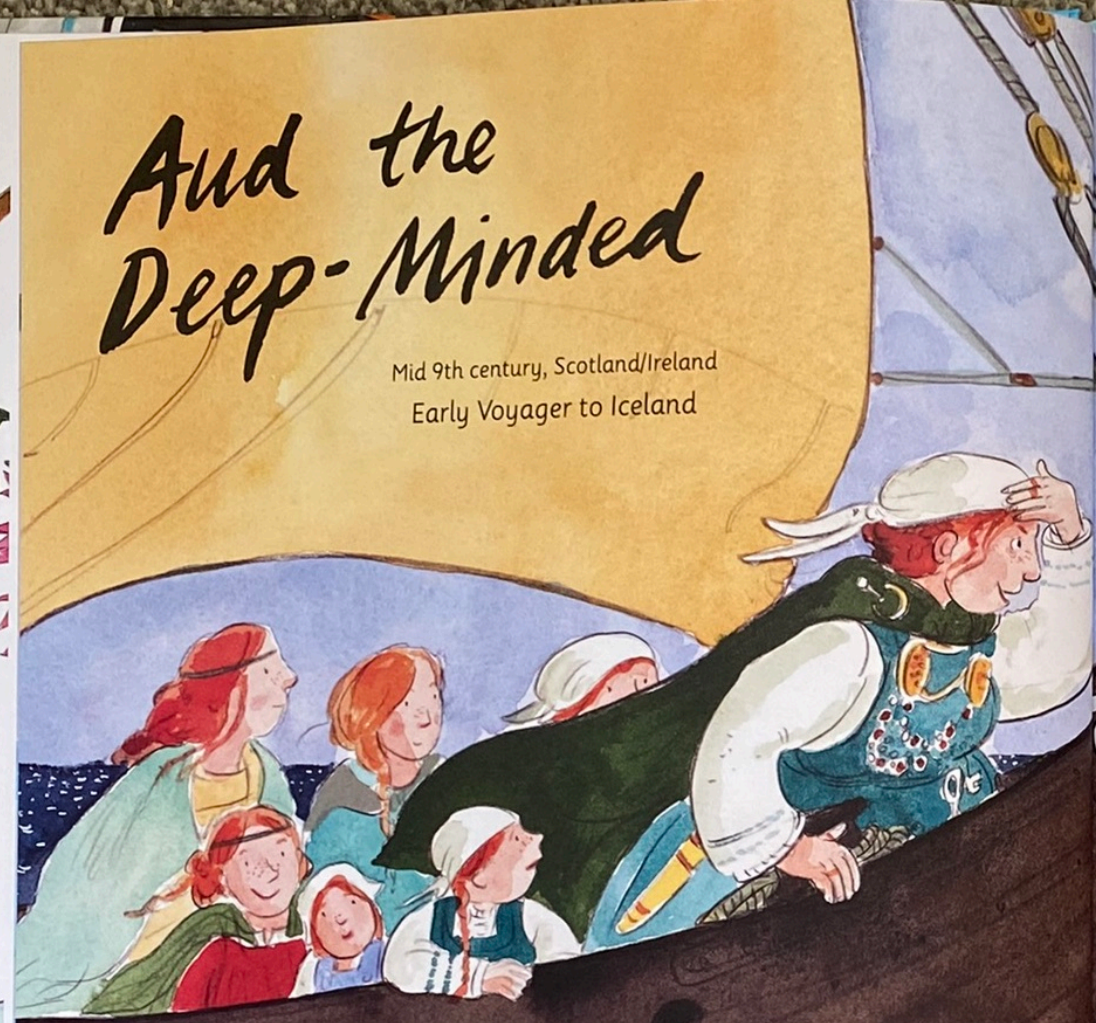

FLY ON THE WALL
See history as it happens
VIKING LONGSHIP
MICK MANNING & BRITA GRANSTRÖM


THE SECRETS of Stonehenge
MICK MANNING & BRITA GRANSTRÖM


The History of PREHISTORY
A breath-taking prehistoric adventure!
MICK MANNING & BRITA GRANSTRÖM

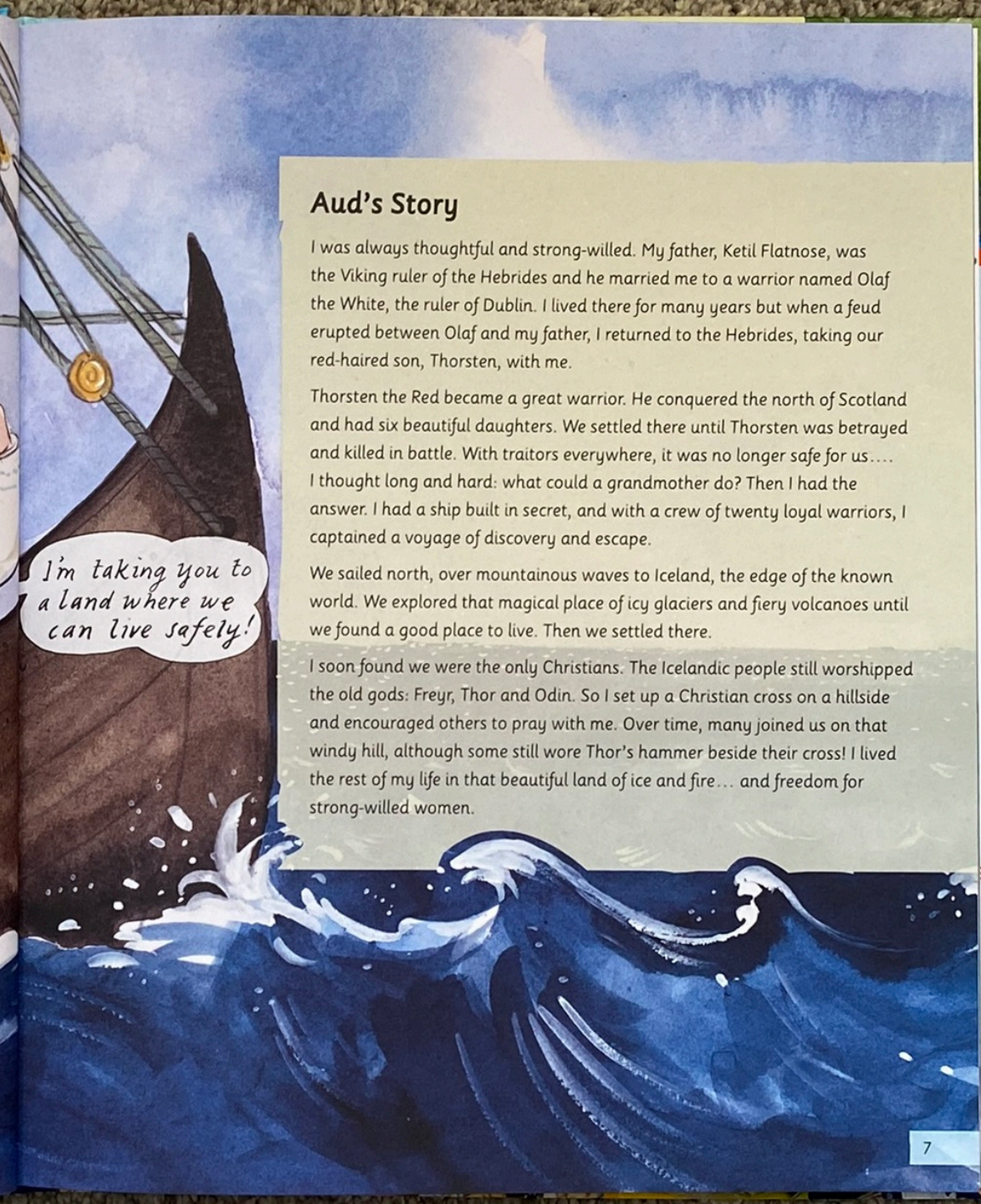
Aud the Deep-Minded

Mid 9th century, Scotland/Ireland
Early Voyager to Iceland



Another great explorer…

Gudridur Thorbjarnardottir (born 10th century, Iceland), after travelling to live in Greenland, later journeyed with her husband, Thorfinn, to explore Vinland (North America). Their baby, Snorri, was the first European to be born there. But life became too hard and they had to sail back to Greenland.



Aud's Story

I was always thoughtful and strong-willed. My father, Ketil Flatnose, was the Viking ruler of the Hebrides and he married me to a warrior named Olaf the White, the ruler of Dublin. I lived there for many years but when a feud erupted between Olaf and my father, I returned to the Hebrides, taking our red-haired son, Thorsten, with me.

Thorsten the Red became a great warrior. He conquered the north of Scotland and had six beautiful daughters. We settled there until Thorsten was betrayed and killed in battle. With traitors everywhere, it was no longer safe for us…. I thought long and hard: what could a grandmother do? Then I had the answer. I had a ship built in secret, and with a crew of twenty loyal warriors, I captained a voyage of discovery and escape.

We sailed north, over mountainous waves to Iceland, the edge of the known world. We explored that magical place of icy glaciers and fiery volcanoes until we found a good place to live. Then we settled there.

I soon found we were the only Christians. The Icelandic people still worshipped the old gods: Freyr, Thor and Odin. So I set up a Christian cross on a hillside and encouraged others to pray with me. Over time, many joined us on that windy hill, although some still wore Thor's hammer beside their cross! I lived the rest of my life in that beautiful land of ice and fire… and freedom for strong-willed women.

Arunima Sinha

Born 1988, India

First female amputee to climb Mount Everest and Mount Vinson

Arunima Sinha's story

Growing up in Uttar Pradesh, India, I loved sport and was selected for the National Volleyball team. I was a strong, independent woman and I wanted to stand up for justice. My ambition was to join the CISF, the Central Armed Police Force. And that's when my life changed….

I was invited to attend an exam for the special police force in Delhi. But when I boarded the train I was attacked by robbers, who tried to steal my bag and gold chain. In the struggle I was pushed out of the speeding train. Surgeons had to amputate my left leg to save my life. I had also fractured my spine and needed metal pins in my other leg. But I fought for my life and, learning to walk with an artificial limb, I was already planning to do something big.

I decided to climb the highest mountains in the world, starting with Mount Everest! I began to train until, after over a year of pain and gain, I was ready…. My climbing buddy was Susan Mahout, a US Air Force instructor. After 52 days, on 21 May, 2013, we stood together on the summit. As I hoisted Mother India's flag, I gave thanks to the Almighty who had helped me stay strong.

I carried on fighting, by climbing the highest mountains on seven continents. In 2014 I wrote a book, *Born Again on the Mountain*, and in 2015 I received India's Padma Shri award for my courage. In 2019 I became the first female amputee to climb the highest peak in Antarctica, Mount Vinson. Now I give talks to inspire and motivate people: if I can fight back from a life-changing tragedy, then you can too!

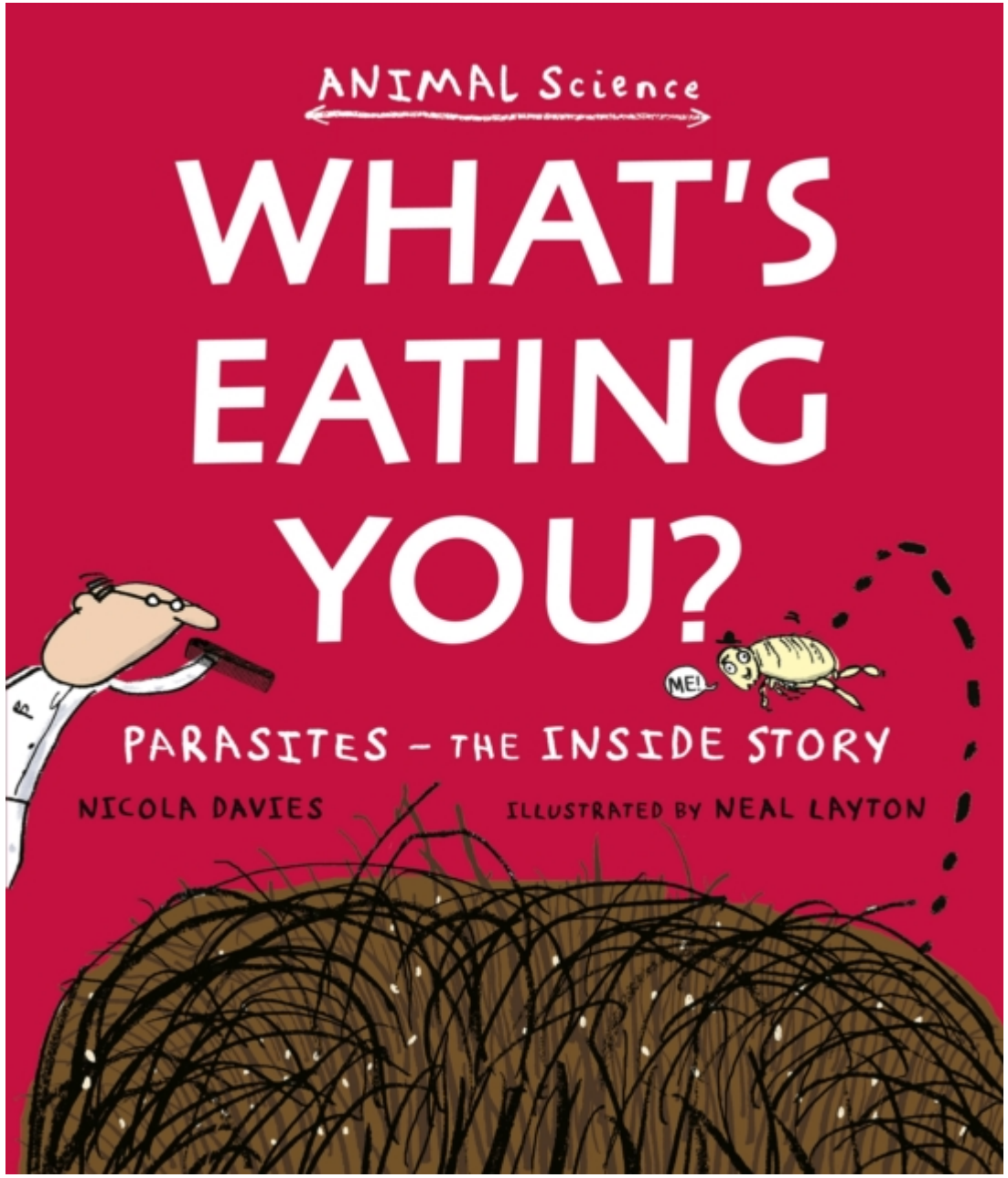
Another great explorer…

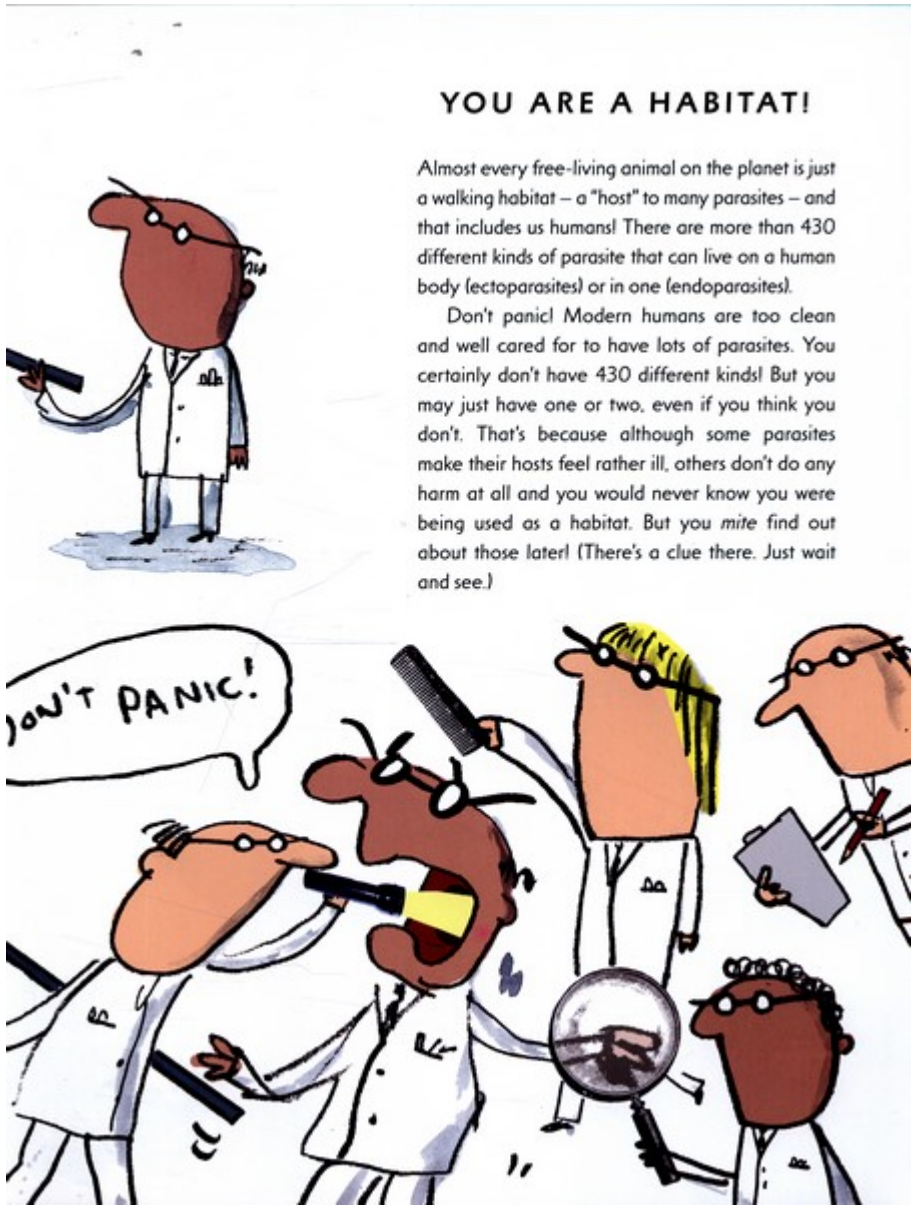
Namira Salim (born 1975, Pakistan) is the first Pakistani person to reach the North and South Poles, the first Asian to skydive over Mount Everest, and the first Pakistani woman to travel into space.


Hummingbird
Nicola Davies
illustrated by
Jane Ray
giving
nature
a home
rspb


Hummingbirds must fly south. The journey's long
and hard for such small bodies, and many of them
won't reach their destination.
Human roads, houses and cities mean
that there are now fewer places for
hummingbirds to refuel on their journey.


"They'll soon be gone," Granny says, "flying north like you."
The little girl looks sad, so Granny kisses her and says,
"Maybe they'll visit you in New York City?"
Their feathers flash in the slants of light.
Their wings beat out their name, flying fast as thought:
Tz-unun! Tz-unun!
"Tz-unun" or "zun-zun" is the name
for hummingbirds in several
countries in South and
Central America

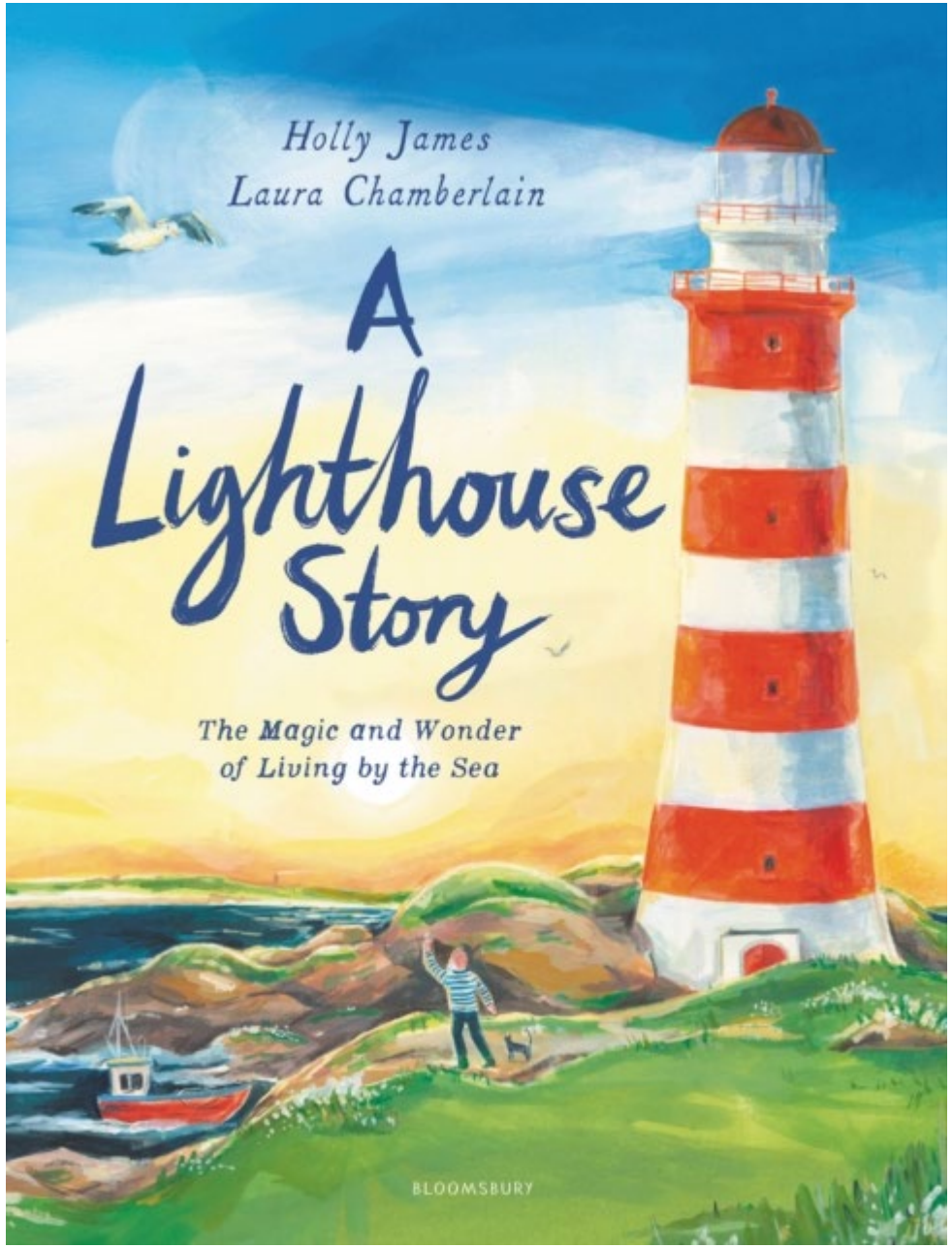


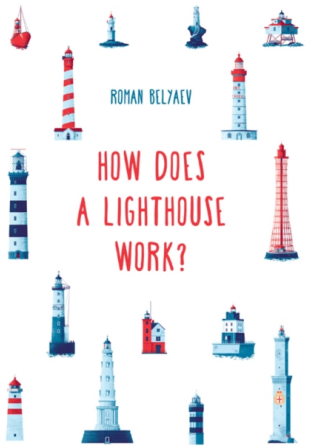


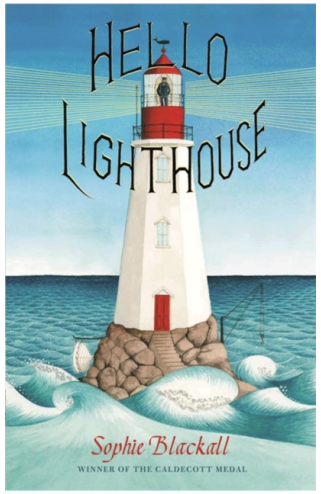
YOU ARE A HABITAT!

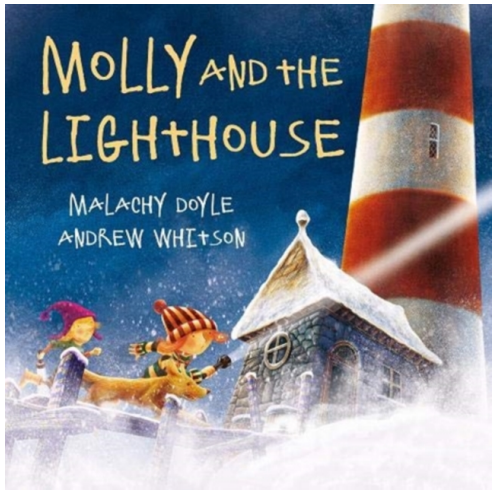
Almost every free-living animal on the planet is just a walking habitat – a "host" to many parasites – and that includes us humans! There are more than 430 different kinds of parasite that can live on a human body (ectoparasites) or in one (endoparasites).

Don't panic! Modern humans are too clean and well cared for to have lots of parasites. You certainly don't have 430 different kinds! But you may just have one or two, even if you think you don't. That's because although some parasites make their hosts feel rather ill, others don't do any harm at all and you would never know you were being used as a habitat. But you *mite* find out about those later! (There's a clue there. Just wait and see.)

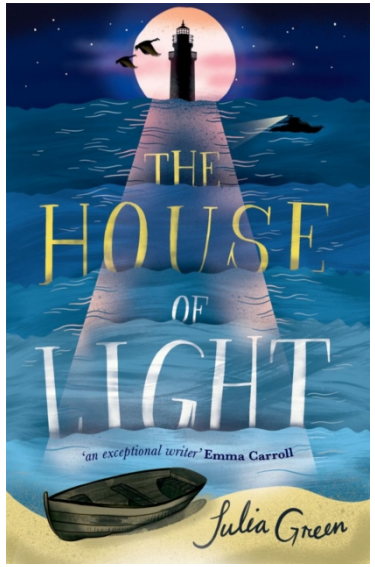

Holly James
Laura Chamberlain
A Lighthouse Story
The Magic and Wonder of Living by the Sea
BLOOMSBURY

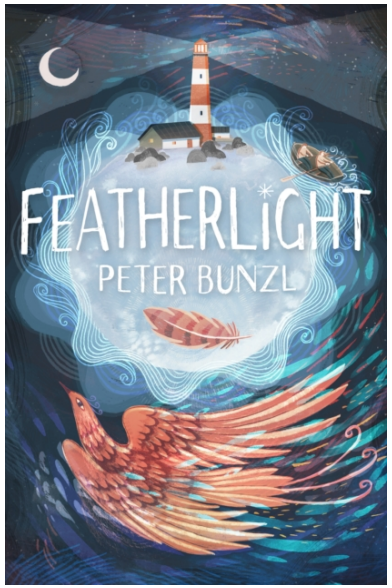

ROMAN BELYAEV
HOW DOES A LIGHTHOUSE WORK?


HELLO LIGHTHOUSE
Sophie Blackall
WINNER OF THE CALDECOTT MEDAL


MOLLY AND THE LIGHTHOUSE
MALACHY DOYLE
ANDREW WHITSON

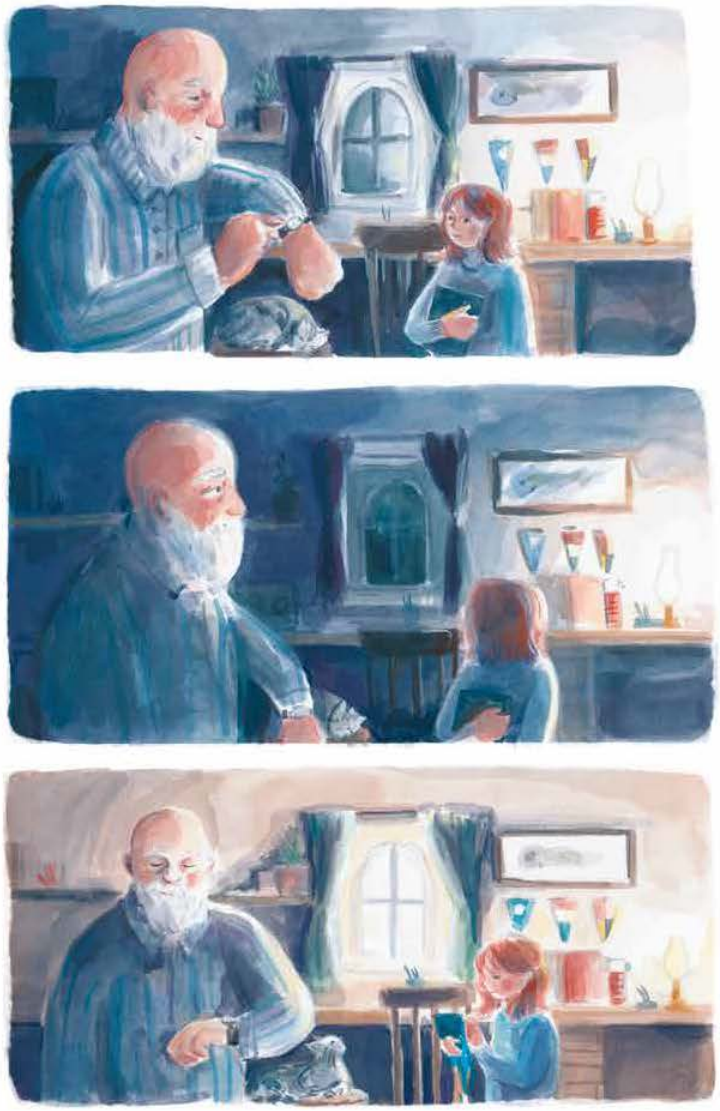

Outsiders never come here.
The magic doesn't let them . . .
The SECRET of HAVEN POINT
LISETTE AUTON


THE HOUSE OF LIGHT
'an exceptional writer' Emma Carroll
Julia Green


FEATHERLIGHT
PETER BUNZL

When the sun set, the lighthouse lamp burned brightly to show the hidden paths across the ocean. Grandad's lighthouse beamed out three short flashes of light.

Others have different patterns. It's how sailors can tell which lighthouse is which.



Before bedtime, Grandad checked his watch to make sure that the flashes coming from the lamp were timed just right.

Modern Lighthouses

How did electricity change lighthouses?

Keepers no longer had to carry heavy fuel to keep the light burning, but now lighthouses would need a reliable source of electricity. Many had their own generators well before electricity was widely available.

Why don't lighthouses need keepers anymore?

Running a lighthouse was once a gruelling, round-the-clock task. Now the lights are electric and are set to turn and flash automatically. They can even be remote-controlled from miles away.

What are lighthouses used for now?

Many lighthouses are still working to rescue shipwrecked travellers. They are also visited by tourists who can sometimes see inside the towers.

Famous Lighthouses of the World

Eddystone
England

This was the first lighthouse to be built on a small rock in the open sea. It is shaped like a tree trunk, so it is strong in fierce winds.

Longstone
England

This was the home of Grace Darling. You can visit it and see the tiny bedroom from which she spotted a ship sinking in a terrible storm.

Bell Rock
Scotland

This is the world's oldest surviving original lighthouse. It has stood for over 200 years without needing repair.

Fastnet
Ireland

This is known as the 'teardrop of Ireland' because it was the last glimpse of home seen by emigrants sailing from Ireland to America.

Tower of Hercules
Spain

This is the oldest working lighthouse in the world. It was built by the ancient Romans in the second century.

The Cordouan Lighthouse
France

This lighthouse was fitted out with a royal bedroom for King Louis XIV in case he wanted to stay. It was the first lighthouse to have a Fresnel lens, in 1823.

Slettnes Lighthouse
Norway

This is the world's most northerly mainland lighthouse. For a few months in summer, the sun never sets and there is no need for the light to be switched on.

Victory Lighthouse
Italy

This claims to have the most powerful beam of any lighthouse. It is also a memorial to sailors who died in the First World War.

The Statue of Liberty
USA

The Statue of Liberty's torch is a symbolic beacon of light and freedom, and for a few years was a real, working lighthouse. It was the first electric lighthouse in the US.

Boston Light
USA

Today this is the only lighthouse in the US with a keeper. It was America's first lighthouse, and helped Boston grow into a big, successful city.

Les Éclaireurs Lighthouse
Argentina

This is so far south that it is known as the 'lighthouse at the end of the world'. It sits on a small craggy rock surrounded by seabirds.

Macquarie Lighthouse
Australia

This is Australia's oldest lighthouse and has been shining outside Sydney Harbour ever since 1818. It was one of the first lighthouses to go electric.

The Pharos of Alexandria
Egypt

This magnificent ancient Egyptian lighthouse was one of the seven wonders of the world. It was over 100 m high.

Jeddah Light
Saudi Arabia

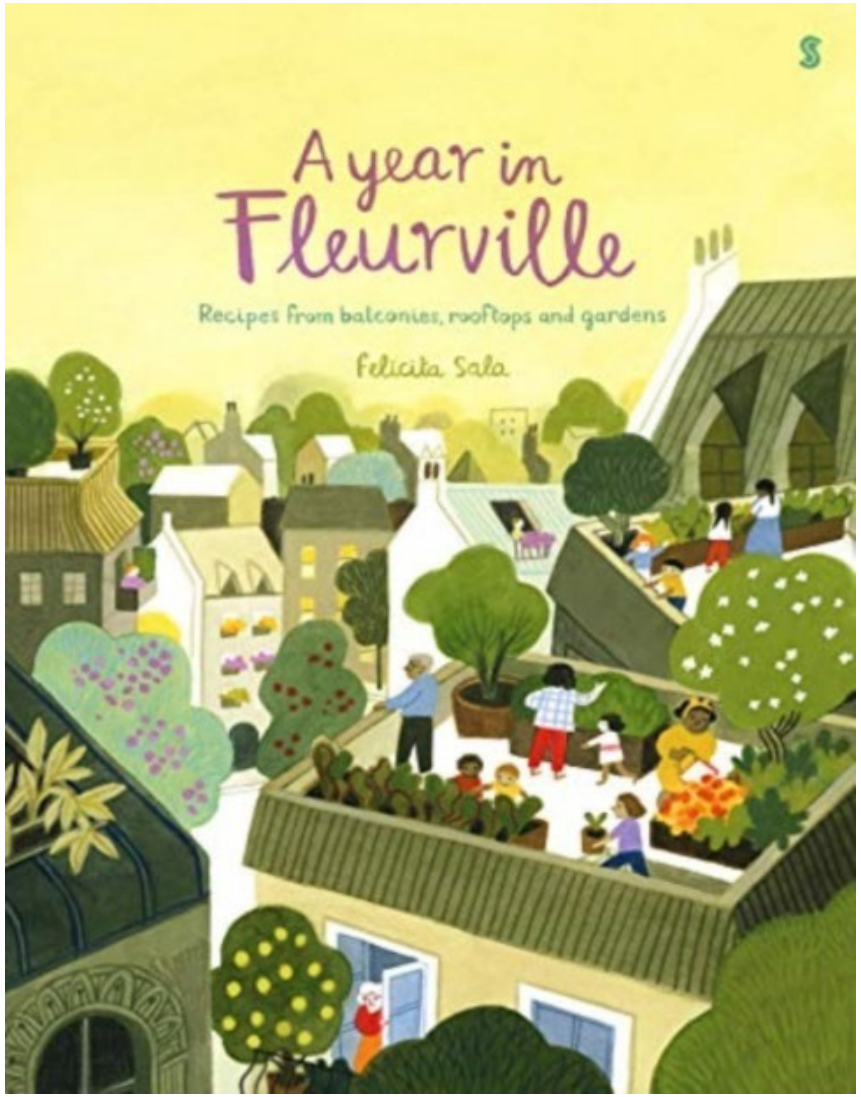
This lighthouse is the tallest in the world today, at 133 m. The globe-shaped room near the top is a control room for Jeddah port.

Enoshima Sea Candle
Japan

This futuristic-looking lighthouse has an unusual cone shape and is built of metal and glass. On winter nights it is lit up with colourful light displays.

The Umhlanga Lighthouse
South Africa

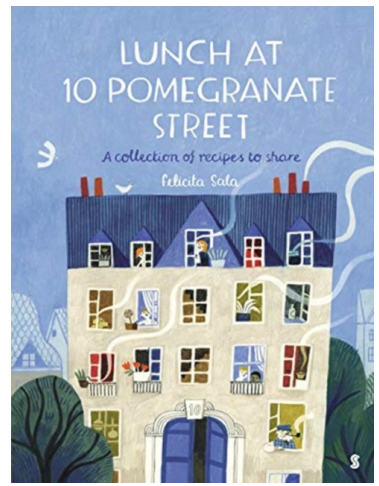
Speedy workers built this lighthouse in just 4 days and 19 hours! It has never had a keeper but staff at a hotel next door take care of the tower.



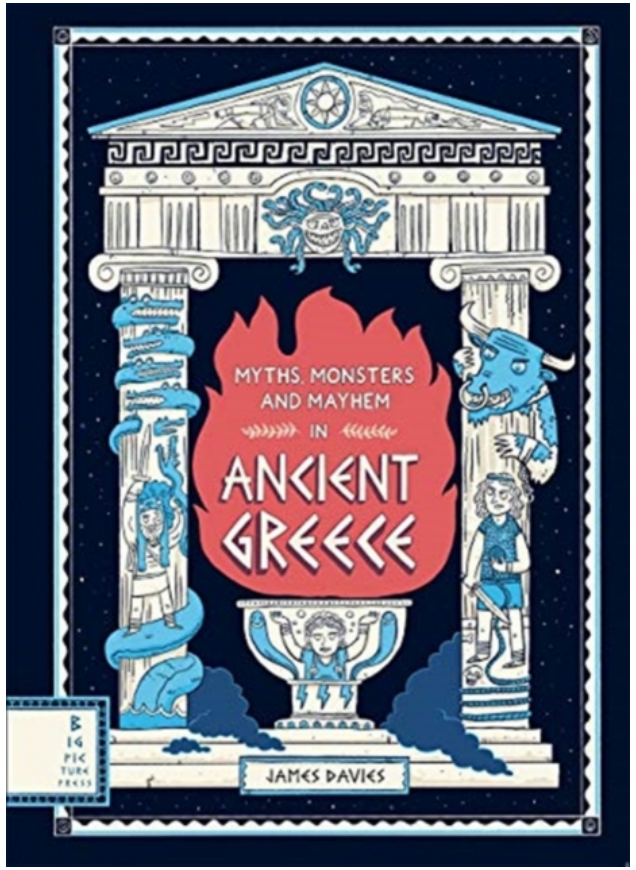
Pea, Basil, and Mint Soup

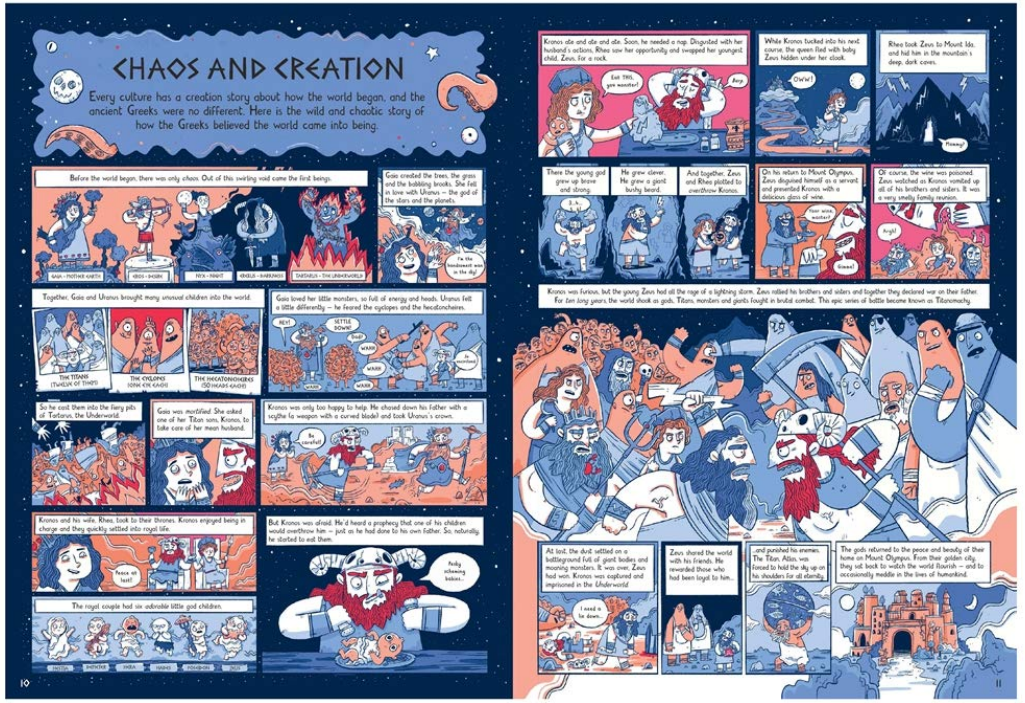
IN A LARGE POT, FRY THE SHALLOTS AND GARLIC IN THE OIL UNTIL GOLDEN, STIRRING OFTEN. ADD THE PEAS AND STIR. POUR IN THE STOCK, ADD THE HERBS AND 1 TSP SALT, BRING TO THE BOIL AND COOK FOR 7 MINUTES. BLITZ WITH AN IMMERSION BLENDER UNTIL SMOOTH. MAKE SOME TOAST, RUB A GARLIC CLOVE OVER IT, AND CHOP INTO CROUTONS. PUT THE SOUP IN BOWLS WITH THE CROUTONS, CRUMBLED FETA, LEMON ZEST, A SQUEEZE OF LEMON JUICE, PEPPER, AND A SPRINKLE OF OLIVE OIL.

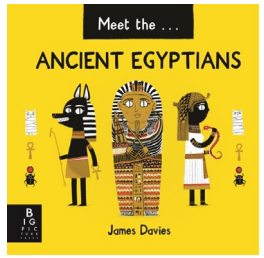
SERVES 6–8

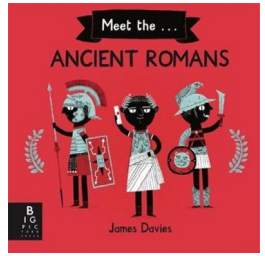


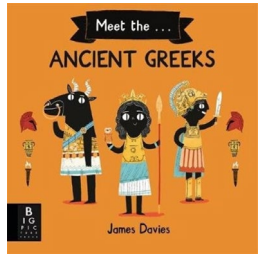
appealing, popular topic, witty











also by James Davies


THE HISTRONAUTS
A VIKING ADVENTURE
FRANCES DURKIN & GRACE COOKE
STORY • FACTS • ACTIVITIES
b small


THE HISTRONAUTS
A GREEK ADVENTURE
FRANCES DURKIN & GRACE COOKE
STORY • FACTS •
b small


THE HISTRONAUTS
AN EGYPTIAN ADVENTURE
FRANCES DURKIN & GRACE COOKE
TS • ACTIVITIES


THE HISTRONAUTS
A ROMAN ADVENTURE
FRANCES DURKIN & GRACE COOKE
STORY • FACTS • ACTIVITIES
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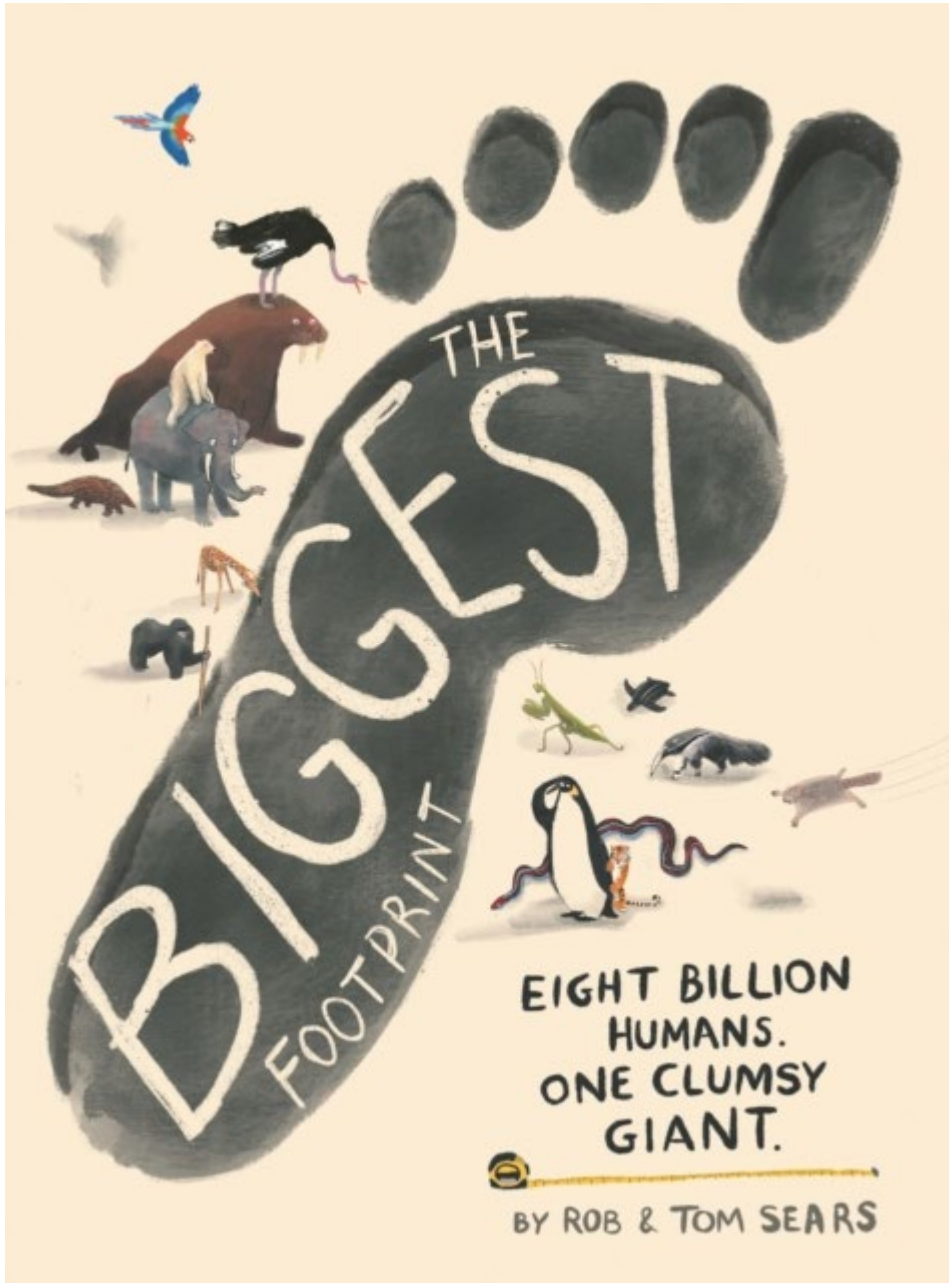
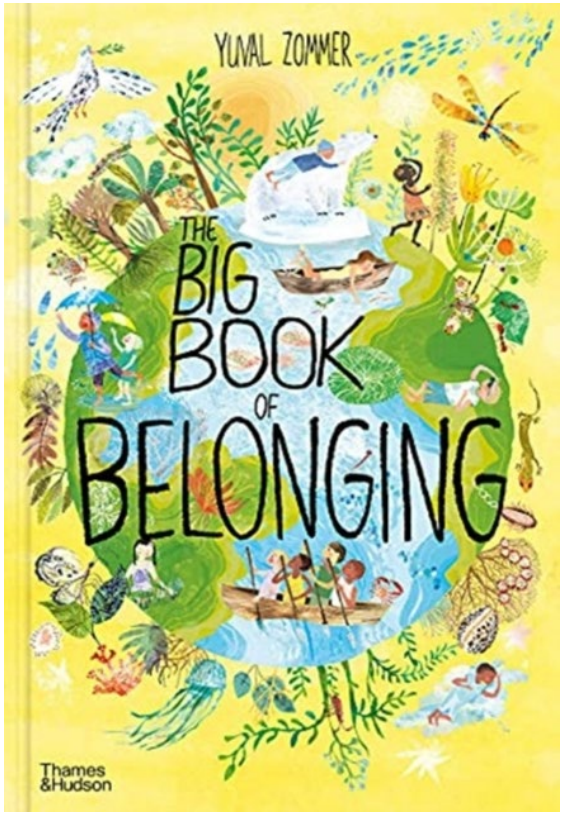


original

SMOOSHING

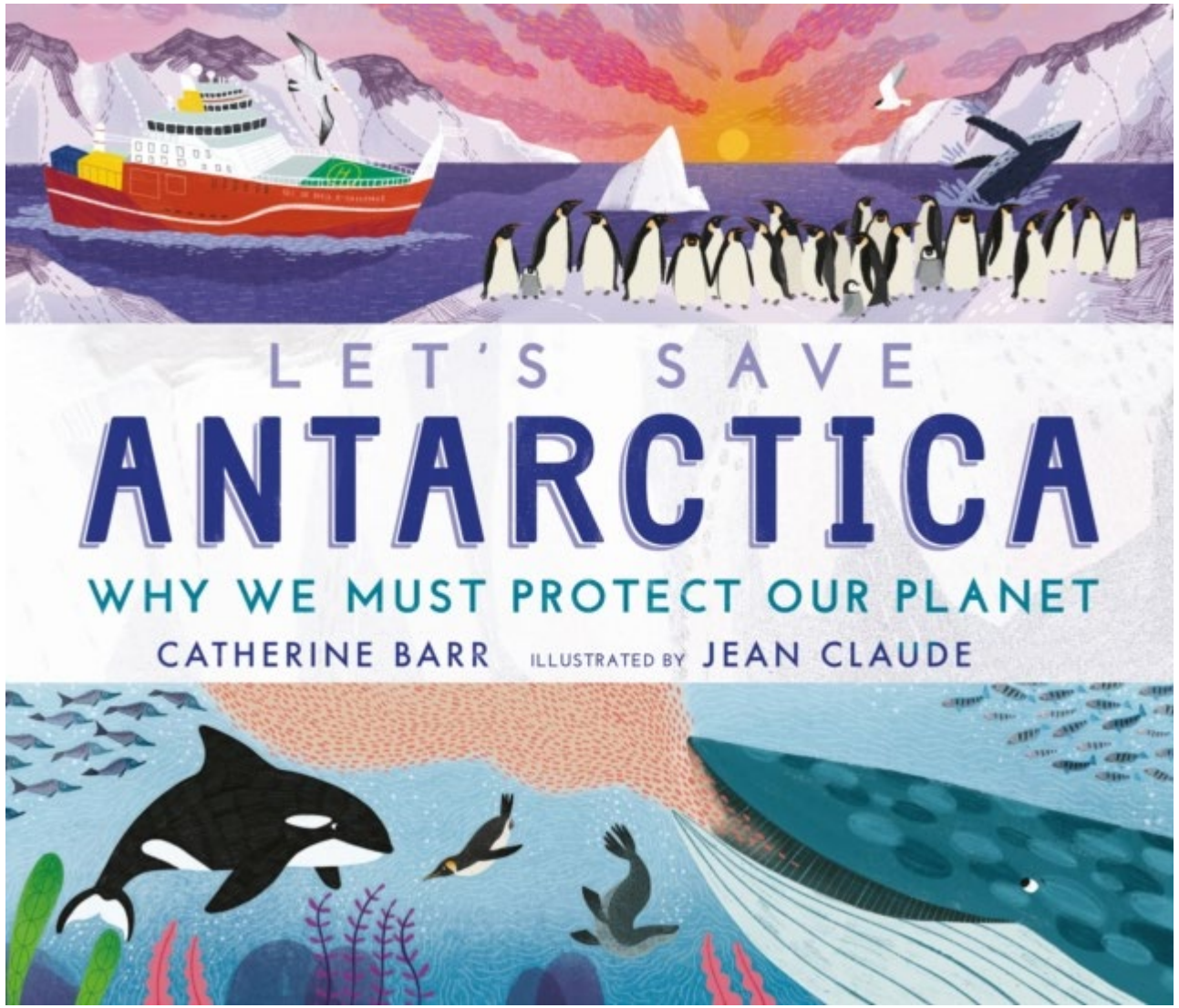
witty

illuminating

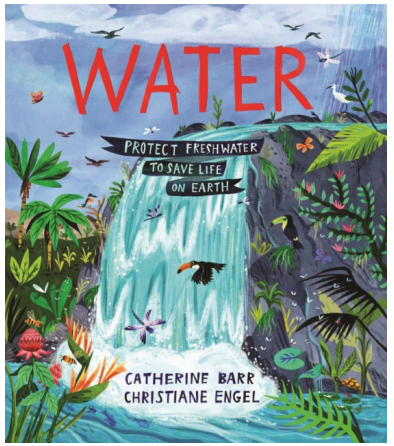


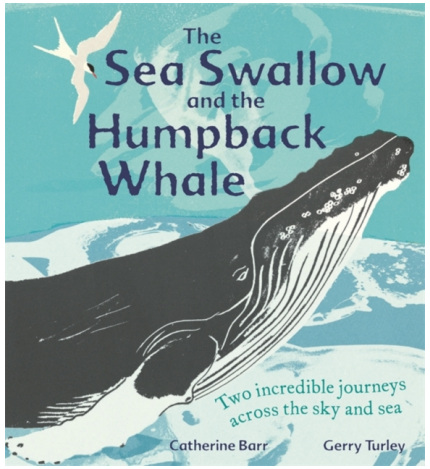
From the air that we breathe, the food we eat, the adventures we seek, to the joy we experience, you will find a connection to nature in every single part of our being. And the more we can reconnect with nature, the more we can reconnect with ourselves.

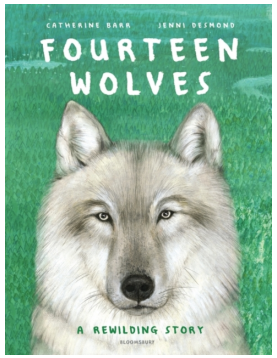
Yuval Zommer

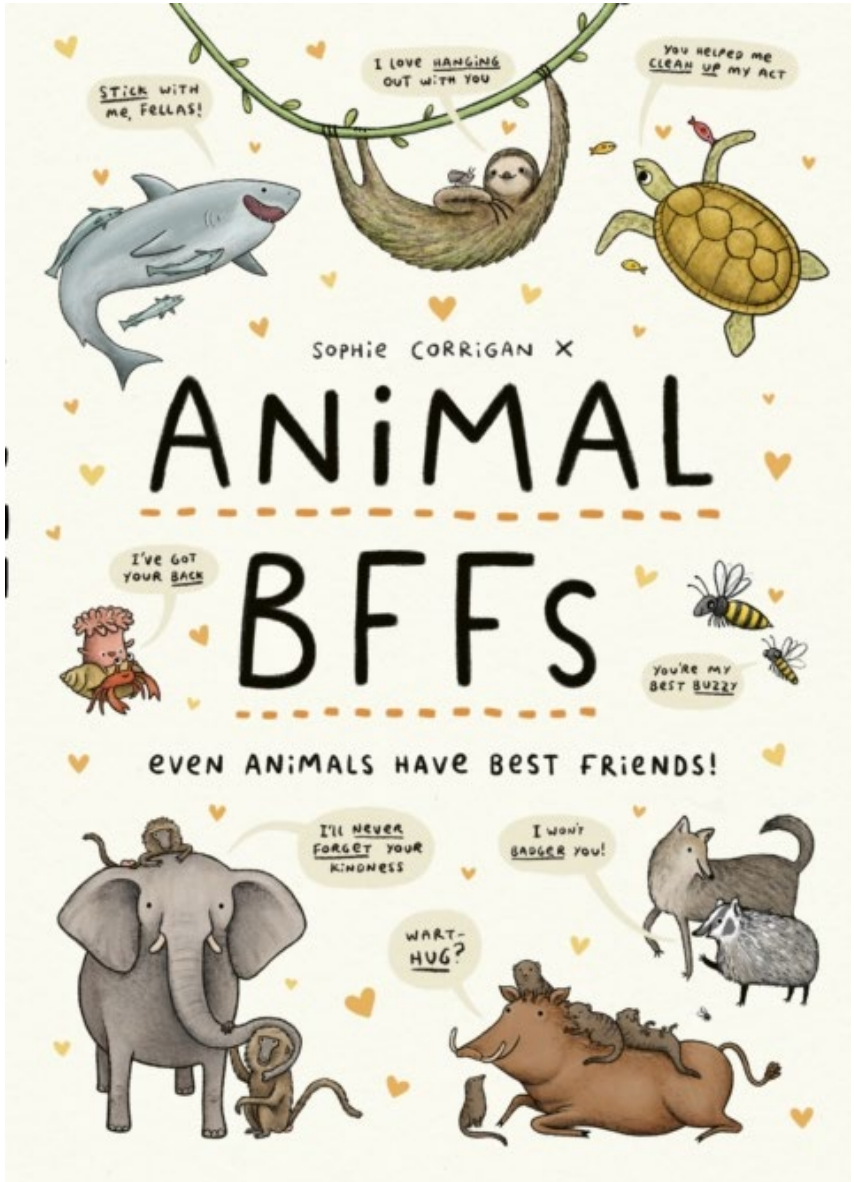


Writing picture books to spark conversation and curiosity.

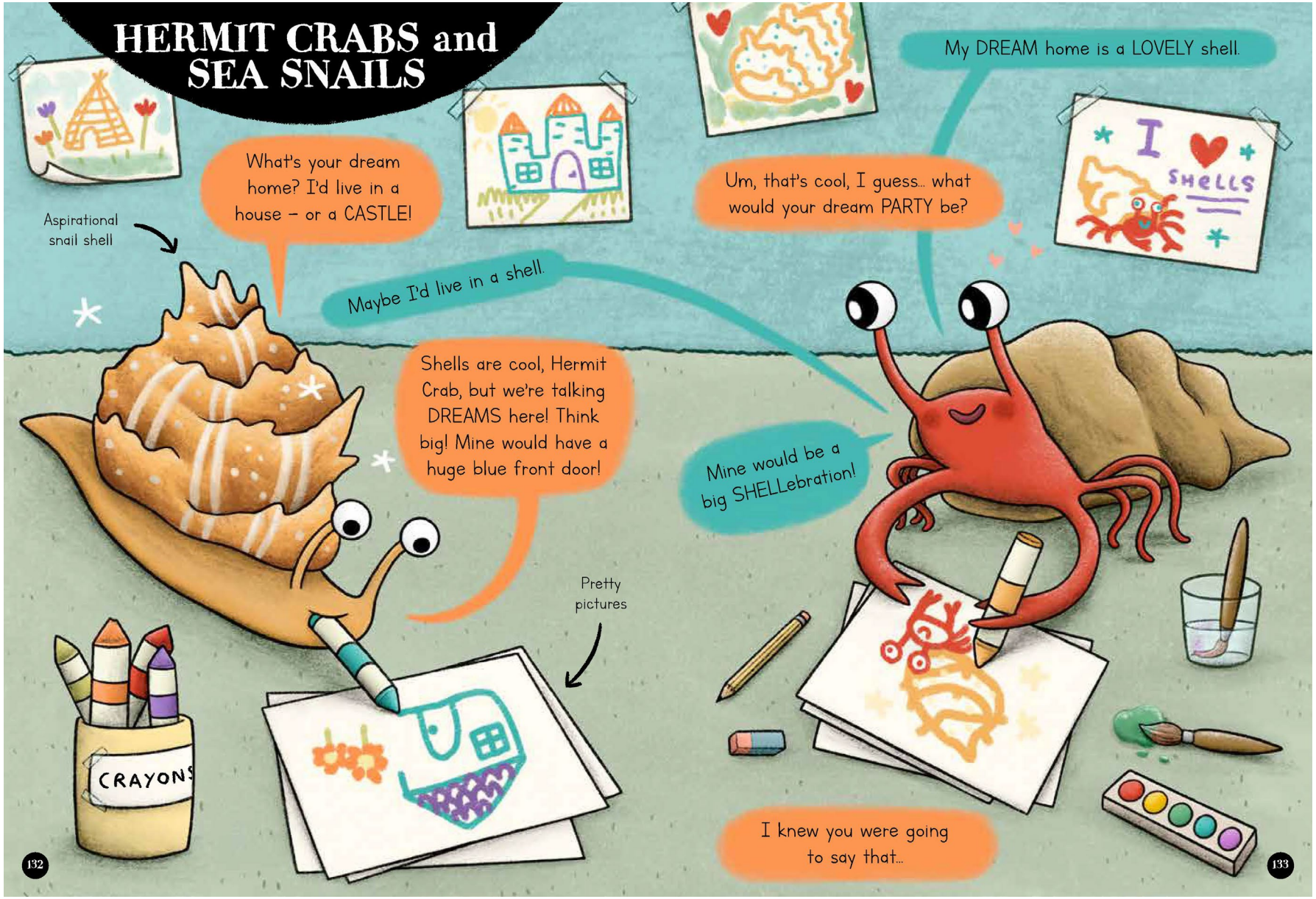








Contents


HERMIT CRABS and SEA SNAILS
Aspirational snail shell
What's your dream home? I'd live in a house – or a CASTLE!
Maybe I'd live in a shell.
Shells are cool, Hermit Crab, but we're talking DREAMS here! Think big! Mine would have a huge blue front door!
Pretty pictures
CRAYONS
My DREAM home is a LOVELY shell.
Um, that's cool, I guess... what would your dream PARTY be?
I ♥ SHELLS
Mine would be a big SHELLebration!
I knew you were going to say that...
132
133

Hermit crabs DON'T draw pictures with sea snails...

but they MOVE INTO their SHELLS!

But only when the snail no longer needs it. Rest in peace, buddy!

My time had come, I guess!

You can take comfort in the fact that your shell home has been recycled and reused – by me!

Oh, that's great. I'm glad it's not gone to waste. Gorgeous little shell, that is!

Second-hand shell

I agree! And I'm so happy in my new home. You've left a wonderful legacy!

Ahh, that's lovely!

Dearly departed sea snail

FASCINATING FACTS:

* Hermit crabs are not true crabs, because they don't have hard exoskeletons or the ability to grow their own shells! They are extremely vulnerable because their bodies are soft. So hermit crabs use the discarded shells of dead sea snails for protection.

* When a sea snail dies, it leaves its hard shell on the seabed. Then a hermit crab finds the shell, tucks itself inside and carries it around on its back!

* As they grow, hermit crabs have to keep trading up their shells for bigger ones. The shell needs to be big enough for them to hide in.

* When a big snail shell is found, hermit crabs have been seen lining up in size order, and trading shells so that everyone has the perfect-sized home!

* Unfortunately, hermit crabs can confuse human trash for shells. They've been seen using bottles, cans, plastic pipes and all sorts of other things. We HAVE to keep our beaches CLEAN!

'This book will transform your experience of being outside'
STEVE BACKSHALL

the SECRET signs of NATURE

HOW TO UNCOVER HIDDEN CLUES IN THE SKY, WATER, PLANTS, ANIMALS AND WEATHER

written by
CRAIG CAUDILL

illustrated by
CARRIE SHRYOCK


Pause at a TREE STUMP to DISCOVER ITS PAST
THE INSIDE OF A TREE TELLS ITS STORY.
TREES CAN LIVE FOR HUNDREDS OF YEARS, AND OVER THIS LONG LIFETIME, THEY EXPERIENCE WEATHER SUCH AS RAIN AND SNOW, AND SOMETIMES EVEN FIRE AND FLOODS. WHEN A TREE FALLS OR IS CUT DOWN, THE RINGS LEFT BEHIND IN ITS STUMP CAN TELL YOU NOT ONLY HOW OLD THE TREE IS, BUT WHAT THE WEATHER WAS LIKE DURING EACH YEAR OF ITS LIFE. LOOK CLOSELY AT THE THICKNESS OF THE RINGS OF THIS TREE STUMP HERE IN THE BLACK FOREST, GERMANY, TO DISCOVER ITS PAST LIFE. IT'S THESE RINGS THAT CAN ALSO PROVIDE A SENSE OF DIRECTION.
Coming together for courtship in summer, some EURASIAN PYGMY OWLS choose to nest in tree cavities that face away from the PREVAILING WIND to protect their future brood.
A TREE'S STORY
A TREE STUMP DISPLAYS CONCENTRIC GROWTH RINGS. THESE ARE FORMED AS THE TREE GROWS BY CREATING A NEW LAYER OF CELLS. EACH RING MARKS ONE CYCLE OF SEASONS, OR ONE YEAR. IN EACH GROWTH SEASON, TREES CREATE A NEW RING THAT REFLECTS THE WEATHER CONDITIONS OF THAT SEASON. SOMETIMES THE RINGS ARE THICK, WHICH MEANS THAT YEAR WAS FULL OF RAIN. WHEN THE RINGS ARE THIN, THIS MEANS THERE WAS NOT MUCH RAIN THAT YEAR.
The BARK of a tree, space between it and the wood beneath, can be home to a huge variety of INSECTS, LICHENS and MOSSES. These in turn give food to other animals.
Follow the RINGS of a tree stump towards the middle, where you'll find the HEART. This is the point where rings are SMALLEST. It tends to be towards the SOUTHERN EDGE in the northern hemisphere, and NORTHERN EDGE in the southern hemisphere.
WILD BOARS dig for food, and by SNUFFLING UP THE SOIL, they create an excellent seedbed for germination. New trees soon flourish, growing LONGER, THICKER BRANCHES on the SOUTHERN SIDE.
A tree's BARK is often PALER on the SOUTHERN SIDE – the side that receives the most SUNLIGHT.
N
S
The individual rings will be THICKER on the tree stump's SOUTHERN SIDE because it receives the most SUNLIGHT.
After STRONG WINDS and HEAVY RAIN, a tree is saturated with moisture on the side of the prevailing, rain-bearing winds.
ROOTS grow longer and larger on one side of a tree, anchoring it against the PREVAILING WIND to prevent it from falling.

TRAIL *the* SWELL *of the* SEA

THE REGULAR RHYTHM OF THE SEA'S SWELL CAN TAKE YOU TO SHORE.

OUT AT SEA, YOU'LL FIND GREAT BODIES OF PULSING WATER KNOWN AS SWELLS. THESE ARE CREATED BY FAR-OFF WINDS PUMMELLING THE WATER AND PASSING ON THEIR ENERGY, WHICH TRAVELS THROUGH THE SEA IN A SERIES OF REGULAR WAVES. A SWELL CAN TRAVEL ENORMOUS DISTANCES, BUT IF YOU ARE CLOSE ENOUGH TO LAND, FOLLOWING THE SWELL WILL GENERALLY LEAD YOU TOWARDS THE SHORE... SOMETHING THAT NATURE'S SURFERS – THE SEA LIONS ON THE GALÁPAGOS ISLANDS IN THE PACIFIC OCEAN – HAVE LEARNED TO MAKE THE MOST OF AS THEY RIDE BACK TO THE BEACH!

What begins as ripples on the surface grows into a **POWERFUL SWELL** as more and more **WIND ENERGY** is added.

Moving in a **RHYTHM**, the **SWELL** journeys to the **SHORE**. Before modern technology, sea captains could recognize these rhythms and know what to expect in different areas of the ocean.

It's sunrise, and these **TERNS** are heading out to sea to hunt fish. When the sun sets, they will return to rest. By following their journey, you can position yourself towards **OPEN WATER** or towards **LAND**.

Swells can **FORECAST THE WEATHER**, with a large **SWELL** telling you that a **ROUGH STORM** is coming and it's time to head back to land.

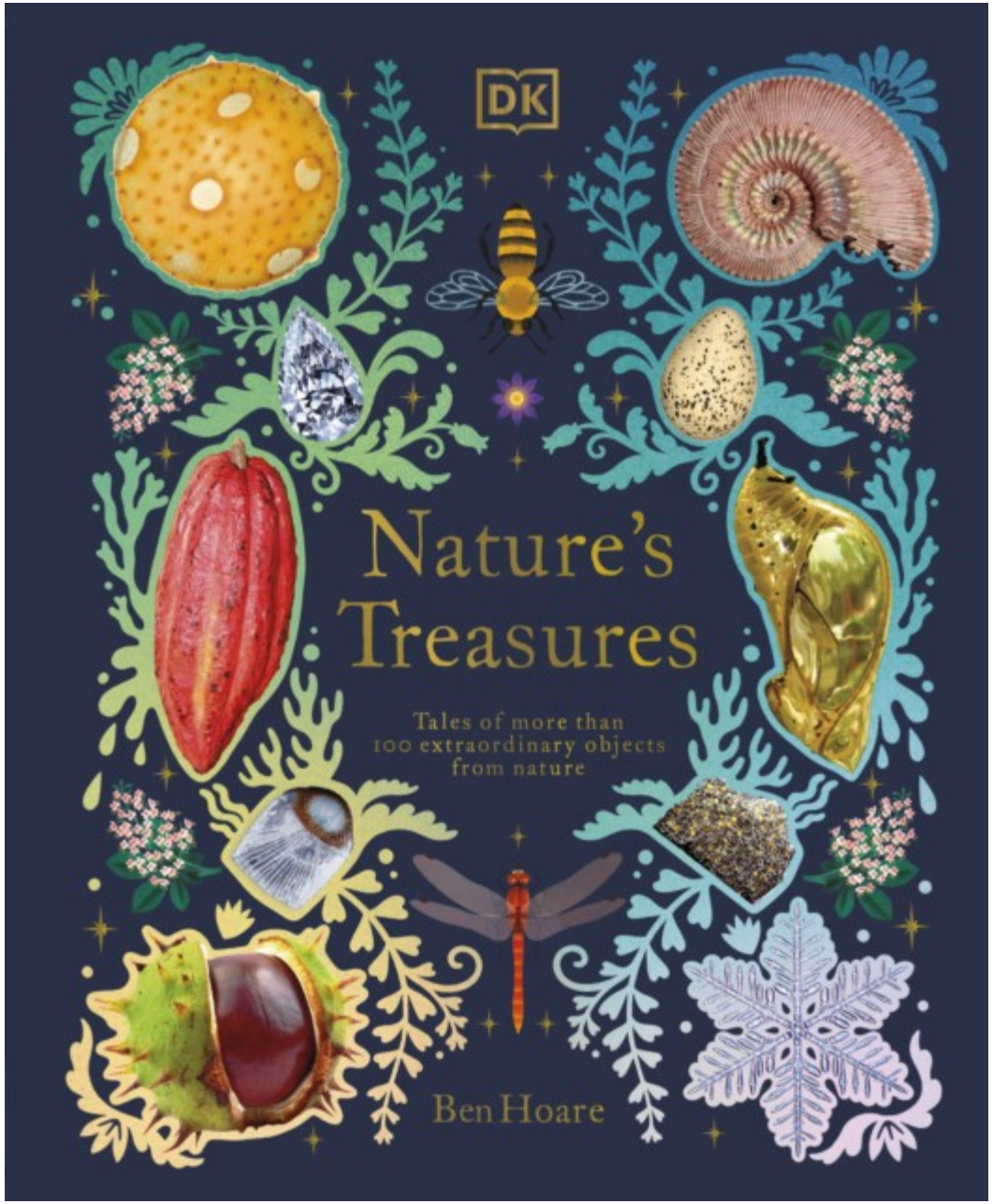
WIND WAVES

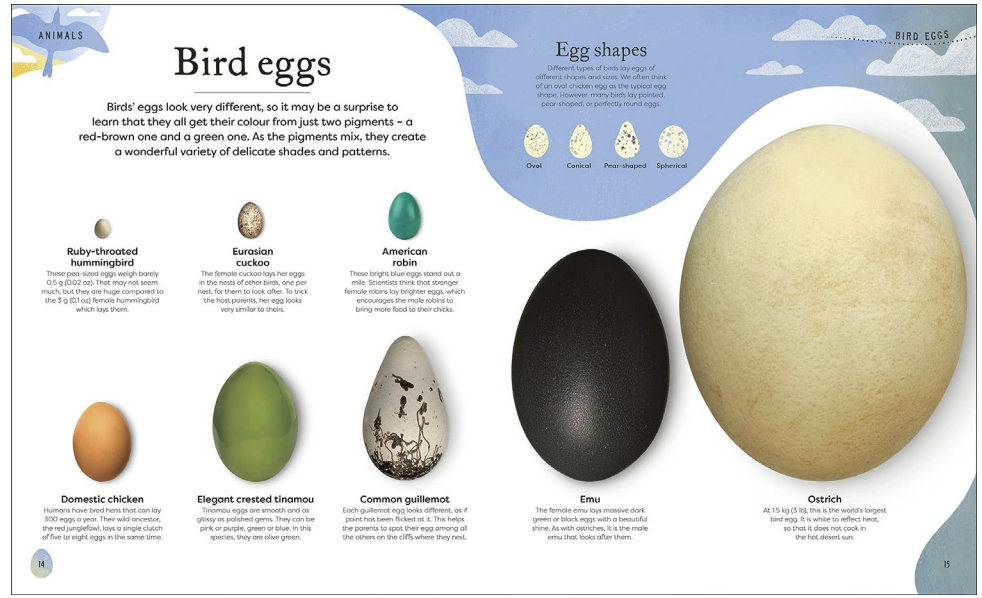
WIND WAVES ARE A DISPLAY OF THE ENERGY THAT HAS BEEN TRANSFERRED TO THE SEA FROM THE WIND. THIS ENERGY TRAVELS DOWNWIND AWAY FROM THE SOURCE, LIKE A POND'S RIPPLES WHEN A STONE IS DROPPED IN. THESE WAVES THAT MOVE AWAY FROM THEIR SOURCE ARE KNOWN AS SWELLS. THE STRONGER THE WINDS, THE BIGGER THE SWELL WILL BE AND THE FURTHER IT WILL TRAVEL. THE LONGER THE WIND BLOWS, THE LONGER THE SWELL WILL PERSIST, EVEN AFTER THE WIND HAS STOPPED OR CHANGED DIRECTION.

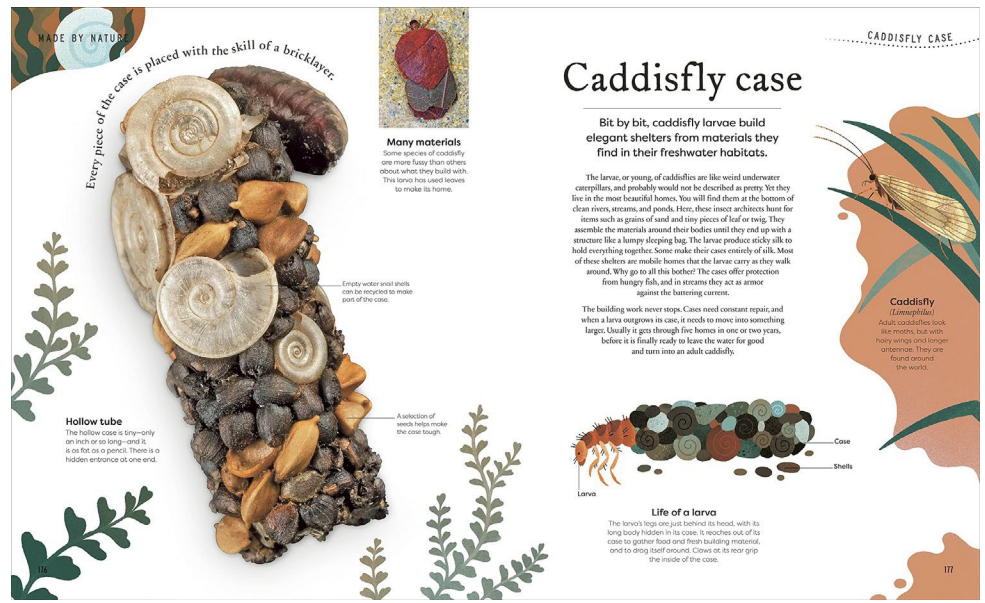
Wind causes water to move and make tiny waves called **RIPPLES**. Ripples are an indicator of the direction of the **PREVAILING WIND**.

SEA LIONS glide gracefully through the **SWELL** that surges them to shore and safely back to their **COLONY**.

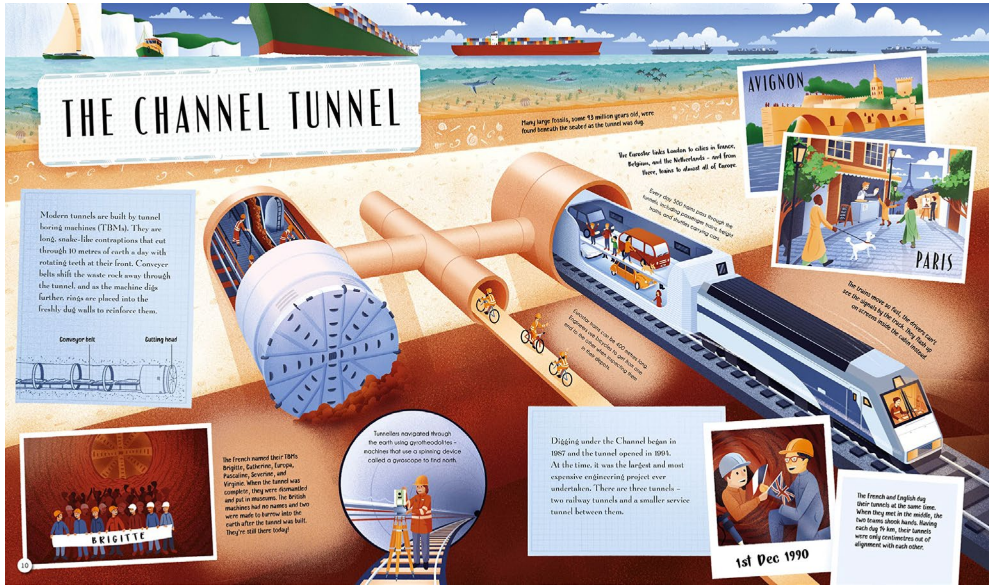
Large **MARINE IGUANAS** can swim through **SWELLS, DIVING** to a depth of well over **10 METRES** to munch on green algae.

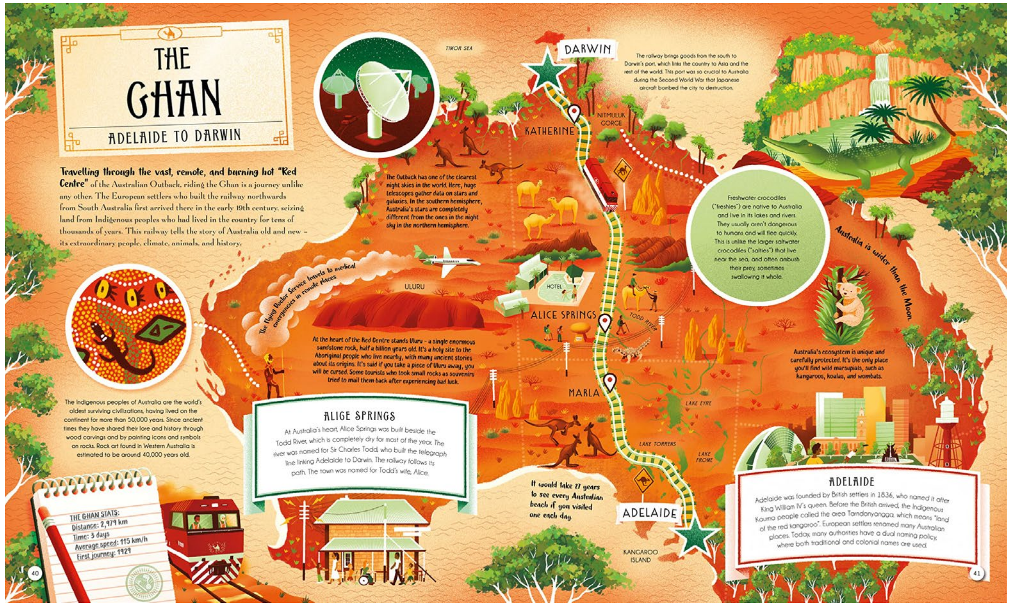

DK
Nature's Treasures
Tales of more than 100 extraordinary objects from nature
Ben Hoare

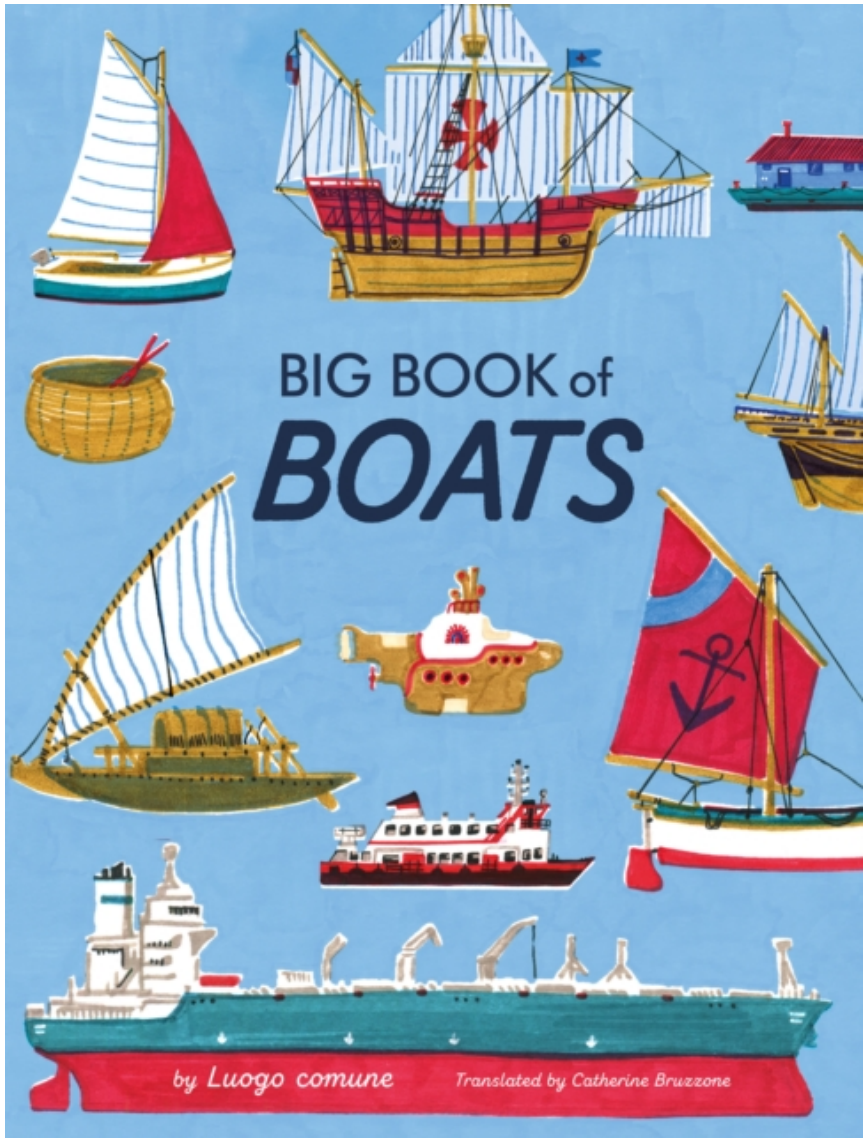

ANIMALS
BIRD EGGS
Bird eggs
Birds' eggs look very different, so it may be a surprise to learn that they all get their colour from just two pigments – a red-brown one and a green one. As the pigments mix, they create a wonderful variety of delicate shades and patterns.
Egg shapes
Different types of birds lay eggs of different shapes and sizes. We often think of an oval chicken egg as the typical egg shape. However, many birds lay pointed, pear-shaped, or perfectly round eggs.
Oval
Conical
Pear-shaped
Spherical
Ruby-throated hummingbird
These pea-sized eggs weigh barely 0.5 g (0.02 oz). That may not seem much, but they are huge compared to the 3 g (0.1 oz) female hummingbird which lays them.
Eurasian cuckoo
The female cuckoo lays her eggs in the nests of other birds, one per nest, for them to look after. To trick the host parents, her egg looks very similar to theirs.
American robin
These bright blue eggs stand out a mile. Scientists think that stronger female robins lay brighter eggs, which encourages the male robins to bring more food to their chicks.
Domestic chicken
Humans have bred hens that can lay 300 eggs a year. Their wild ancestor, the red junglefowl, lays a single clutch of five to eight eggs in the same time.
Elegant crested tinamou
Tinamou eggs are smooth and as glossy as polished gems. They can be pink or purple, green or blue. In this species, they are olive green.
Common guillemot
Each guillemot egg looks different, as if paint has been flicked at it. This helps the parents to spot their egg among all the others on the cliffs where they nest.
Emu
The female emu lays massive dark green or black eggs with a beautiful shine. As with ostriches, it is the male emu that looks after them.
Ostrich
At 1.5 kg (3 lb), this is the world's largest bird egg. It is white to reflect heat, so that it does not cook in the hot desert sun.
14
15

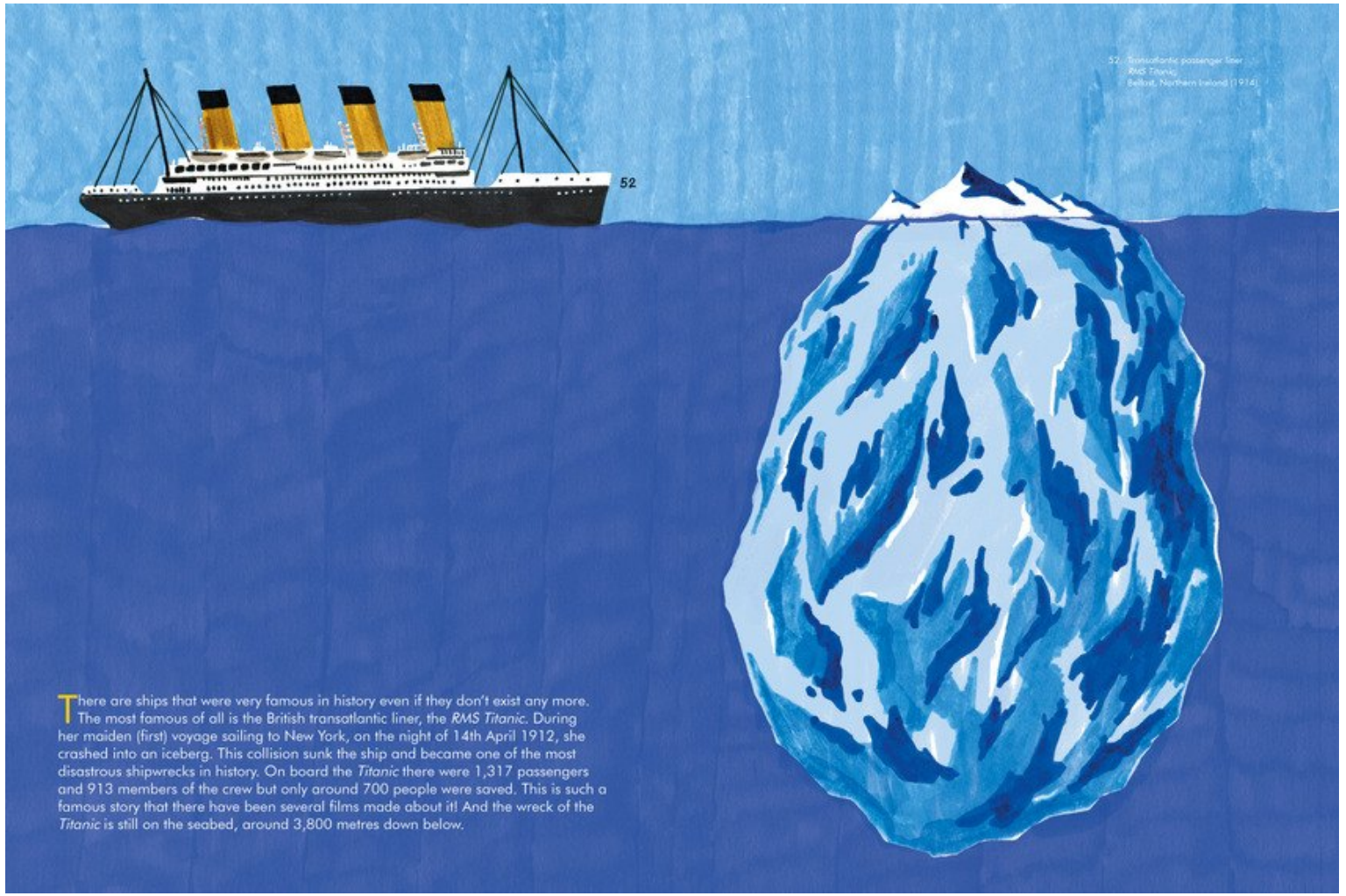

MADE BY NATURE
CADDISFLY CASE
Every piece of the case is placed with the skill of a bricklayer.
Many materials
Some species of caddisfly are more fussy than others about what they build with. This larva has used leaves to make its home.
Empty water snail shells can be recycled to make part of the case.
A selection of seeds helps make the case tough.
Hollow tube
The hollow case is tiny—only an inch or so long—and it is as flat as a pencil. There is a hidden entrance at one end.
Caddisfly case
Bit by bit, caddisfly larvae build elegant shelters from materials they find in their freshwater habitats.
The larvae, or young, of caddisflies are like weird underwater caterpillars, and probably would not be described as pretty. Yet they live in the most beautiful homes. You will find them at the bottom of clean rivers, streams, and ponds. Here, these insect architects hunt for items such as grains of sand and tiny pieces of leaf or twig. They assemble the materials around their bodies until they end up with a structure like a lumpy sleeping bag. The larvae produce sticky silk to hold everything together. Some make their cases entirely of silk. Most of these shelters are mobile homes that the larvae carry as they walk around. Why go to all this bother? The cases offer protection from hungry fish, and in streams they act as armor against the battering current.
The building work never stops. Cases need constant repair, and when a larva outgrows its case, it needs to move into something larger. Usually it gets through five homes in one or two years, before it is finally ready to leave the water for good and turn into an adult caddisfly.
Case
Shells
Larva
Life of a larva
The larva's legs are just behind its head, with its long body hidden in its case. It reaches out of its case to gather food and fresh building material, and to drag itself around. Claws at its rear grip the inside of the case.
Caddisfly
(Limnephilus)
Adults caddisflies look like moths, but with hairy wings and longer antennae. They are found around the world.
176
177


WRITTEN BY
SAM SEDGMAN
ILLUSTRATED BY
SAM BREWSTER
EPIC
ADVENTURES
EXPLORE THE WORLD IN 12 AMAZING TRAIN JOURNEYS
FROM THE AUTHOR OF...
ADVENTURES ON TRAINS


THE CHANNEL TUNNEL
AVIGNON
PARIS
Modern tunnels are built by tunnel boring machines (TBMs). They are long, snake-like contraptions that cut through 10 metres of earth a day with rotating teeth at their front. Conveyor belts shift the waste rock away through the tunnel, and as the machine digs further, rings are placed into the freshly dug walls to reinforce them.
Digging under the Channel began in 1987 and the tunnel opened in 1994. At the time, it was the largest and most expensive engineering project ever undertaken. There are three tunnels – two railway tunnels and a smaller service tunnel between them.
BRIGITTE
1st Dec 1990


THE GHAN
ADELAIDE TO DARWIN
Travelling through the vast, remote, and burning hot "Red Centre" of the Australian Outback, riding the Ghan is a journey unlike any other. The European settlers who built the railway northwards from South Australia first arrived there in the early 19th century, seizing land from Indigenous peoples who had lived in the country for tens of thousands of years. This railway tells the story of Australia old and new – its extraordinary people, climate, animals, and history.
DARWIN
KATHERINE
ULURU
ALICE SPRINGS
MARLA
ADELAIDE


BIG BOOK of
BOATS
by Luogo comune
Translated by Catherine Bruzzone

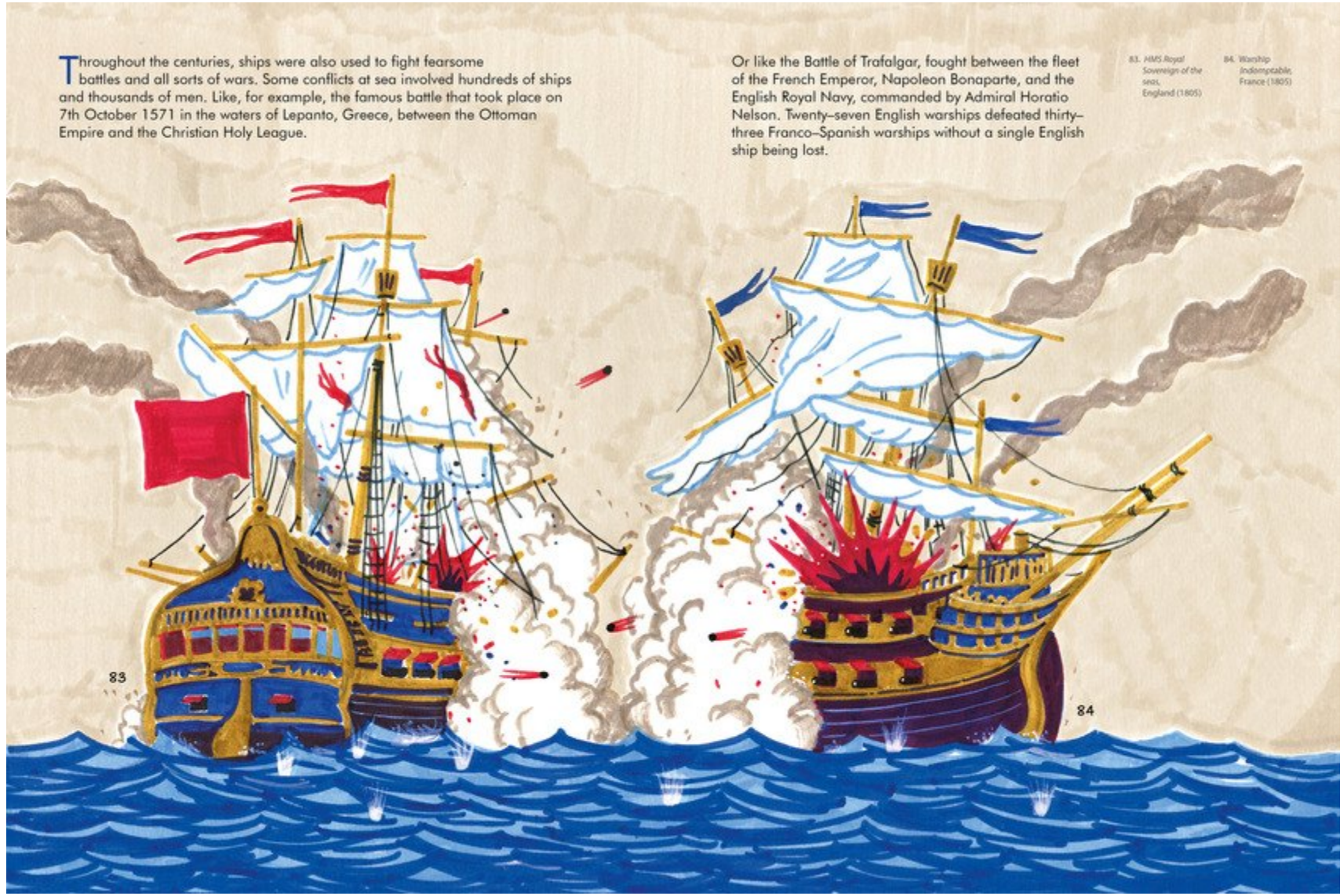

52
52. Transatlantic passenger liner
RMS Titanic
Belfast, Northern Ireland (1914)
There are ships that were very famous in history even if they don't exist any more. The most famous of all is the British transatlantic liner, the *RMS Titanic*. During her maiden (first) voyage sailing to New York, on the night of 14th April 1912, she crashed into an iceberg. This collision sunk the ship and became one of the most disastrous shipwrecks in history. On board the *Titanic* there were 1,317 passengers and 913 members of the crew but only around 700 people were saved. This is such a famous story that there have been several films made about it! And the wreck of the *Titanic* is still on the seabed, around 3,800 metres down below.

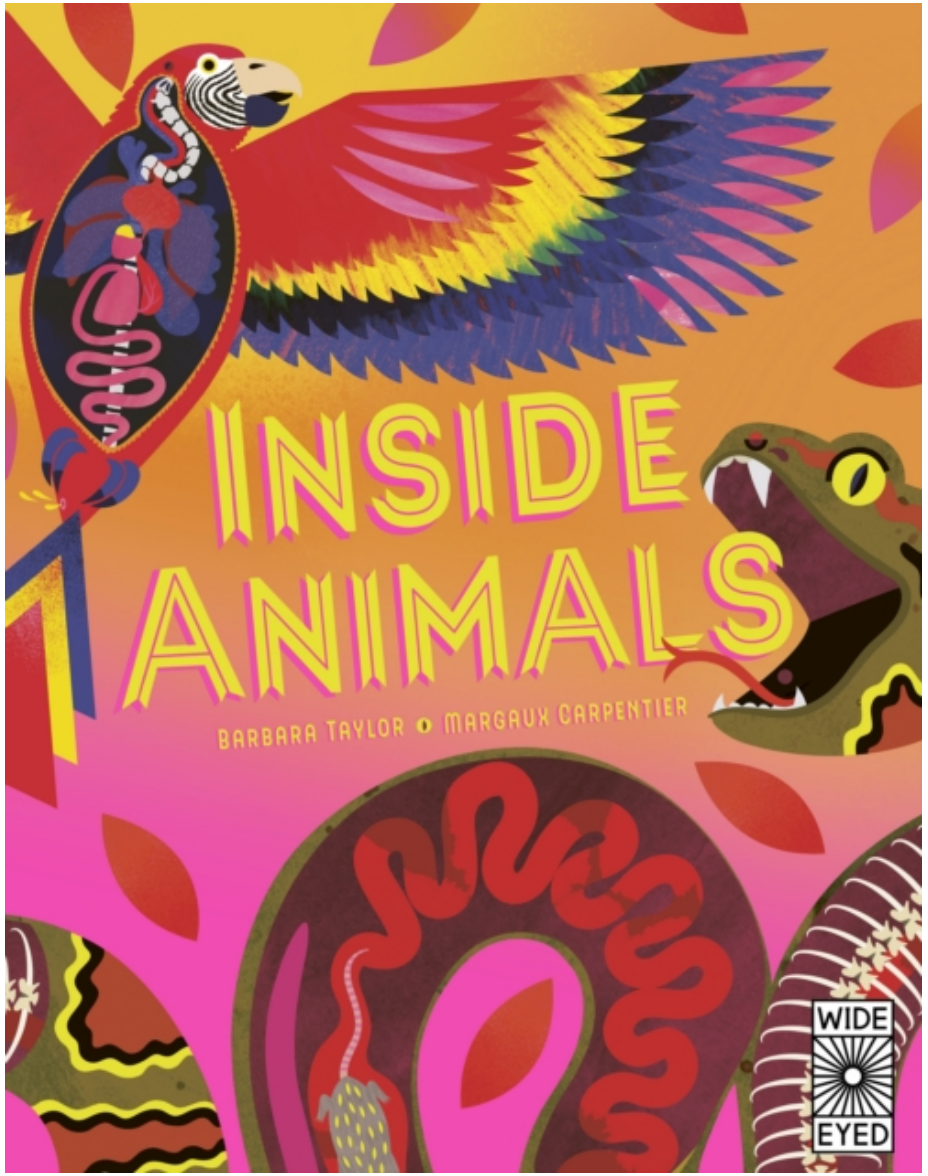
Throughout the centuries, ships were also used to fight fearsome battles and all sorts of wars. Some conflicts at sea involved hundreds of ships and thousands of men. Like, for example, the famous battle that took place on 7th October 1571 in the waters of Lepanto, Greece, between the Ottoman Empire and the Christian Holy League.

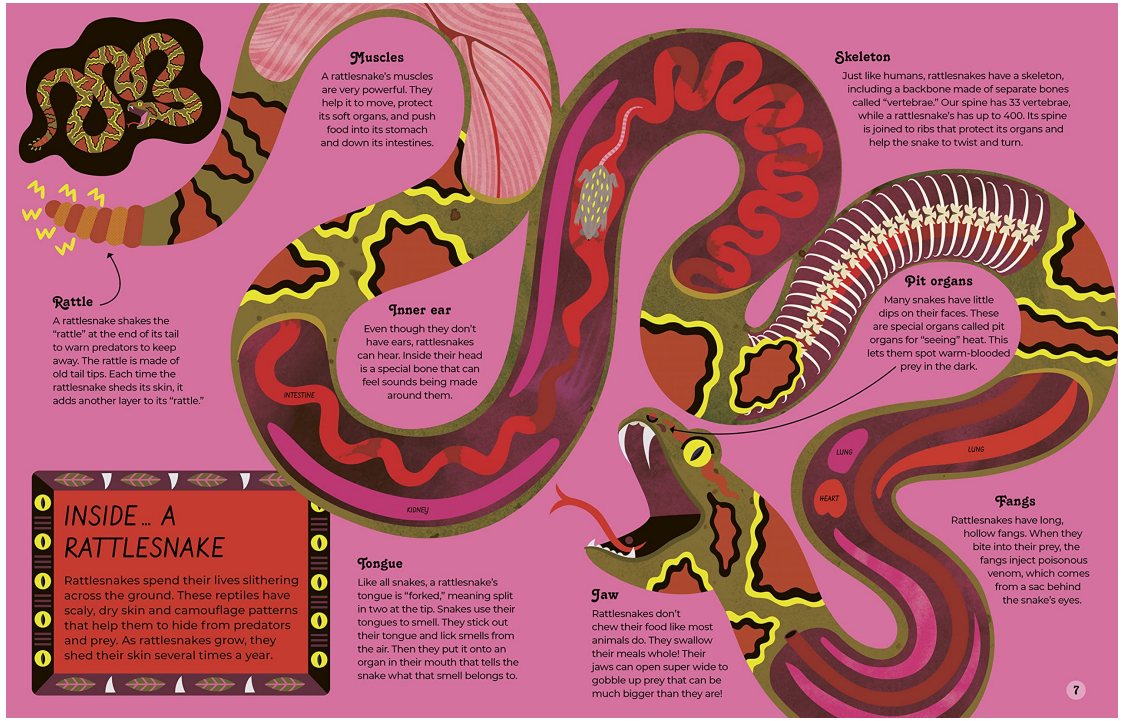
Or like the Battle of Trafalgar, fought between the fleet of the French Emperor, Napoleon Bonaparte, and the English Royal Navy, commanded by Admiral Horatio Nelson. Twenty-seven English warships defeated thirty-three Franco–Spanish warships without a single English ship being lost.

83. *HMS Royal Sovereign of the seas, England (1805)*

84. *Warship Indomptable, France (1805)*







vibrant, illuminating, ‘animal-tastic’!

Black and white

On land, a penguin's black back soaks up the sun's warmth, while its white front reflects heat away to keep it cool. In the ocean, the black and white colours help to camouflage a penguin from predators.

Feathers

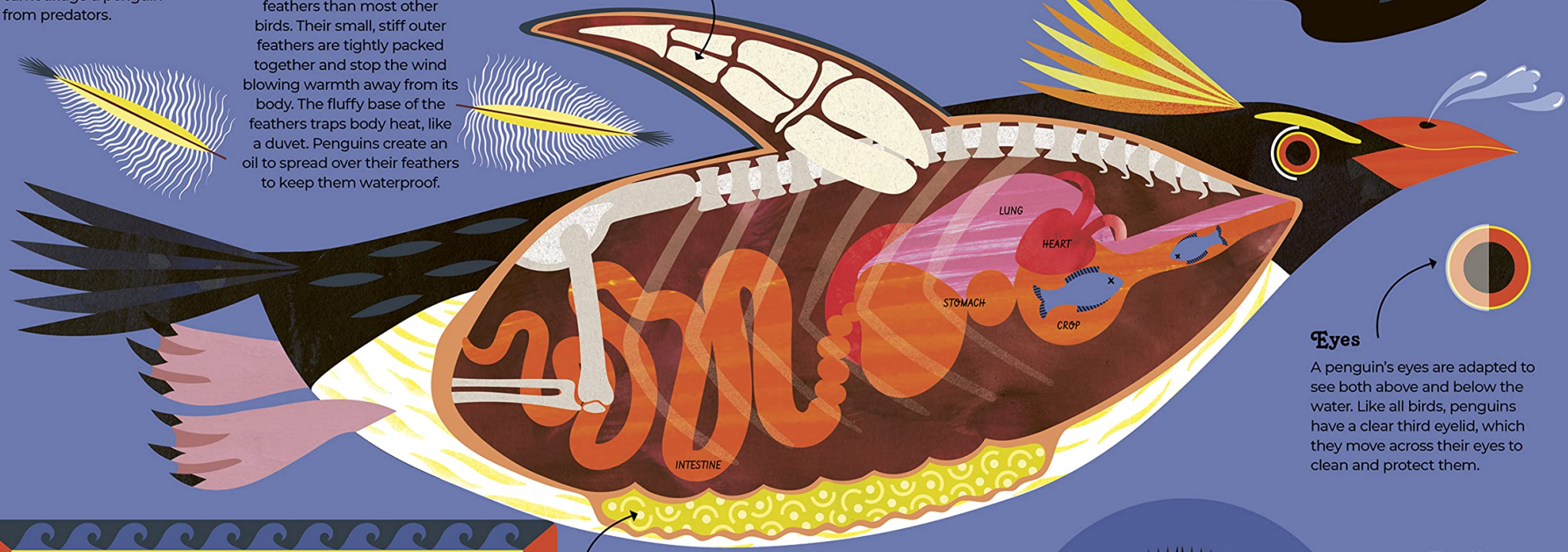
Penguins have more feathers than most other birds. Their small, stiff outer feathers are tightly packed together and stop the wind blowing warmth away from its body. The fluffy base of the feathers traps body heat, like a duvet. Penguins create an oil to spread over their feathers to keep them waterproof.

Heavy bones

A penguin's bones are solid and heavy, which helps it to dive under the water. The bones inside its paddle-like flippers are wide and flat to push water aside easily.

Salty sneeze

A penguin can drink salty seawater because special glands behind its eyes get rid of extra salt from its blood. When a penguin shakes its head, it 'sneezes' out salty drops, which run down its beak from its nose.



Eyes

A penguin's eyes are adapted to see both above and below the water. Like all birds, penguins have a clear third eyelid, which they move across their eyes to clean and protect them.

INSIDE... A PENGUIN

Zooming along underwater at speeds faster than an Olympic swimmer, the streamlined body of a penguin is superbly adapted to 'flying' underwater. Penguins spend up to three-quarters of their lives in the sea. Millions of years ago, there were giant penguins as big as an adult human. Today, the biggest penguin, the emperor, is only as tall as a small child.

Warm layer

Penguins have a thick blanket of fat – called blubber – under the skin to keep them warm in cold water. The fat is also a useful store of energy and protects penguins from knocks and bumps on land.

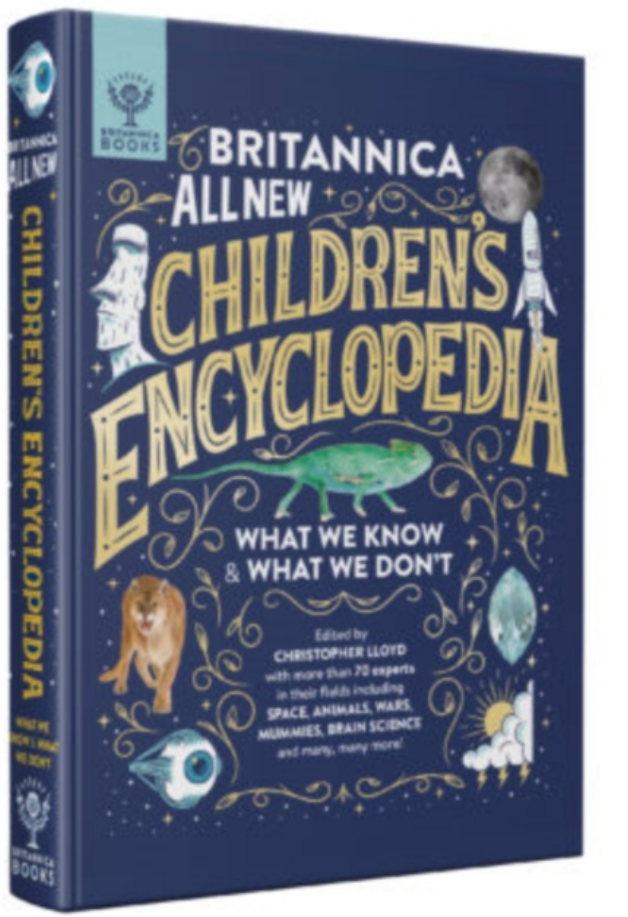
Colour and crests

The colours, skin patterns or crests on penguins' heads are used for display and courtship and they also help them to recognise each other.

Feeding

Spines on the tongue and the roof of the mouth help penguins to grip slippery prey, such as fish. Parent penguins store the seafood they catch in their crop – a part of their stomach – and cough it up for their chicks back on land.

- Does the book invite the reader to question, or does it assert its authority?
- Is provisional terminology used such as ‘estimated’, ‘probably’, ‘thought that’?
- Are sources cited either in the text or the peritext? Are references addressed to the child reader, or is it assumed that an adult will read this?
- Does the book provide a model for different types of thinking: cause and effect, problems and solutions, argument and counterargument, sequence etc.
- Is the design attractive? Does it enhance or distract from the content?



RADIOACTIVITY

Radioactivity is particles splitting off from the nucleus of an atom. With unstable atoms such as uranium, this happens naturally—scientists call it "radioactive decay." Most natural particle radiation is low level and does no harm, but long-term exposure to it or bursts from uncontrolled nuclear reactions can kill or cause cancer.

The world's most dangerous toy?

When radioactive materials were first discovered, people wore watches with radium dials that glowed green in the dark. Children were even given atomic energy kits containing uranium to play with—although not enough to cause harm. Still, the idea seems crazy today.

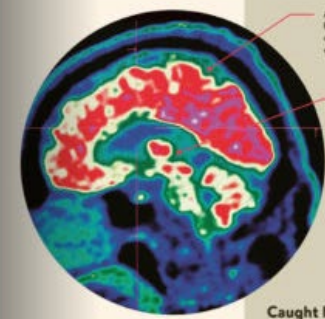
FACTastic!

Even bananas are radioactive. They contain just enough potassium to set off some radiation alarms. So, scientists measure low-level radioactivity in food in terms of Banana Equivalent Doses or BEDs. Fortunately, a BED is far too weak to ever harm you, even if you ate millions of bananas!

This 1950s Gilbert U-238 Atomic Energy Lab kit allowed children to create nuclear reactions.

The kit came complete with four jars of radioactive uranium samples.

Your own toy Geiger counter for measuring the low-level radiation.



A PET scan of a human brain, where high levels of chemical activity show up as bright spots.

High levels of chemical activity can be an indication of a disease, such as cancer.

Radioactive scanning

If you are ill, doctors may use radioactivity to find out what's wrong. When patients go for a PET scan, they are injected with a substance that contains atoms that send out harmless radioactive particles. The atoms gather wherever certain chemical activities are happening in the body. The scanner detects the pattern of particles and gives doctors a picture of what is going on.

GAME CHANGER

MARIE CURIE

Physicist and chemist, 1867–1934
France (born Poland)

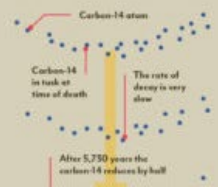
Marie Curie and her husband Pierre were fascinated by radioactivity. They found new radioactive elements, which they called radium and polonium. In 1903, they were awarded the Nobel Prize in physics for their work. Tragically, Marie died from cancer caused by years of exposure to radioactive elements.

Caught by the tusk

A poacher found with a stash of elephant tusks claimed they got them before hunting had been banned. But science caught them! Carbon dating showed the tusks contained so much carbon-14 that the elephants could only have died recently.

Around 100 elephants a day are killed illegally for their ivory tusks.

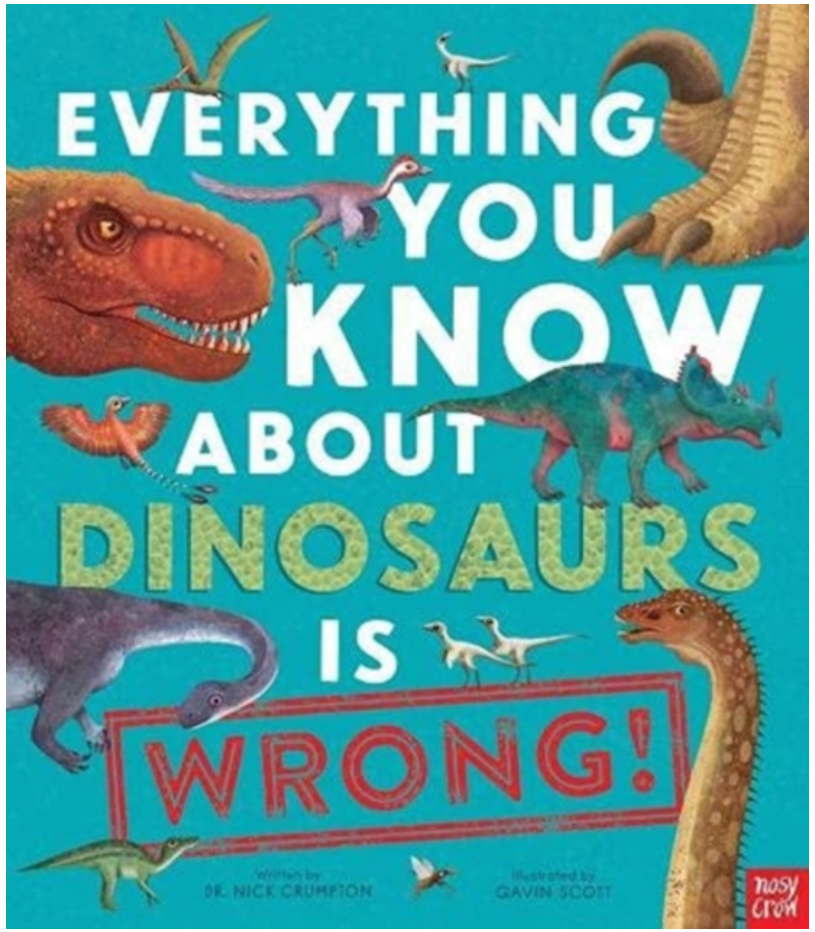
Ivory is prized for making luxury items and souvenirs.

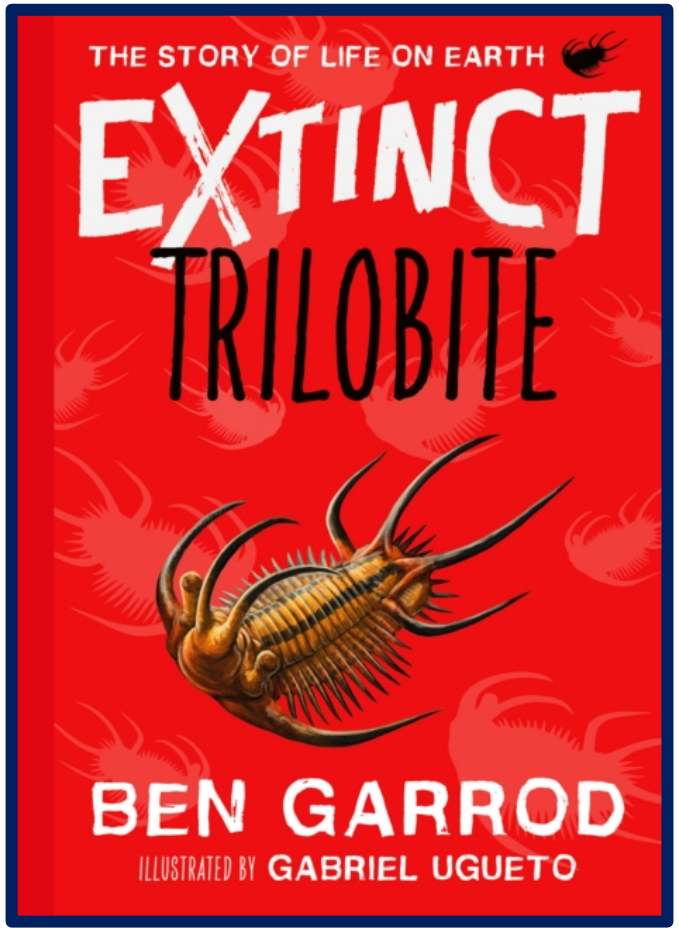


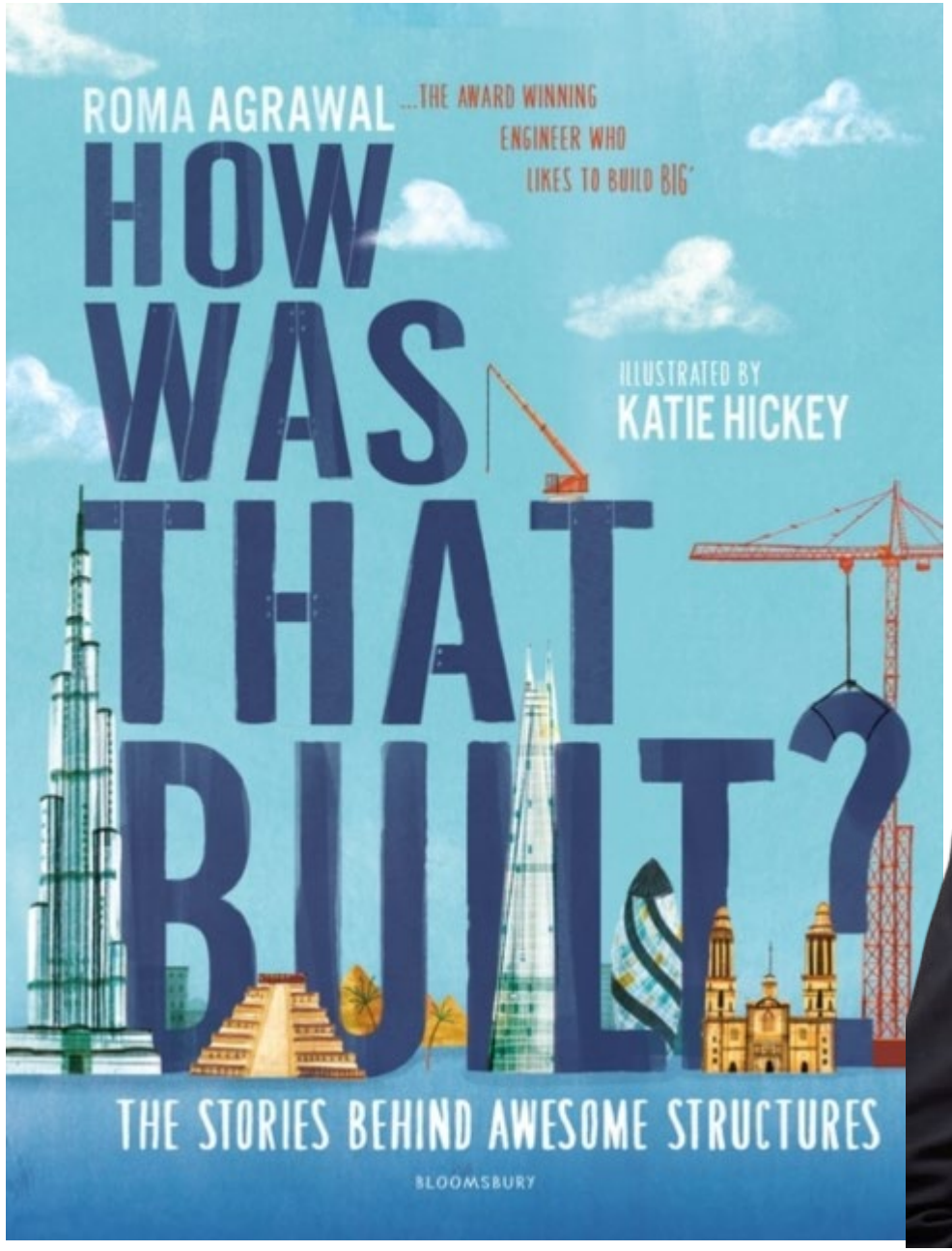
Carbon dating

The radioisotope carbon-14 (a kind of carbon atom) is present in all living things. When plants and animals die, particles split off from the carbon-14, causing it to disintegrate slowly. By measuring the proportion of carbon-14 isotopes left in a well-preserved fragment, scientists can tell how long

Why are some iceberg's green?
Most icebergs are bluish in colour but some in the Antarctic are green (called jade bergs because they look like the stone jade). Scientists don't know why these icebergs are green, but one theory is that yellowish-red iron oxide minerals scraped up by glaciers mix with the normal blue colour of the icebergs and make them green. (p.84)


EVERYTHING YOU KNOW ABOUT DINOSAURS IS WRONG!
written by DR. NICK CRUMPTON
illustrated by GAVIN SCOTT
nosy crow


THE STORY OF LIFE ON EARTH
EXTINCT
TRILOBITE
BEN GARROD
ILLUSTRATED BY GABRIEL UGUETO



How to build flat
How to build tall
How to build long
How to build a dome
Home to build clean
How to build strong
How to build across
How to build watertight
How to build underground
How to build moving things
How to build on ice
How to build in the sea
How to build in outer space

HOW TO BUILD TALL

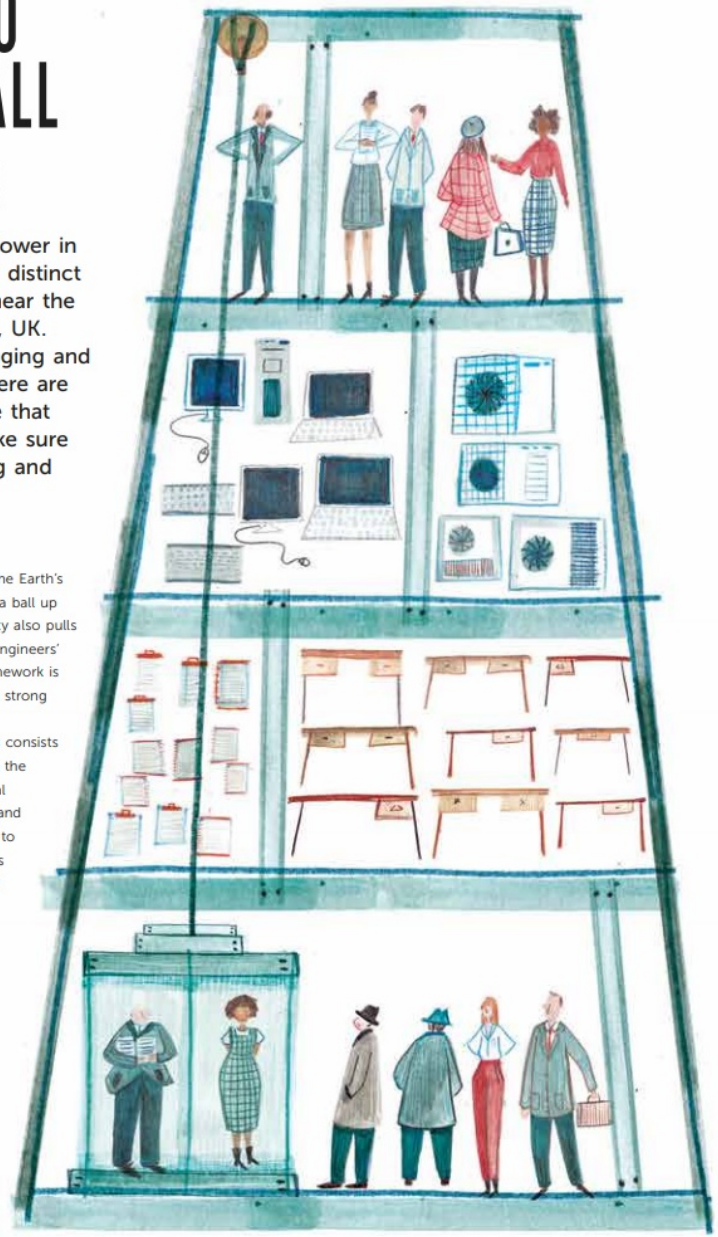
THE SHARD

The Shard is the tallest tower in Western Europe. It has a distinct triangular shape and is near the River Thames in London, UK. Tall buildings are challenging and interesting to design. There are different forces in nature that we need to resist to make sure skyscrapers stay standing and don't collapse.

What makes a building stand?

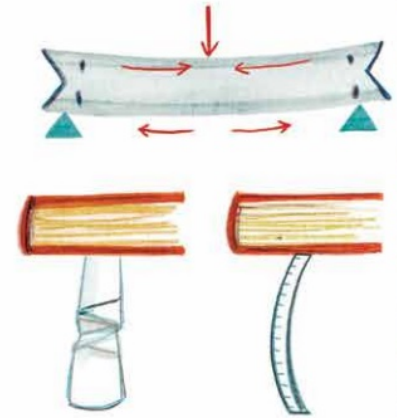
Gravity attracts everything towards the Earth's centre – that's why when we throw a ball up into the air, it falls back down. Gravity also pulls down on all our structures. It's the engineers' job to make sure the structure's framework is made from the right materials and is strong enough to fight this force.

The main framework for buildings consists of horizontal beams, which make up the floors, ceilings and roofs, and vertical columns, which hold up the beams and form walls. In a skyscraper, we have to calculate how much the materials it's made from will weigh, and also how much the stuff inside it will weigh, from lifts and air-conditioning units, books, computers and desks to all the people! We can then do the maths to check that the steel or concrete beams and columns won't get crushed by this weight and that our skyscrapers will reach brilliant heights.



Beams

Imagine holding a carrot lengthwise between your hands and bending the ends up to form a U-shape. The top side gets squashed and the bottom gets pulled apart. Engineers call the squashing force compression and the pulling force tension. When the tension is large enough, the carrot snaps. When the compression is large enough, the top crushes. This is how beams work. Engineers check the forces acting on beams to make sure they won't move too much or break.



Columns

Try these two simple experiments to see how columns can fail. Roll up a piece of paper into a tube and tape it together. Stand it up on a table and put a small, light book on it. You'll see the tube is strong enough to hold the book up: that's what a good column does. But if you put a really heavy book on top, the tube will crush and the book will fall down. That's a bad column, which has failed by crushing. To hold up the heavy book, you would need a much stronger tube. Columns can also fail by bending. If you hold a ruler vertically on a table and push down on it, you will see it bowing. Don't push too hard or your ruler will snap!

Steel for strength

Millions of tiny atoms, arranged in patterns to form crystals, make up metals such as iron and steel. The earliest metal used in big buildings was wrought iron. But this is a relatively soft metal because its crystals slide around a little when pushed and pulled. To make iron stronger, engineers added carbon. The atoms of carbon sat within the iron crystals and stopped them moving as much, and made a metal called steel. When you try to pull steel apart, the crystals don't move as easily, and so it's a stronger material for building. But you need the perfect amount of carbon: too much makes metals brittle, which means they can crack easily.

How do we make steel?

To build upward, first we have to gather materials deep inside the earth. Iron mined from the ground has a mix of different impurities, such as carbon, silicon and phosphorus. A British engineer called Henry Bessemer invented a process for making steel cheaply in the 19th century. He put iron pieces into a covered furnace and blew hot air into it. A chemical reaction happened. The oxygen in the air reacted with the carbon in the iron and released huge amounts of heat. This heat took away the impurities and left behind pure iron. Then Bessemer could add in the exact quantity of carbon needed to make the best steel. Since then, steel has been used all over the world to build our most exciting buildings, bridges, stadiums and railways.

TRY IT AT HOME: STEEL

Take a large plate and pour some Maltesers chocolates on to it. Roll your palm over them. You'll see that the chocolates move around easily – this is like the crystals of pure iron. Now sprinkle some raisins between the Maltesers and try again. The raisins block the Maltesers from rolling around as easily, which is how carbon atoms make steel stronger.

Henry Bessemer

HOW TO BUILD UNDERGROUND

TYPES OF TUNNEL

Dom Pedro II was crowned the second-ever emperor of Brazil in 1841 when he was just 14 years old. He was especially interested in engineering, astronomy, literature and languages, and wanted to connect his entire kingdom by rail. The railway would need to journey through the coastal mountains of the state of Rio de Janeiro and, 17 years after his coronation, work on a large tunnel called the Túnel Grande began.

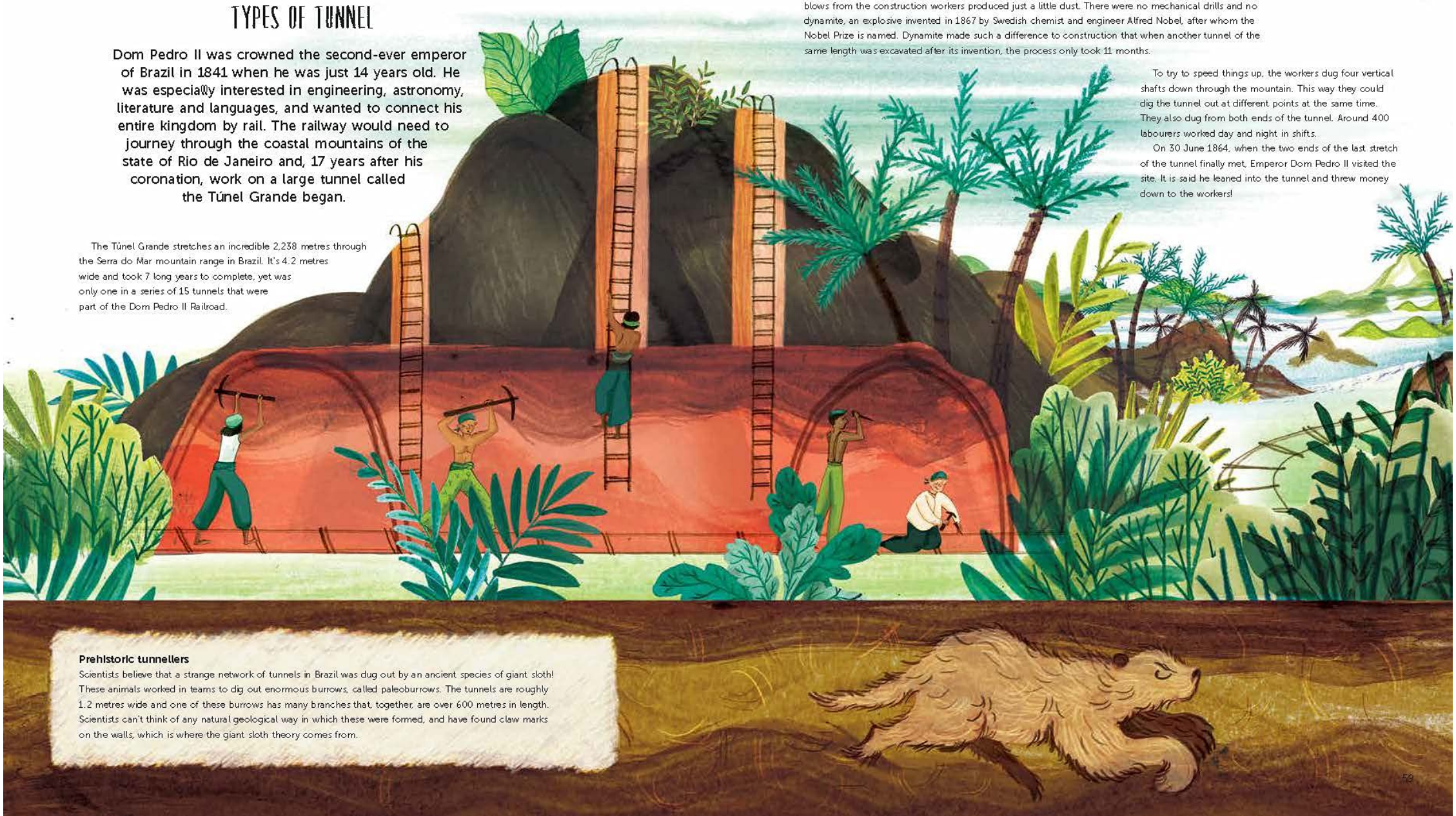
The Túnel Grande stretches an incredible 2,238 metres through the Serra do Mar mountain range in Brazil. It's 4.2 metres wide and took 7 long years to complete, yet was only one in a series of 15 tunnels that were part of the Dom Pedro II Railroad.

Rock hard

The Túnel Grande had to be cut through solid rock. The only way to do this at the time was using tools like chisels and hammers, as well as gunpowder. It is said that the rock was so hard that the heaviest of blows from the construction workers produced just a little dust. There were no mechanical drills and no dynamite, an explosive invented in 1867 by Swedish chemist and engineer Alfred Nobel, after whom the Nobel Prize is named. Dynamite made such a difference to construction that when another tunnel of the same length was excavated after its invention, the process only took 11 months.

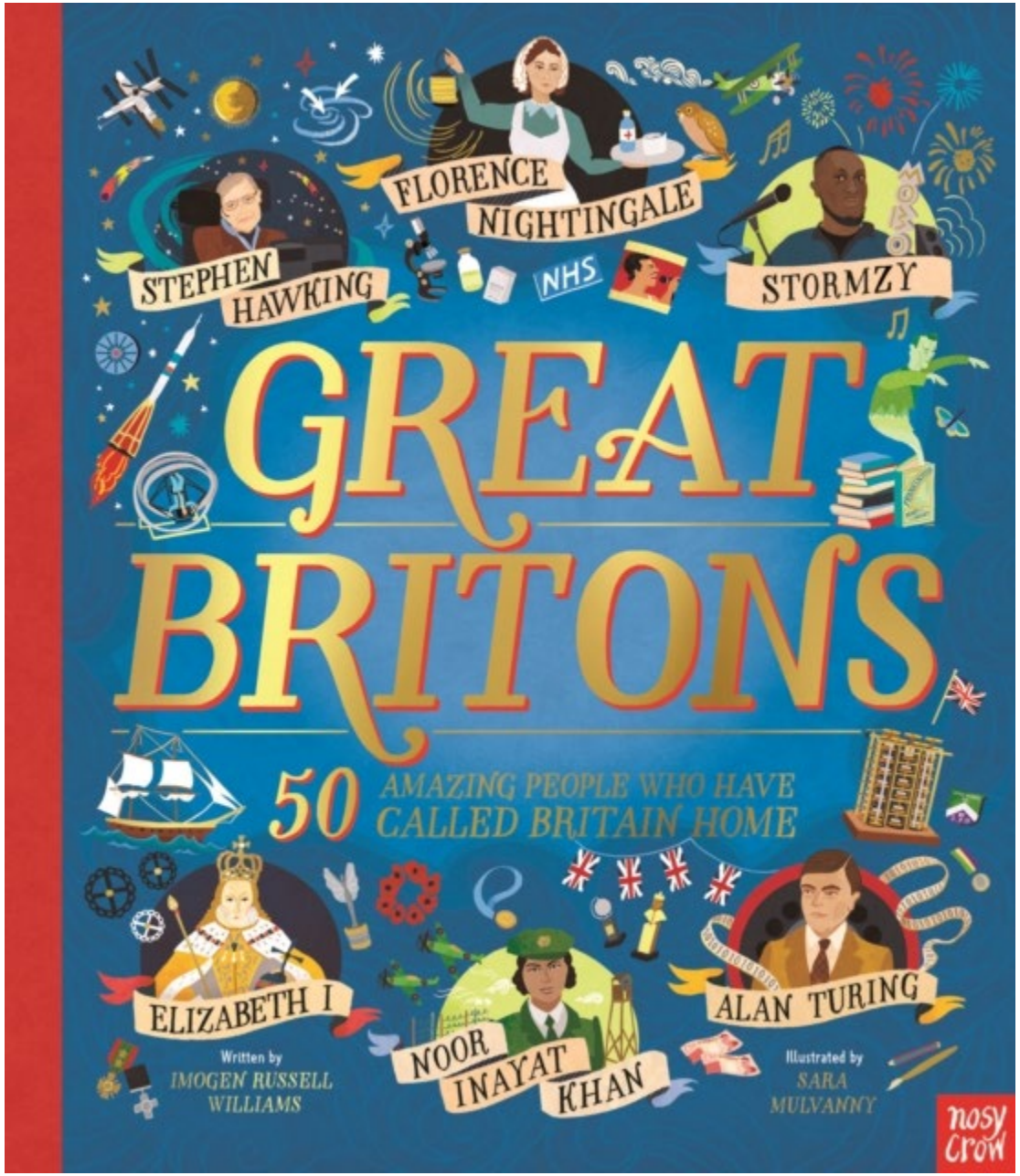
To try to speed things up, the workers dug four vertical shafts down through the mountain. This way they could dig the tunnel out at different points at the same time. They also dug from both ends of the tunnel. Around 400 labourers worked day and night in shifts.

On 30 June 1864, when the two ends of the last stretch of the tunnel finally met, Emperor Dom Pedro II visited the site. It is said he leaned into the tunnel and threw money down to the workers!



Prehistoric tunnellers

Scientists believe that a strange network of tunnels in Brazil was dug out by an ancient species of giant sloth! These animals worked in teams to dig out enormous burrows, called paleoburrows. The tunnels are roughly 1.2 metres wide and one of these burrows has many branches that, together, are over 600 metres in length. Scientists can't think of any natural geological way in which these were formed, and have found claw marks on the walls, which is where the giant sloth theory comes from.



An excellent selection of Great Britons from Imogen Russell Williams

The cover illustration gives a good indication of the care taken to ensure inclusivity.

Shirley Bassey

Boudicca

Robert the Bruce

Owain Glyndwr

Mary Prince

Elise Inglis

Ian McKellen

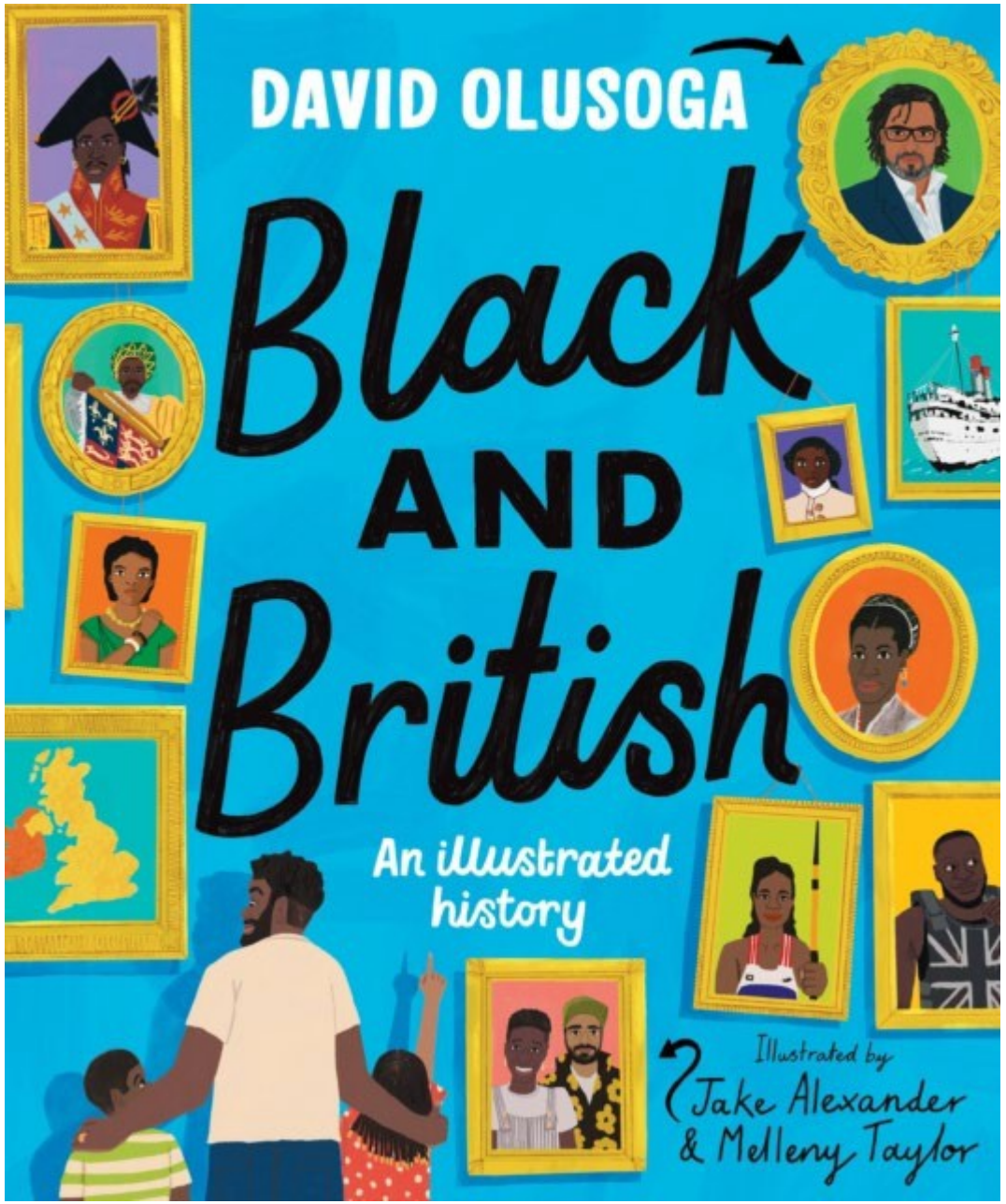
Chris Packham

Helen Sharman

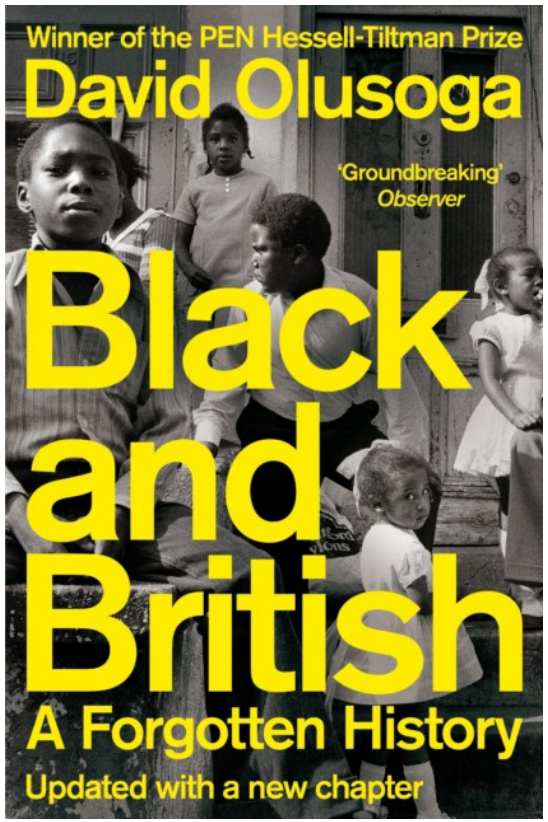
Lemn Sissay

Stormzy

Paul Stephenson


DAVID OLUSOGA
Black AND British
An illustrated history
Illustrated by
Jake Alexander
& Melleny Taylor

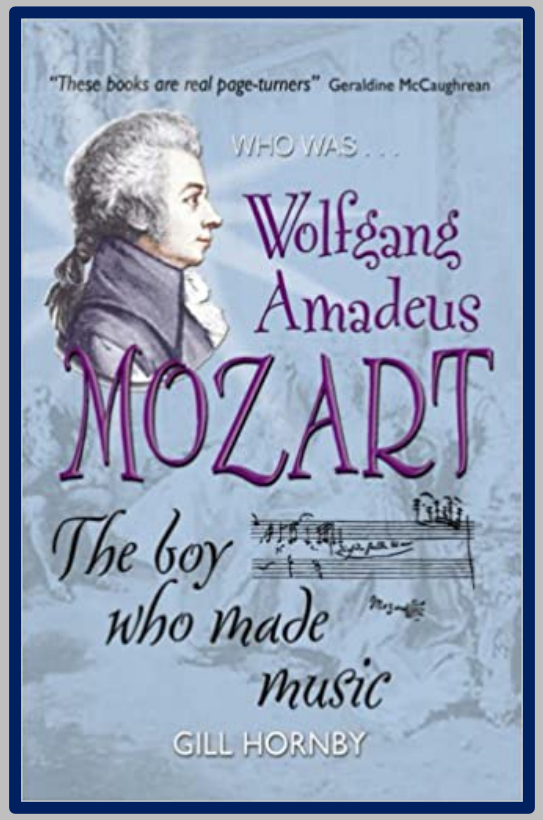

DAVID OLUSOGA
Black AND British
A short, essential history


Winner of the PEN Hessell-Tiltman Prize
David Olusoga
'Groundbreaking'
Observer
Black and British
A Forgotten History
Updated with a new chapter

- If the intended use of the book is for research purposes, are structural guiders present, clear and helpful? (e.g. contents, index, headings, captions)
- Are illustrations informative? Are drawn and photographic illustrations used as appropriate? Are they given enough space so that the reader can see details?
- Is technical vocabulary introduced clearly? Does the glossary have child- friendly explanations?

In The Reading Corner

Read Aloud



Look for texts in different subjects that have an engaging voice that reads aloud well.

Consider investing in multiple copies of key nonfiction texts – needs careful selection.

Key ideas in summary

- Develop teacher knowledge - it is worth the time investment
- Think about the demands of reading in different subjects. Are older junior readers are given opportunities to read more challenging material?
- Review practice – who does most of the reading in curriculum lessons? You or your students?
- Read nonfiction aloud – it supports understanding, especially if questioning, dialogue and discussion accompany the reading
- Compare different texts – can you detect the writer’s point of view

- Develop a reflective stance. Look for the places where you can interrogate the text. Are assertions made without evidence? Is the writer indicating that there might be more than one way of looking at the subject by using tentative and provisional thinking. Keep asking the key question – how does the writer know that?
- Making text structures explicit and talking about the language used to communicate different types of thinking supports comprehension. Thinking maps (David Hyerle, 1995) help students to visualise different types of thought.

- Talk about language
- words that we think of as everyday words are often used differently in nonfiction (e.g. table).
- Focus on technical words that are needed for understanding the big concepts that children will encounter several times.
- Draw attention to words that help you understand the writer’s point of view for instance words with positive and negative connotations.