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VERY Interesting Junior



10 cool facts about the Cape dwarf chameleon

JULY 2021

ISSUE #33

growing young minds, testing your knowledge

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EXPERIMENT



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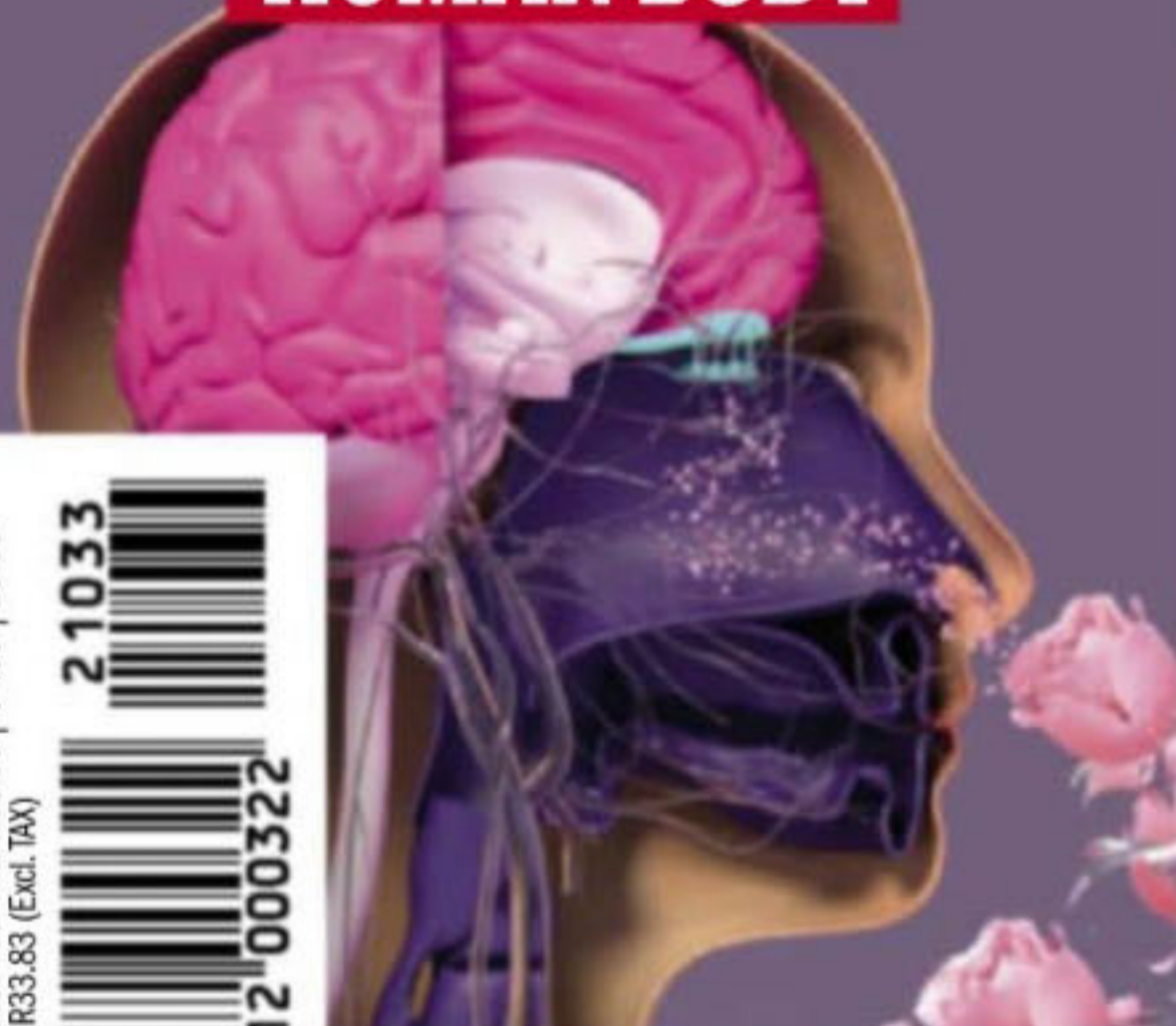
BURNING QUESTIONS ANSWERED

- Who were Lewis and Clark?
- Could you eat a 3D-printed cake?
- How were special effects made before the computer era?
- Should I rather bath or shower?



THE WORLD'S BIGGEST CREATURES

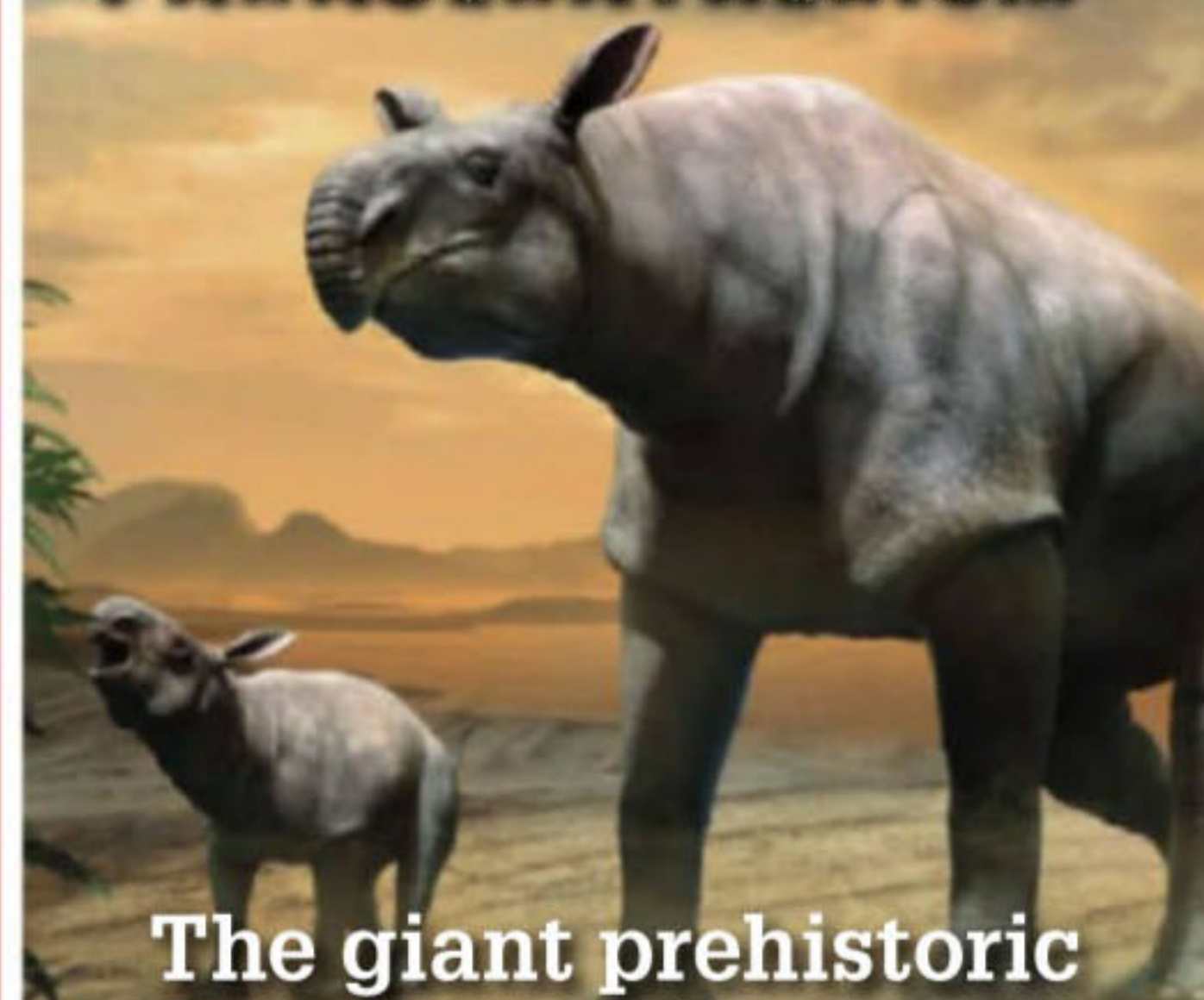
HUMAN BODY



HOW DOES MY NOSE WORK?

HOW CHAPPIES BECAME A SOUTH AFRICAN FAVOURITE

PARACERATHERIUM



The giant prehistoric hornless rhinoceros

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PUBLISHER

Urs Honegger

EDITOR

Deanne Dudley

SENIOR SUB-EDITOR

Vanessa Koekemoer

SUB-EDITOR

Claire Rencken

**OPERATIONS AND PRODUCTION
MANAGER**

Paul Kotze

SENIOR DESIGNER

Annie Fraser

**CIRCULATION AND SUBSCRIPTION
MANAGER**

Amanda Potgieter amanda@panorama.co.za

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ADVERTISING

Gill Johnston 011 468 2090, sales@panorama.co.za

SALES MANAGER

Gillian Johnston gill@panorama.co.za

FINANCE accounts@panorama.co.za

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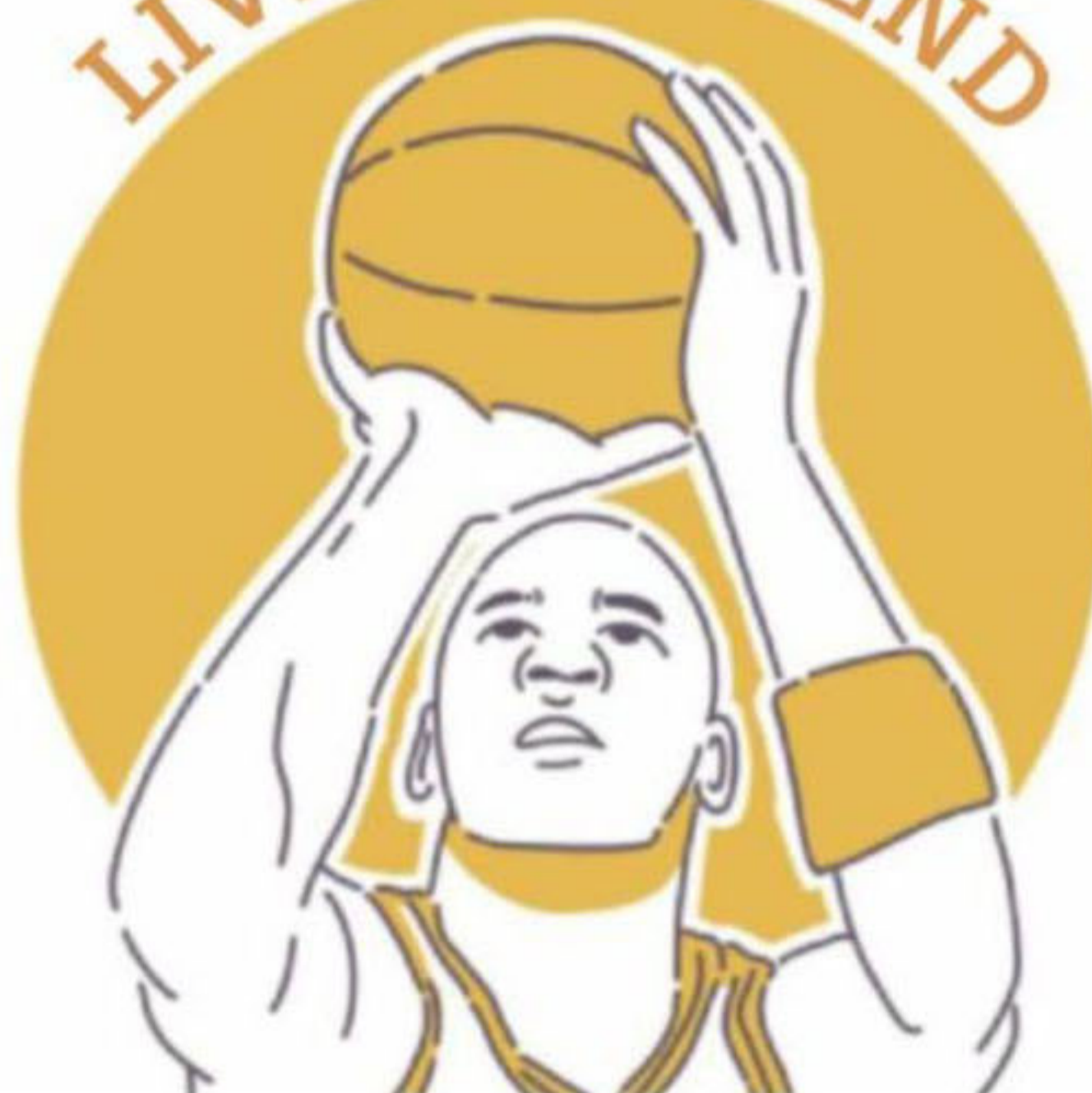
THIS ISSUE'S HIGHLIGHTS ON ONE PAGE

5 COOL THINGS



...about the extinct paraceratherium, who looked like a giant hornless rhino with a long neck p.8

LIVING LEGEND



Michael Jordan – basketball superstar and role model p.24



WHAT DID ONE EYE SAY TO THE OTHER?

Between you and me, something smells... Find out how p.26

COLOUR CHANGER

10 reasons to love the Cape dwarf chameleon p.38



Competition disclaimer

These rules apply to all competitions and giveaways in *VI Junior*:

1: Email entries are restricted to one per person or email address. **2:** Staff members of Panorama Media Corp, the sponsors of the prize, their advertising agencies as well as any immediate family may not enter. **3:** Prizes are not transferable, and may not be converted into cash. **4:** The judges' decision is final. No correspondence will be entered into. **5:** Panorama Media Corp staff cannot be held liable for any prizes that go missing, or are damaged in the post, or may cause harm to the recipients. **6:** Please note that by entering our competitions you are opting into the Panorama Media Corp database. Should you receive any unwelcome communications, you will be given the opportunity to unsubscribe. **7:** Panorama Media Corp makes every effort to contact prize winners on either the email address or mobile number used to enter the competition. Prizes that are not claimed within 90 days of the winner being published, will be forfeited. Prizes returned by the post office as unclaimed will be forfeited.

Plus

- Did spiders 'invent' suspension bridges?
- How did the Chappies brand start?
- Can I make an electromagnet at home?
- Can you eat a 3D-printed cake?
- How were special effects done before the computer era?
- What is the world's largest amphibian?

Tech is really propelling the world forward and, in this issue, we take a look at two ways it's helping us better understand things. The first is **natural disasters** – scientists and researchers are always looking for better ways to handle these, and we take you on a journey throughout the world to see how they are recreating the high winds of hurricanes, the frozen conditions of a blizzard and the terrifying ground movements of an earthquake. The goal is to help prepare us for any eventuality, and the ways they do it are quite remarkable.

Another cool bit of tech allows us to **see how prehistoric creatures moved**. Using robotics and a bucket-load of research, scientists have recreated a moving skeleton of an early reptile who lived even before the dinosaurs. Speaking of prehistoric creatures, we also bring you five cool facts about the rhino's massive, long-necked, hornless ancestor – the paraceratherium.

Giant creatures also dominate our top 10 page this month, with massive salamanders, fish and birds. You can also marvel at how **animals actually 'invented' things** like suspension bridges and incubators before humans did, and meet a tiny chameleon who lives in our very own Cape Town.

Then take some time out and **try an experiment at home**, by making your own electromagnet. And don't forget to enter to **win two awesome prizes** – an inspirational book hamper and a Nick Music hamper.

We hope you find something to learn and enjoy in this issue. Remember that you can **email me at any time** on vi junior@panorama.co.za with questions or comments, or even just to say hi!

Thank you for reading this issue!

Until next time,

Keep learning

Deanne

Sources: Livescience.com, Guinnessworldrecords.com, newscientist.com, sciencefocus.com

1. LARGEST FISH

WINNER: Whale shark

LENGTH: 12.65m

WEIGHT: 21.5 tonnes

Despite their misleading name, whale sharks are technically fish. They may be huge, but they cannot bite or chew. They are filter feeders and survive on tiny plankton (masses of them, of course!).

DID YOU KNOW?

Goliath bird-eating spiders can shoot little hairs with barbs on them to defend themselves. If you come into contact with these, they can cause you a lot of pain, and will cause itching. Oh, another line of defence for these spiders is to bite you with fangs that can reach lengths of up to 3.8cm!



10. LARGEST SPIDER

WINNER: Goliath bird-eating spider

LENGTH: 28cm

WEIGHT: 170g

The largest specimen on record was found in Venezuela in 1965.

9. LARGEST STARFISH

WINNER: Sunflower star

LENGTH: 1m

WEIGHT: up to 5kg

This massive sea star has between 16 and 24 extremities (legs).



Unfortunately we don't have a pic of this species, but it's like this – just MUCH bigger!



8. LARGEST SEGMENTED WORM

WINNER: African giant earthworm

LENGTH: up to 6.7m

WEIGHT: up to 1.5kg

A massive version of the species, measuring almost 7m was found in King William's Town in 1967.

TOP 10

LARGEST CREATURES

We break down some size and weight records. Can you believe these?!



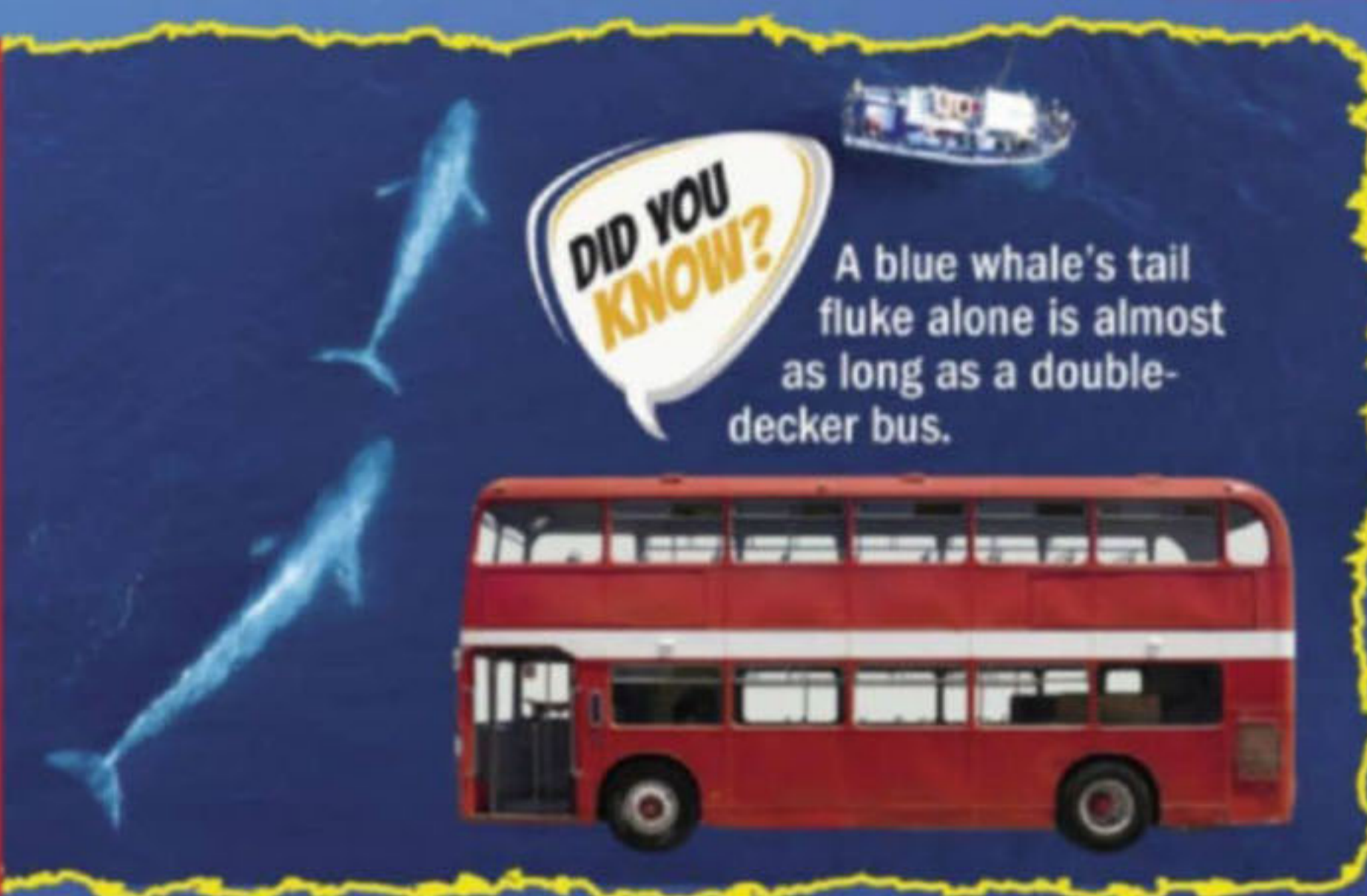


DID YOU KNOW?

The whale shark has a HUGE mouth that can open more than 1m wide!

2. LARGEST ANIMAL

WINNER: Blue whale
LENGTH: 30m
WEIGHT: 150 tonnes
 The blue whale is the biggest creature ever to have lived on Earth (bigger than any dinosaur). His tongue alone can weigh four tonnes! He also has the largest lungs, largest heart and slowest heart rate of any animal. So, he's a record-breaker all round.



DID YOU KNOW?

A blue whale's tail fluke alone is almost as long as a double-decker bus.



5m

The distance a Goliath frog can cover in one jump!



3. BIGGEST FROG

WINNER: Goliath frog
LENGTH: 34cm
WEIGHT: 3.2kg
 Scientists have observed Goliath frogs building their own ponds by lifting and moving rocks weighing up to 2kg each!

4. HEAVIEST REPTILE

WINNER: Saltwater crocodile
LENGTH: Up to 6m
WEIGHT: Up to 1,300kg
 Female saltwater crocs are much smaller than males (the figures above are for the male). They have on average 66 teeth and have the strongest bite pressure of any animal.



3 years

The length of time some species of crocodiles can go without eating. They conserve their energy by keeping still.

DID YOU KNOW?

In 2010, 150 people at a beach in New Hampshire (USA) were all stung by the remains of what is thought to have been one lion's mane jellyfish, who had broken up into lots of pieces.



7. LARGEST CNIDARIAN

WINNER: Lion's mane jellyfish
LENGTH: 2.5m bell and 37m tentacles (record)
WEIGHT: 150kg
 The largest lion's mane jellyfish on record washed up on shore in 1870 in Massachusetts Bay.

6. LARGEST AMPHIBIAN

WINNER: South China giant salamander
LENGTH: up to 1.8m long
WEIGHT: 64kg
 The three known Chinese giant salamander species are all classified as critically endangered.



5. LARGEST BIRD

WINNER: Common ostrich
HEIGHT: up to 2.8m
WEIGHT: up to 156kg
 The ostrich also holds the record for the largest egg, with each one weighing up to 1.4kg.



Random facts for fun!



60%

The percentage of house dust that comes from outside - through windows and doors, and on the soles of your shoes.



SPOT THE CHEETAH

In May, a two-year-old cheetah named Njozi had everyone in a tizz in Rietvlei Nature Reserve and its surrounds. It was thought that she had escaped the reserve, possibly while chasing a waterbuck, and was roaming free. Everyone was worried about the cat, fearing she'd be run over, and they could not locate her because her tracking collar was not working. People phoned in saying they had seen her, and some even sent pictures of footprints, which turned out to be those of a brown hyena.

Then, a few days later, Njozi simply showed up in the reserve again, completely unfazed about all the hype surrounding her disappearance. Thank goodness she's safe - and the reserve says that they will be getting her a cheetah friend soon.

BE A GAME DESIGNER

Nintendo is releasing a new game called *Game Builder Garage*, which allows you to use your Nintendo Switch to develop games. It features seven lessons and teaches you to develop different types of games - and at the end you can design one from scratch without using the templates. During the lessons, you'll design alien games, mystery games, racing games and even a 3D world game, and each lesson gets more difficult as you go along.

These little games can be shared with other friends who have a Switch (provided they own a copy of the game) and you can see the programming of other people's games, so that you can learn from their designs. Sound like great fun - and who knows? Maybe you'll be the next millionaire game developer if you come up with an awesome idea!

DID YOU KNOW?

A hummingbird is the only bird who can fly backwards.

10 million tonnes

The amount of food that is wasted in South Africa every year, according to the WWF. They say that the energy this wastes could power Joburg for six weeks, and the water wasted could fill over 600,000 Olympic swimming pools.



DID YOU KNOW?

Kanye West's Yeezy brand played a huge role in turning him into a Forbes-certified billionaire in 2020.

Sneakers shatter records

A pair of sneakers worn by rapper Kanye West sold on auction for a cool US\$1.8 million (around R25.5 million) in April 2021. That tripled the previous record held by a pair of Nike Air Jordan 1s, worn by Michael Jordan during a basketball match in Italy in 1985, where he slam-dunked a ball so hard that he shattered the backboard. Those went for US\$615,000 (about R8.6 million) last year. The black Nike Air Yeezy 1s were worn by Kanye to the Grammys in 2008. But we reckon the record won't stand for very long, as the sale of rare sneakers has become a huge deal in recent years.

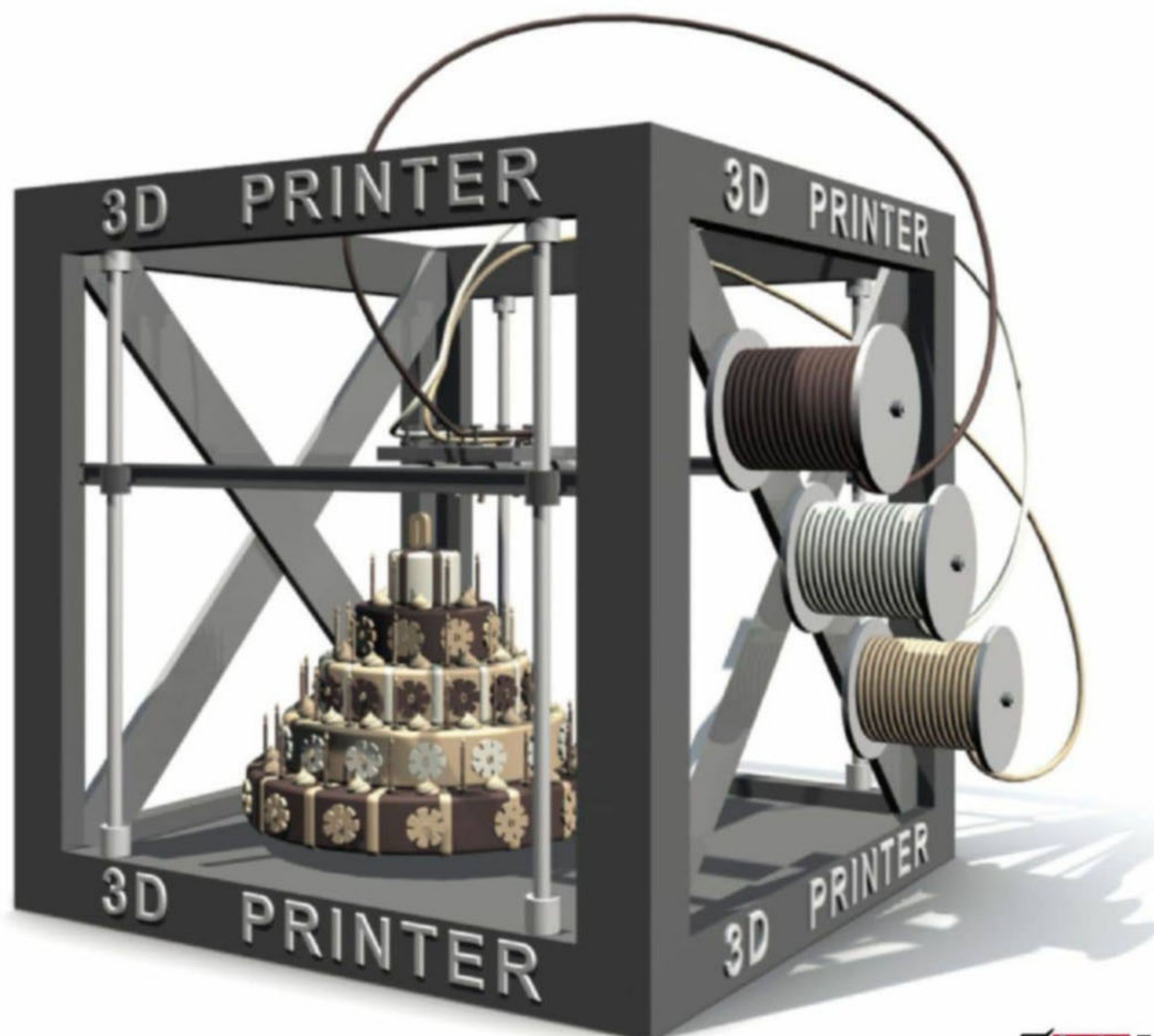
For more about Michael Jordan and Nike Air, see page 24.



CAN YOU EAT A 3D-PRINTED CAKE?

Seems so... But 3D food printing is currently quite limited. While 3D printing is thought to be the next big answer to delicious food for space travellers, there is still a lot that needs to be solved before we could have a juicy steak without needing to braai it. In 3D printing, the food has to travel through a print head, meaning that all ingredients have to be puréed in order for them to have the right texture to pass through the syringe-like containers.

Doughs and batters, like the syrups used to make sweets, work well for 3D printing, but special cakes that are light and fluffy may not work so well. 3D printing of food is also limited to what scientists like to call 'single material processes' (a fancy way to say you can only use one ingredient/mixture at a time) and it is very time-consuming – you certainly couldn't use them in restaurants or anything.



5 COOL THINGS ABOUT PARACERATHERIUM

This extinct mammal, who looks like a hornless rhino, is one of the largest land mammals ever known

1. BIG STUFF

Paraceratherium was big, but exactly how big, we're not 100% sure. That's because the fossils found have not been complete. Estimates using measurements on the bones we do have, however, put them at 4.8m tall and 7.4m long. Weight is a real guesstimate, but could be anything up to 20 tonnes.

2. WHEN THEY LIVED

These magnificent creatures roamed the Earth between 34 and 23 million years ago in the Oligocene epoch, when things were cool and dry. Remains have been found in Eurasia – more specifically, in modern-day countries like Turkey, Romania, Bulgaria, Georgia, Kazakhstan, Mongolia, India, Pakistan and China.

3. PINK, GREY, BLUE?

No one knows what colour paraceratherium was, because we don't have any skin fragments to base the assumptions on. We also don't know anything about the texture of his skin. Pictures you see of them are based on modern rhinoceroses. But, for all we know, they were blue with pink spots and completely smooth.

4. PLANT EATERS

Their teeth indicate that they were grazers who chomped on soft leaves and shrubs. Given their size, they would have had to eat large amounts to keep them going. This is why it is thought that they regularly crossed long distances, moving slowly, to find food.



A life-size replica at the Shanghai Natural History Museum.

5. WHERE DID THEY GO?

Paraceratherium went extinct after living for around 11 million years. Reasons for their demise may have been climate change, lack of food sources, competition from other species or low reproduction rates (not enough babies to keep the species going).



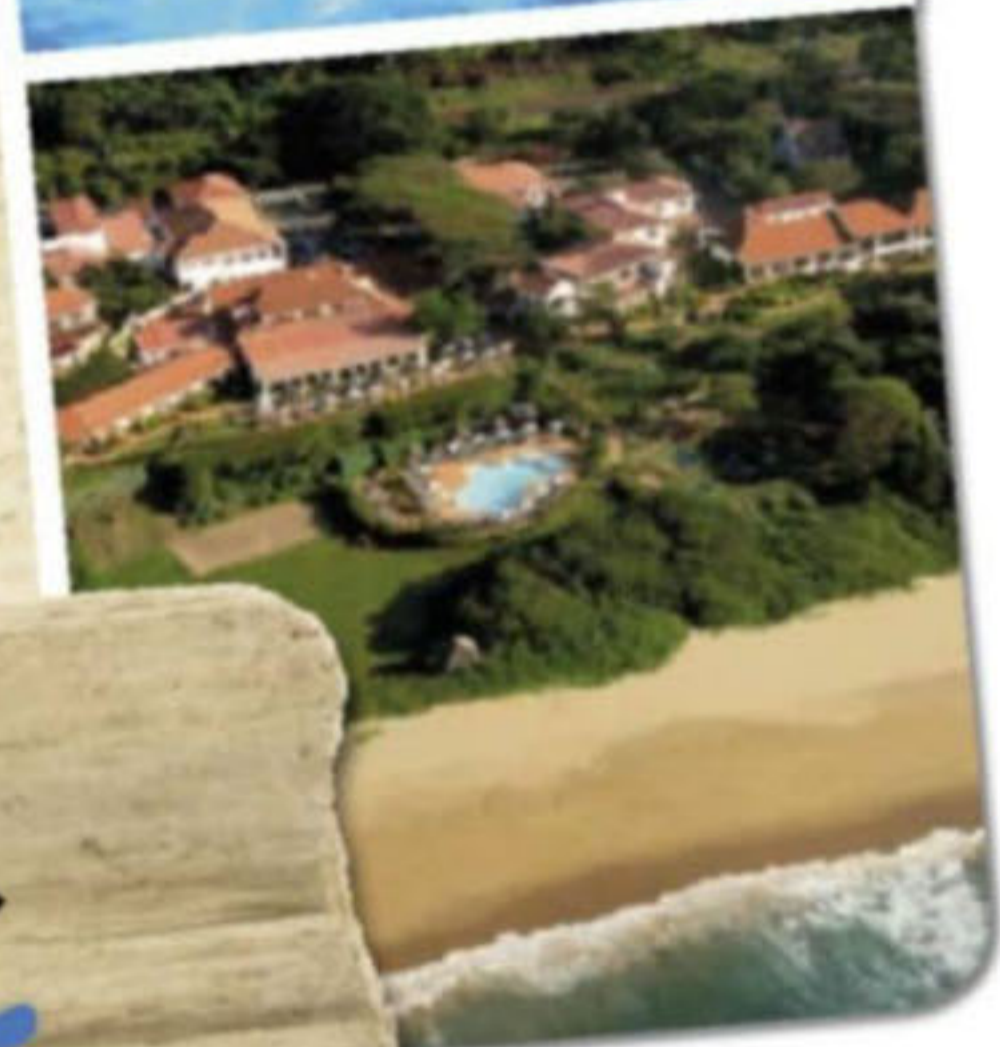
SAY IT!
Paraceratherium
(para-serra-their-ium)

This is what we think they looked like, but we can't be certain.

THE CALL OF THE BERG...



...OR THE BEACH



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DISASTER MASTERS

Scientists are recreating extreme weather and natural disasters inside labs. Why? To prepare for catastrophes

1. MAKING WAVES

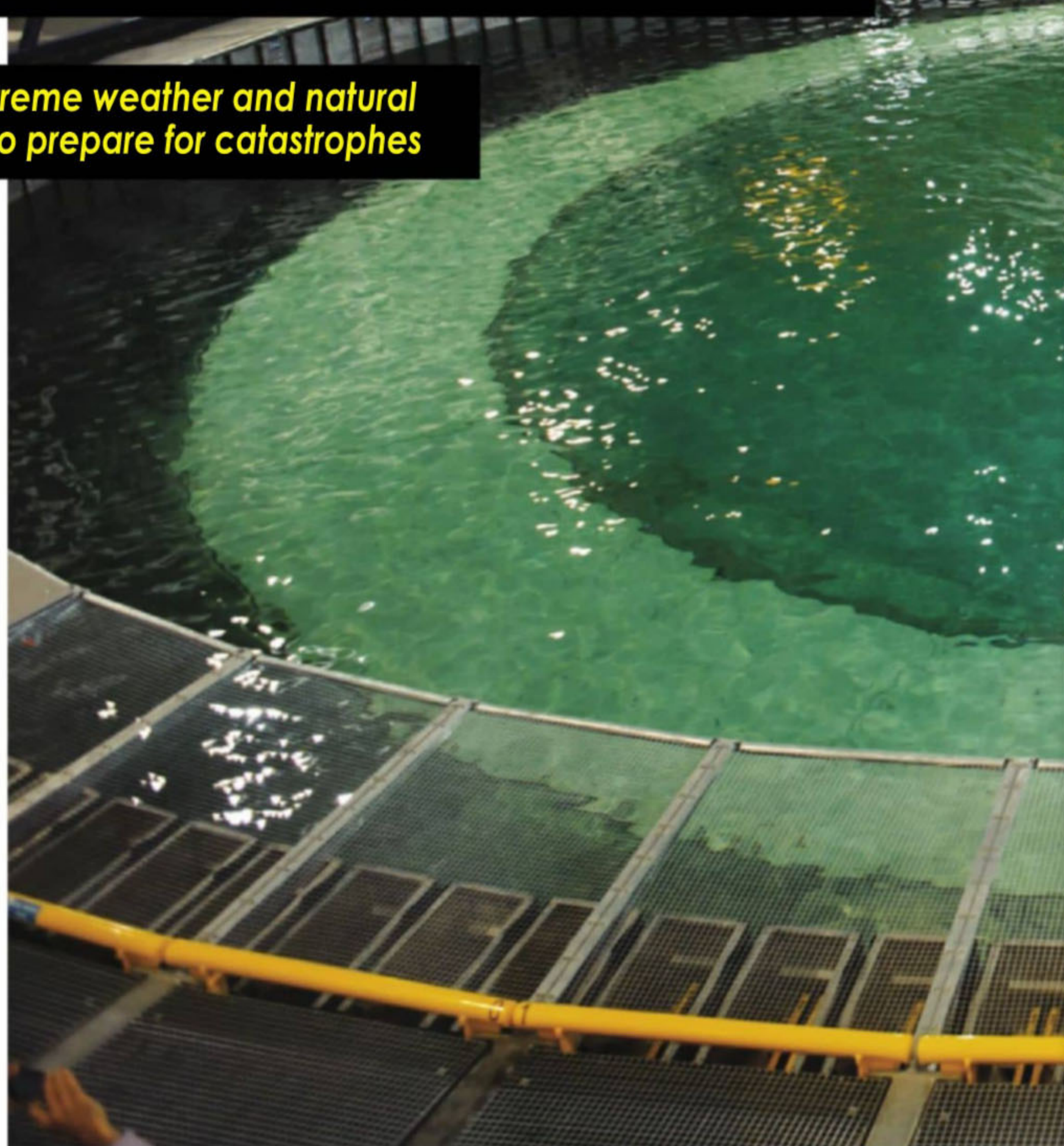
WHERE? FLOWAVE, EDINBURGH

Capable of making 28m-high waves, Edinburgh University's FloWave is the world's largest circular wave and tidal tank. The 25m-wide, 5m-deep pool was built to test wave and tidal energy machines (which turn the ocean's energy into electricity), as well as for basic research on how waves are made at sea. Using 168 computer-controlled paddles (which you can see here around the edge) FloWave can produce waves and tidal currents in any direction.

Recently, Edinburgh researchers teamed up with Oxford University academics to better understand how 25m-plus 'freak waves' can form when waves travelling in different directions cross paths. These giant waves are thought to have sunk many a ship over the centuries.

The tower of water in this photo, however, is a 'party trick', and wouldn't occur naturally. Like a stone's throw in reverse, ripples made at the edge of the tank travel towards the centre, where they come together and shoot two tonnes of water straight up in the air.

Awesome!





2. I'M ALL SHOOK UP!

WHERE? E-DEFENSE FACILITY, JAPAN

The 'shake table' at the E-Defense facility ('E' stands for 'Earth') near Kobe, Japan, is the largest in the world. The 20x15m platform hides 24 pneumatic (operated by air or gas under pressure) pistons (cylinders), which are controlled by engineers to shake full-scale buildings in three directions, at earthquake-level intensities.

When Texas A&M University engineer Dr Maria Koliou visited in February 2019, she got to wander around these fully furnished, wood-framed houses and then watched as her Japanese colleagues ran their shake programmes – one of which simulated the 6.9 magnitude Kobe earthquake that destroyed 150,000 buildings in 1995. "It was pretty impressive," says Koliou. "I hadn't seen a full-scale test before."

The right-hand building was even grounded in soil with pipes running through it, to get closer to real-life conditions. The Japanese scientists surveyed the structural damage caused to the houses, with the aim of learning how building companies can better protect people's homes during earthquakes.



3. IT'S GETTING HOT IN HERE...

WHERE? WILDFIRE SIMULATOR, SOUTH CAROLINA, USA

Wildfire spreads like... well, wildfire, in this specially designed wind tunnel in Chester County, South Carolina. This is part of a six-storey research facility belonging to the Insurance Institute for Business and Home Safety (IBHS). The tunnel is used to simulate what happens when burning embers are driven by wind to produce the 'ember storms' often seen in wildfires, which can be devastating to nearby buildings.

On the right of the picture, embers – made in chambers filled with mulch and wood – are blown across the test space from metal ducts. The building sits on a rotating platform so that the embers can be blown from different directions. Researchers examine how the embers get into buildings through vents, and look at how decking and debris can help wildfires to spread. In this picture, plants below the front windows are acting as kindling, while the wooden step outside the front door is also adding fuel to the flames.





4. ICE, ICE BABY WHERE? SCANIA TEST FACILITY, SWEDEN

At this sophisticated climate facility in Södertälje, Sweden, you can control the weather. Developed by truck manufacturer Scania at a cost of R610 million, it took three years to build and is used for testing heavy vehicles in the harshest weather conditions. The snowdrifts in this picture were produced by snow cannons like those used at ski resorts, while a single 3.75m-high fan provides the wind for snowstorms.

On another day, conditions could be similar to a desert heatwave, thanks to a temperature control system that goes as low as -35°C and up to 50°C . The humidity can range between 5 and 95%, and even the droplet size of simulated rain is adjustable.

Rollers under the parked vehicles allow the researchers to mimic speeds of up to 100km/h as they study variables such as driver visibility, windscreen wiper function, and the reaction of different vehicle parts. Scania hopes that its facility will help improve fuel efficiency in demanding conditions, cutting down vehicles' emissions.





5. RECIPE FOR DISASTER

WHERE? UNIVERSITY OF BUFFALO, NEW YORK

How do you cook up volcanic lava in the lab? A team at the University of Buffalo in New York has the recipe down: take 45ℓ of basaltic rock, put it in a furnace, bake for four hours until it reaches 1,316°C, then pour it into an insulated steel box. In this photo, volcanologist Dr Ingo Sonder stirs the lava. His experiments examine “the basic physics of what happens when water gets trapped inside molten rock”.

This could help scientists learn more about explosions like the one that triggered the Icelandic ash cloud event in 2010, when meltwater from a glacier flowed into the erupting Eyjafjallajökull volcano and threw ash 9km into the air, leading to the cancellation of nearly all European flights for five days.

By injecting water into DIY lava, Sonder's team has discovered that spontaneous explosions are more likely to occur when water meets lava at a depth below the surface exceeding 30cm. At shallower depths, the water can escape as steam before it causes an explosion.

6. SHIVER ME TIMBERS

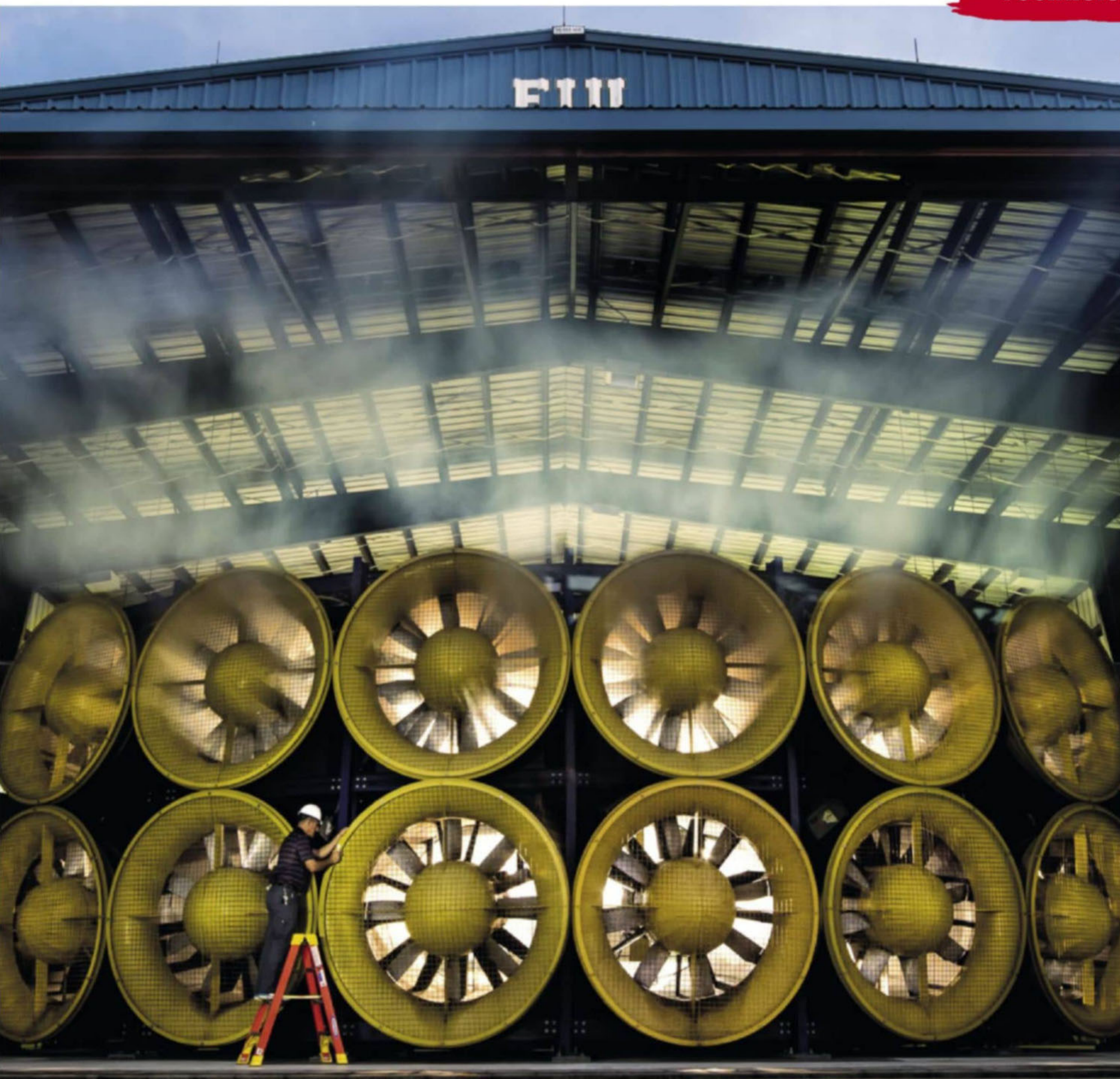
WHERE? DEBRIS IMPACT FACILITY, TEXAS

You can't shoot a bullet through a brick wall, but fire a piece of wood at it hard enough and you might have more luck. In the image to the right, the strip of wood shatters, but it isn't quite moving fast enough to break through the bricks. However, at 160km/h, it rips right through, as researchers at the Debris Impact Facility at Texas Tech University have demonstrated by firing a piece of wood from their pneumatic (air pressured) cannon.

Even though a bullet shot from a gun moves faster, a strip of wood is heavier, so the impact is greater. This explains why debris thrown at high speed by a tornado can cause so much damage.

The researchers use their cannon to simulate the impacts of flying debris in tornadoes travelling at up to 400km/h, testing storm shelters, safe rooms, doors and windows to their limits.





7. SUCH A BIG FAN

WHERE? WALL OF WIND, FLORIDA

Together, the motors behind these massive fans provide the power of more than eight Mercedes Formula 1 racing cars at top speed. They're also capable of simulating hurricane winds strong enough to rival Katrina, the storm that devastated the city of New Orleans in 2005. Researchers at Florida International University use the Wall of Wind facility to test building materials and outdoor structures like solar panels that need to withstand strong winds.

The fans are independently controlled and can rotate 1,800 times per minute, generating winds of up to 253km/h (the same as the most destructive type of hurricane - Category 5). Test structures are placed on a turntable in front of the fans, before researchers move somewhere safer to view the action on-screen from the control area. Among other things, experiments have tested bridge sections (to help with the hurricane-proofing of bridges), and the wind required to lift metal roofs off buildings.

EXPLORERS: PART 2

Learn more about how Lewis and Clark explored the American West

WHAT WAS THE LEWIS AND CLARK EXPEDITION ABOUT?

Back in the early 1800s, American President Thomas Jefferson signed the Louisiana Purchase, which was an agreement that made the United States double the size it was. This gave the country some very valuable land. The president wanted to find out more about the territory and decided to send a team of explorers to do just that. The group was to be headed by the president's personal secretary, Meriwether Lewis. Lewis, realising what a difficult and dangerous task lay ahead of him, brought his army friend, William Clark, on board. Together, they undertook the 'Corps of Discovery'.



MAP OF LEWIS AND CLARK'S EXPEDITION



1804

The crew of 41 men set off from Missouri in May of 1804. In September of that year, they met with the Teton Sioux, a Native American tribe. It was difficult to communicate with them, having to rely on interpreters, and the situation became quite tense, with both sides threatening the other. Luckily, after three days, a peace agreement was reached, and the expedition was allowed to proceed upriver.

In November 1804, winter was setting in, and the expedition found a place among some friendly tribes to stay. That's where they met Sacagawea, an Indian woman, who was the wife of a French interpreter Lewis and Clark had hired. She helped the expedition by assuring native tribes that the men had come in peace, and by helping the crew to find food. She stayed on with the expedition when they left the area after winter.

300

The approximate number of species of plants and animals they collected.

1805

In August 1805, the expedition needed to find a way to cross the Rocky Mountains. They decided that the easiest way to do that was to find the Shoshone tribe and buy horses from them. Sacagawea had originally come from that tribe and proved useful in locating them. There she was reunited with her brother, who was now the Shoshone chief.

Now with horses, and a Shoshone guide called Old Toby, the expedition tackled the mountain crossing. It turned out to be a dangerous and very tough mission, and the men almost starved to death. After 11 days, they reached the edge of a forest and were taken in by a local village.

12,874km

The distance the expedition travelled.

1805/1806

In November 1805 the men, paddling in traditional canoes, finally made it to what they thought was the Pacific Ocean... only to find out that it was actually an estuary 32km from the sea. The weather was bad and prevented them from continuing. Again, locals came to the rescue, and the Clatsop Indians used their big ocean canoes to help the men cross the estuary.



Meriwether Lewis



William Clark



Lewis and Clark received double pay and 1,600 acres of land for the successful completion of their mission. They had mapped large areas, identified hundreds of plant and animal species, and set up good relations with many local tribes.

1806

On their return journey, the men spent a month with the Nez Perce tribe and called it the most enjoyable time of their journey. They played games, danced and played music around fires in the evenings. When they left there in **July 1806**, the group split up to explore different areas (Clark explored the Yellowstone River and Lewis the Marias River), agreeing to reunite further along where the rivers meet up.

Lewis and Clark were reunited and said goodbye to Sacagawea before heading home to St Louis, where they were hailed heroes. The expedition was a success and there had been only one casualty amongst the group – the youngest expedition member had died early into the mission from what is assumed to be a ruptured appendix.



To prepare for the expedition, Lewis studied medicine, botany (the study of plants), astronomy (the study of the stars) and zoology (the study of animals).



A special dollar coin depicting Sacagawea.



When Sacagawea died, Clark became her children's guardian.

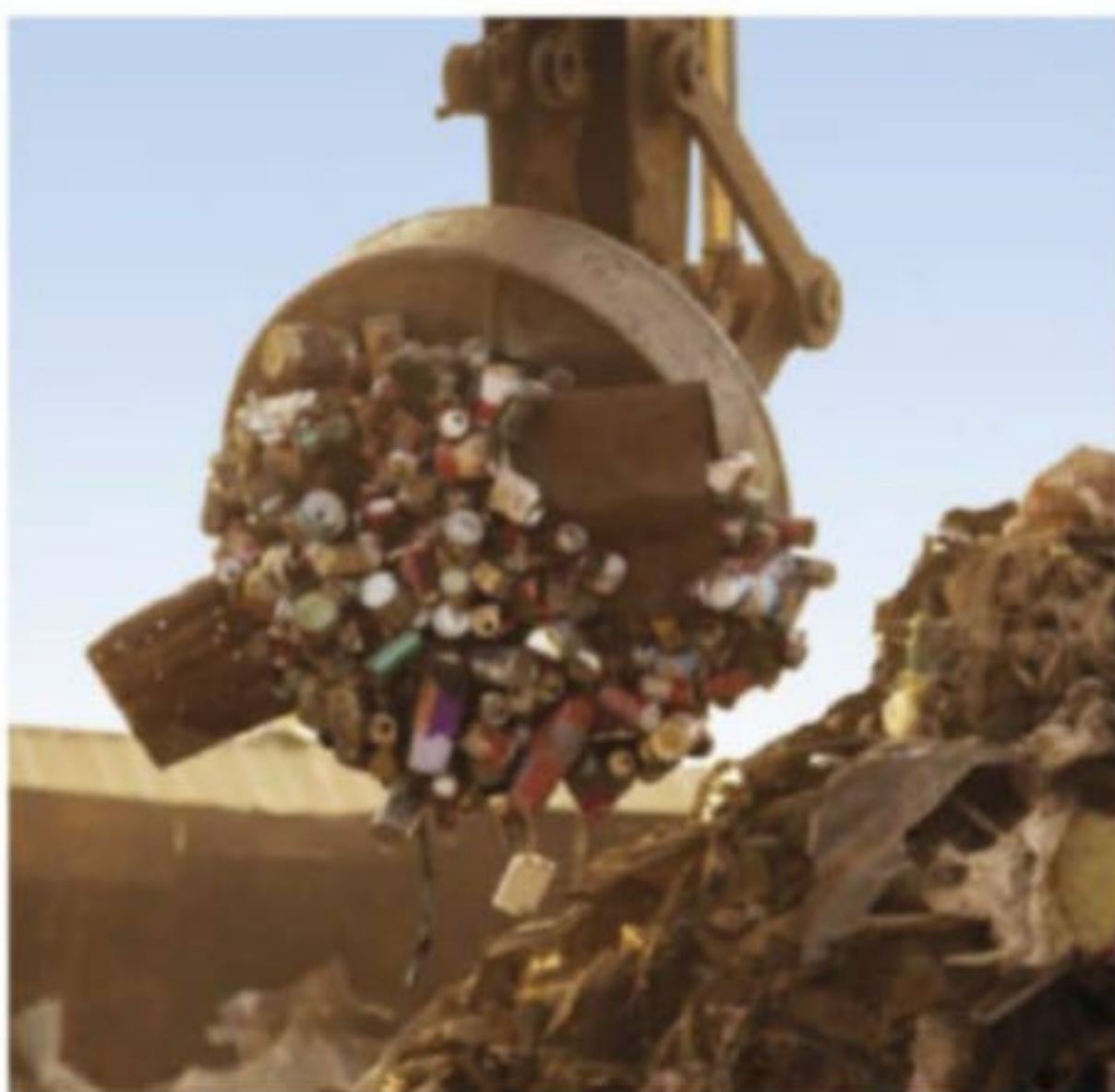
WARNING!

This experiment includes sharp objects, so please get adult supervision. The wire can get hot if it is connected to the battery for too long – disconnect it immediately if this happens. Fine wires can also prick your fingers, so be careful!



DID YOU KNOW?

Scrapyards use giant electromagnets to lift iron and steel. When they have moved them to where they would like them to be, they simply switch off the current and the load drops to the ground.



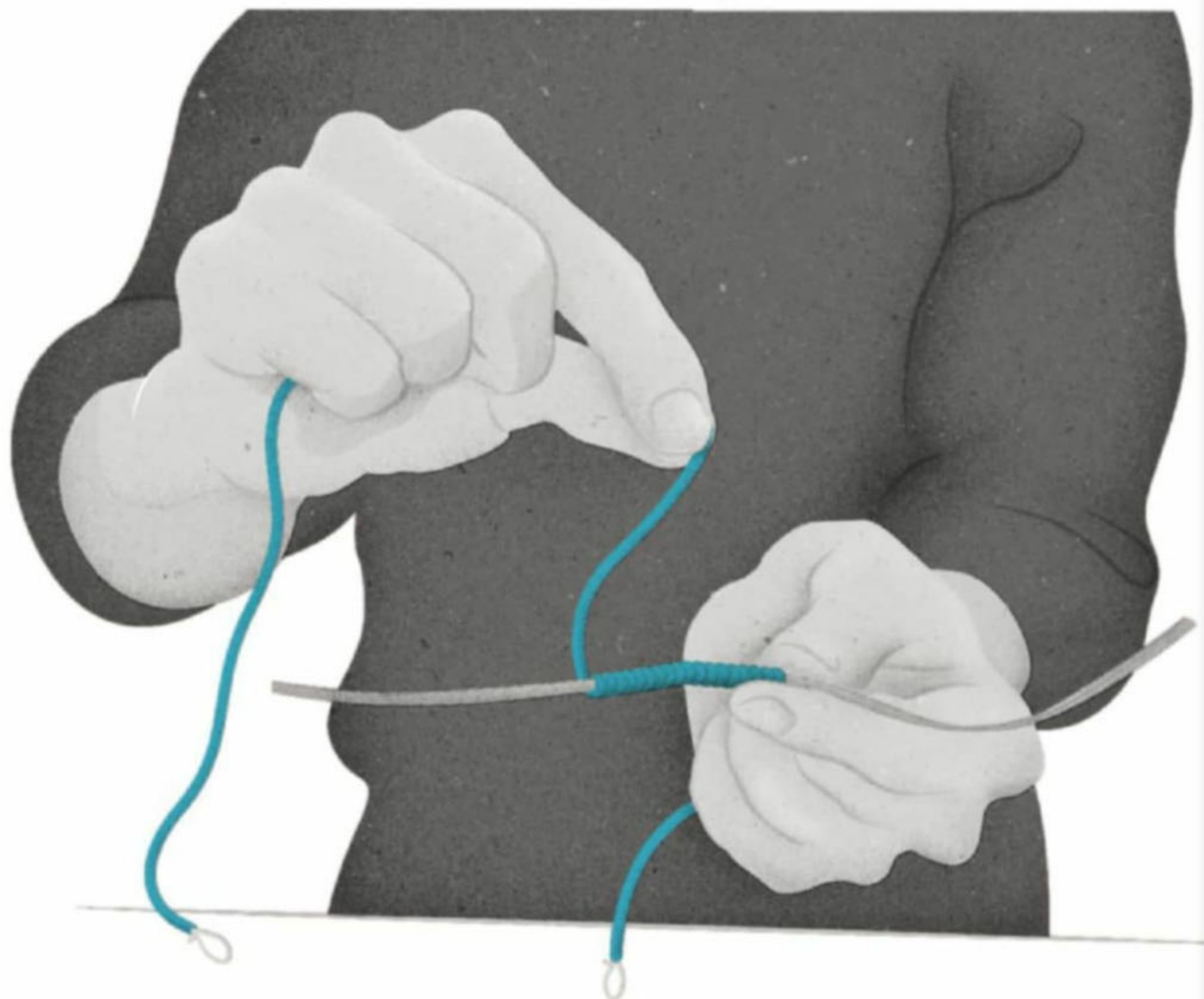
MAKE AN

ELECTRO

Ask an adult to help you – we

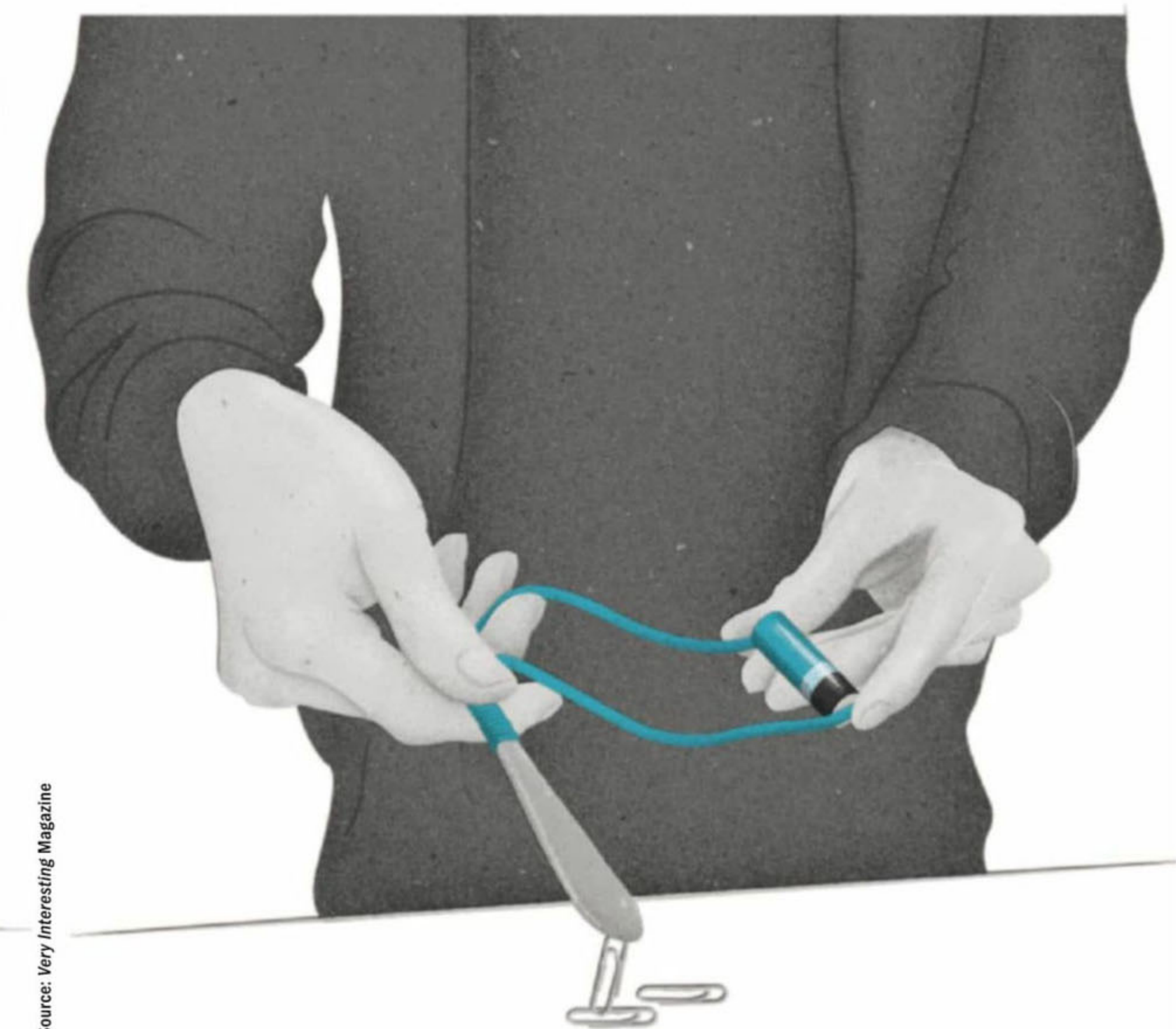
YOU WILL NEED:

- ☞ About 1m of insulated wire (you can get this from an unused power cable or phone charger)
- ☞ Wire strippers or scissors
- ☞ Stainless-steel dessert spoon or fork
- ☞ Sticky tape
- ☞ Battery (size AA, AAA or C will work)
- ☞ Paperclips (or drawing pins)



EM MAGNET

don't want any injuries please!



WHAT TO DO

1. Strip about 2cm of the insulation off both ends of the wire, using wire strippers or scissors.
2. Twist each uninsulated end of the wire firmly to bring together any loose, fine wires, making a thick braid of wire. Fold this in half and twist it into a flat loop at each end (this will make it easier to get a good contact with the battery terminals).
3. Starting about 10cm from one end of the wire, coil the wire tightly around the handle of your spoon/fork. Do not overlap the coils, and leave about 10cm of uncoiled wire at the other end.
4. Wrap sticky tape around the coils of wire to hold them in place.
5. Using the thumb and finger of one hand, press each end of the wire against opposite ends of the battery.
6. Using your other hand, hold the spoon or fork and use it to magnetically pick up paperclips or drawing pins.

WHAT'S HAPPENING?

Electromagnets are a particular type of magnet that only work when an electric current is passing through them. They rely on the fact that a movement of charged particles (in this case, electrons) creates a magnetic field. In fact, all magnetic fields arise from the movement of charge. Most objects are non-magnetic because the individual magnetic fields of the electrons moving around inside them are randomly aligned and cancel each other out.

When you connect the wire to the battery, electrons begin to flow in the same direction through the wire, and this generates a magnetic field around the wire. By coiling the wire around a stainless-steel core, you're creating a combined magnetic field in the wire and core, which is strong enough to pick up objects.

Electromagnets are useful because their magnetic fields can easily be controlled: the greater the current, the stronger the magnetic field. Increasing the number of coils also increases the magnetic field. This activity demonstrates that electricity and magnetism are essentially two aspects of the same phenomenon, called 'electromagnetism'.

YOUR QUESTIONS ANSWERED

We LOVE receiving your questions! Thank you to Munashe and McKayla, who asked some great ones this month



IS IT POSSIBLE FOR A BAR OF SOAP TO CONTAIN GERMS?

Asked by McKayla

A bar of soap can house some environmental germs, but studies have shown that they do not transmit bacteria. Way back in 1965, a study was done where scientists contaminated their hands with tonnes of bacteria and then washed their hands with a bar of soap. A second person then used the same bar, and they measured if the bacteria had been transferred. They concluded that bars of soap were not a health hazard. Further studies concluded similar results and, currently, according to the Centers for Disease Control and Prevention (cdc.gov), "Both bar and liquid soap work well to remove germs."



DO YOU REALLY BURN MORE ON A CLOUDY DAY THAN A SUNNY DAY?

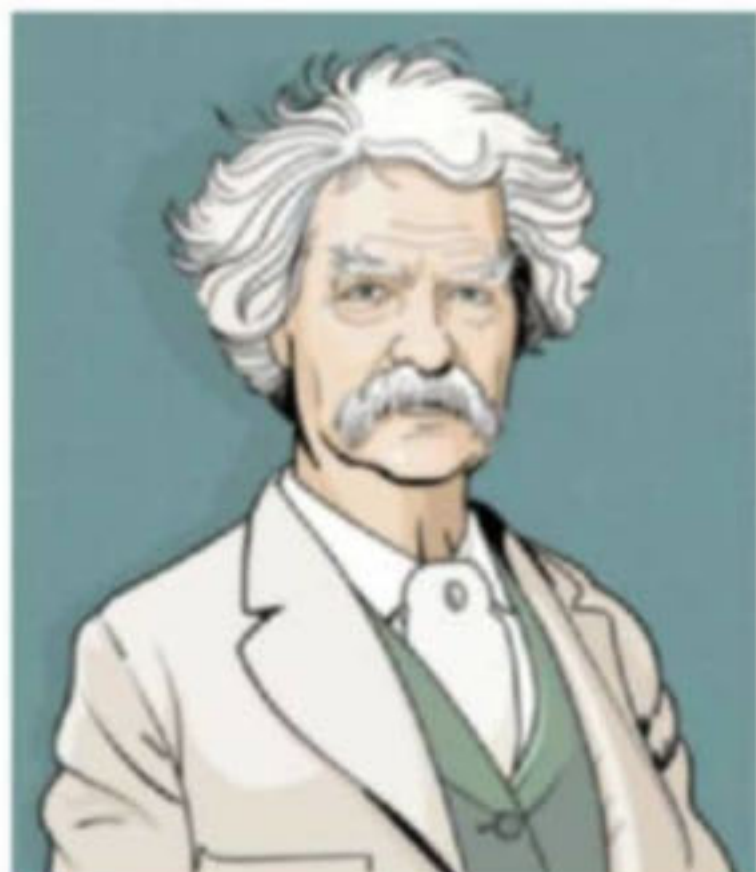
Asked by McKayla

There are claims that this is the case, and that clouds reflect the UV rays, making them more intense. One problem is that people tend to think they can't burn when it is overcast and are, therefore, less likely to apply sunscreen. But, according to the Skin Cancer Foundation, up to 80% of the sun's rays can pass through clouds. According to

CANSA, "Skin cancer is the most common cancer worldwide, and SA has one of the highest monitored ultraviolet (UV) levels in the world, resulting in one of the highest skin cancer rates globally." The sun's rays can reflect off surfaces and cause sunburn even when it's overcast. But the fact is that, no matter what the weather is like outside, we should always apply sunscreen.

"Twenty years from now, you will be more disappointed by the things that you didn't do than by the ones you did do. So throw off the bowlines. Sail away from the safe harbor. Catch the trade winds in your sails. Explore. Dream. Discover." – Mark Twain

WHO WAS MARK TWAIN?



Asked by Munashe

He was an American writer, born Samuel Langhorne Clemens in 1835. He brought us such literary classics as *The Adventures of Tom Sawyer* and *The Adventures of Huckleberry Finn*. He based these stories on real people and the lives they lived growing up in a town called Hannibal on the Mississippi River. One of his great passions was river boating, and he became a licensed river pilot. That is where he got his pen name (a made-up name authors sometimes write under) – the term 'mark twain' means the water is deep enough to sail, as it is two fathoms (3.6m) deep.



WHAT IS THE DIFFERENCE BETWEEN INDOOR PLANTS AND NORMAL OUTDOOR PLANTS? AND WHY DO INDOOR PLANTS DIE WHEN THEY ARE OUTSIDE?

Asked by McKayla

Indoor plants are usually species that prefer a 'controlled climate', whereas outdoor plants are far hardier and can withstand changes. Indoor plants generally do not get as big as outdoor ones, mostly because their growth is held back by the size of their container (pot). They also need less sunlight than outdoor plants – that is why they do not do well when placed outside in direct sunlight. One last difference to note is the amount of water they need – indoor plants rely on us for their water, whereas outdoor ones have ways and means of seeking and storing water themselves.



DO BATTERIES LAST LONGER IF STORED IN THE FREEZER?

Asked by McKayla

According to Energizer, storage in a refrigerator or freezer is not required or recommended for non-rechargeable batteries produced today: "Cold temperature storage can, in fact, harm batteries if condensation results in corroded contacts, or label or seal damage due to extreme temperature storage."

According to Panasonic, the ideal temperature for a battery is 15°C, but even more important is to ensure that they stay dry. Keeping batteries in the freezer will increase the risk of condensation, which can reduce the battery's lifespan.

HOW DOES IQ WORK AND WHAT DOES IT STAND FOR?



Asked by Munashe

IQ stands for 'intelligence quotient'. It is a number that indicates your reasoning and problem-solving abilities, as a measure of intelligence compared to the general population. It is ranked according to age. A score of over 140 indicates that you're a genius (or near that), 120-140 means you have 'superior intelligence',

and 90-109 indicates 'average intelligence'. The IQ test was first developed in 1904 in France to determine which children needed academic help. There are many people who criticise the use of IQ to indicate intelligence. There are a number of factors it doesn't take into account, and can also change over time.



WHY CAN'T BIRDS SEE GLASS?

Asked by McKayla

Windows cause millions of bird deaths every year. That's because birds cannot see glass. Worse than that, reflections of the sky or trees in the glass often make it look like a safe place to fly. The reason they cannot see it, is simple – we can't, either, but humans use visual cues to make sense of what we are seeing, whereas birds don't have the ability to do this. From the time we are young we learn to detect and avoid glass – we know that it is solid and see-through. We learn that window frames and handles signal that glass is present. Some birds do learn about certain pieces of glass in their immediate environment, and start to avoid them, but that doesn't mean they can see them. They will still fly into other glass. The sad reality is that, as we build more and more, there are more opportunities for birds to collide with glass.

Source: abcbirds.org

If you need answers to questions you've been carrying around, ask us! You can email us at vjunior@panorama.co.za and your questions may be answered in the magazine.



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Reading
time



"The more that you read, the more things you will know. The more you learn, the more places you'll go." - Dr. Seuss



THERE'S SOMETHING FOR THE WHOLE FAMILY!

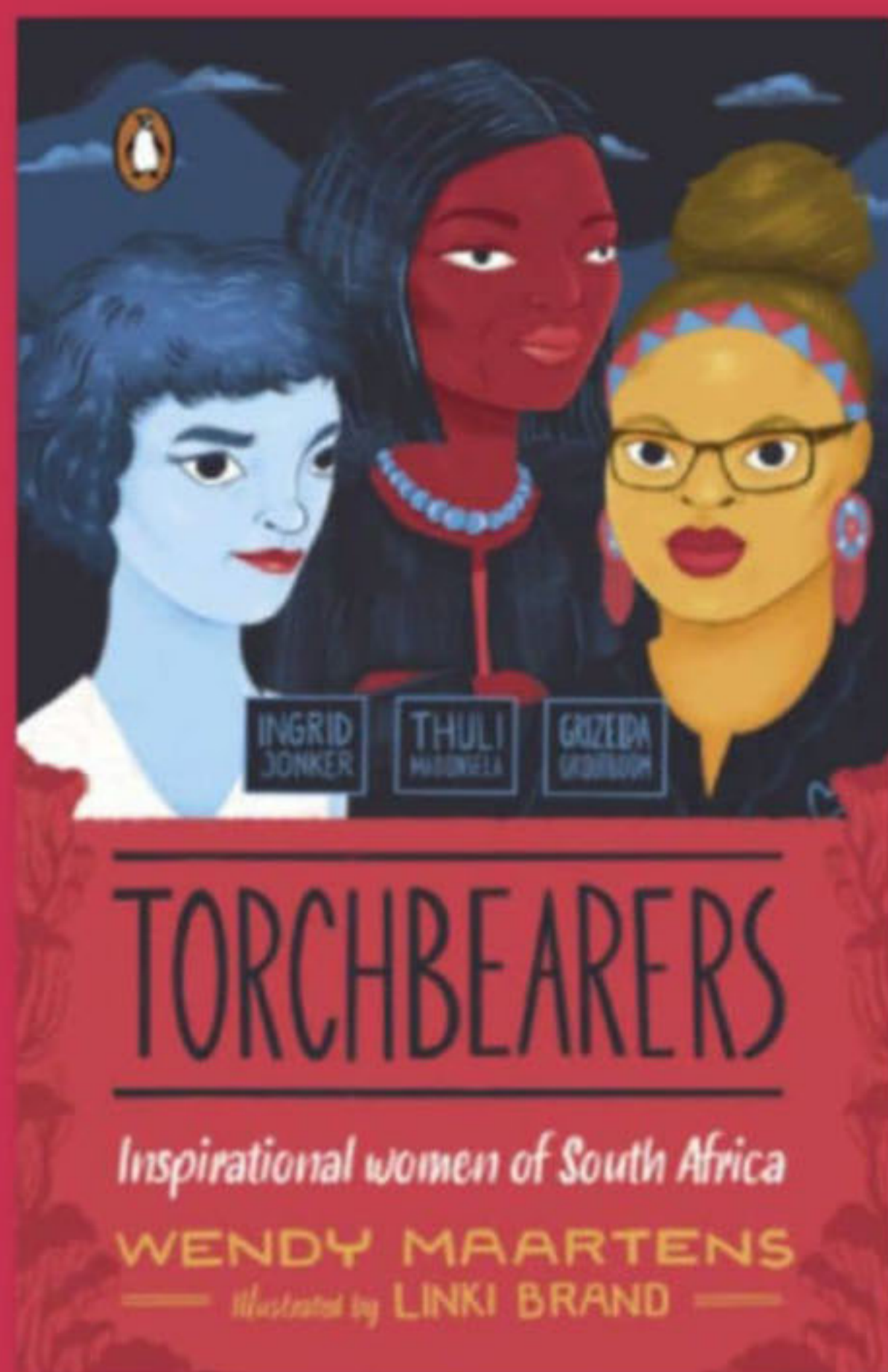
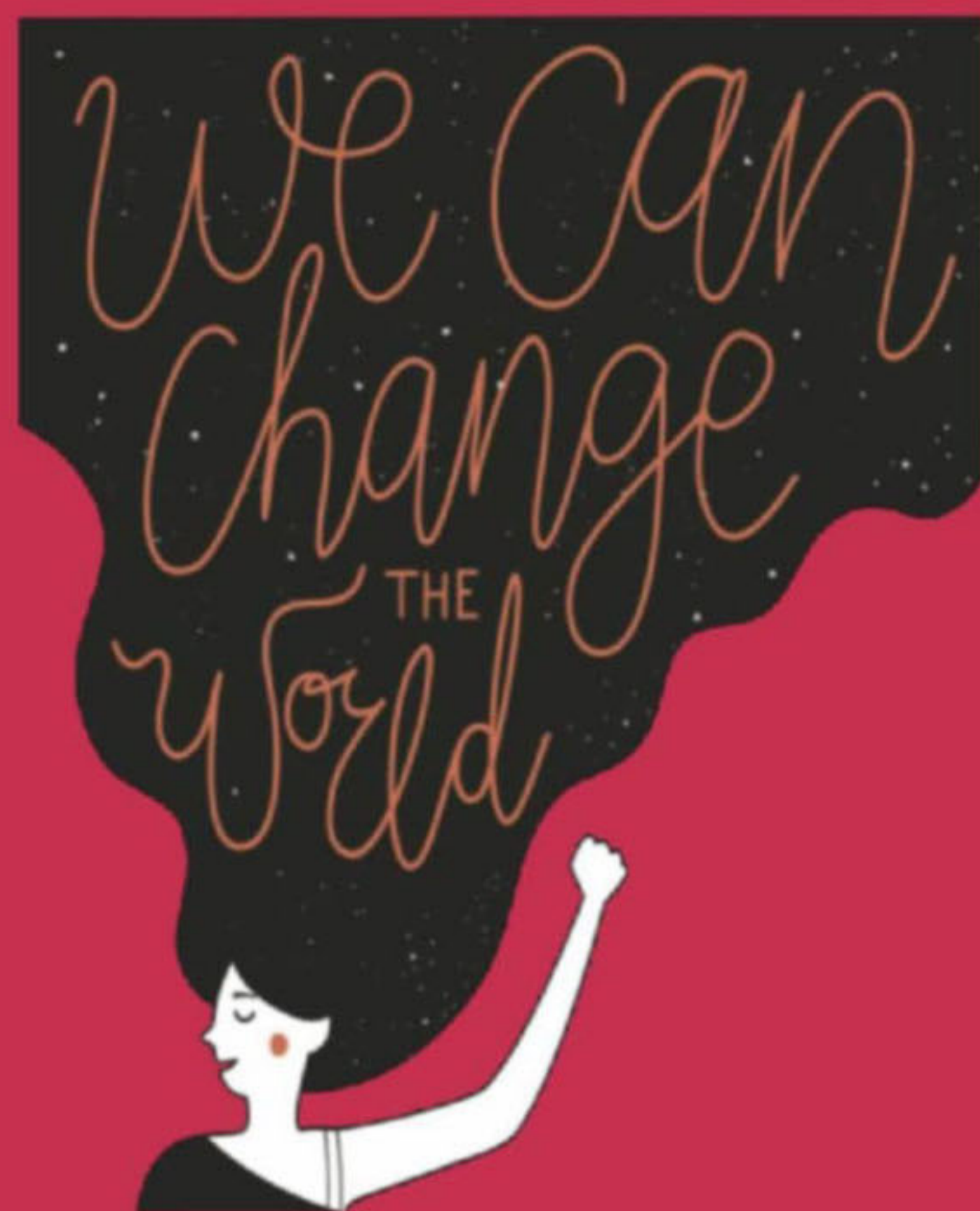
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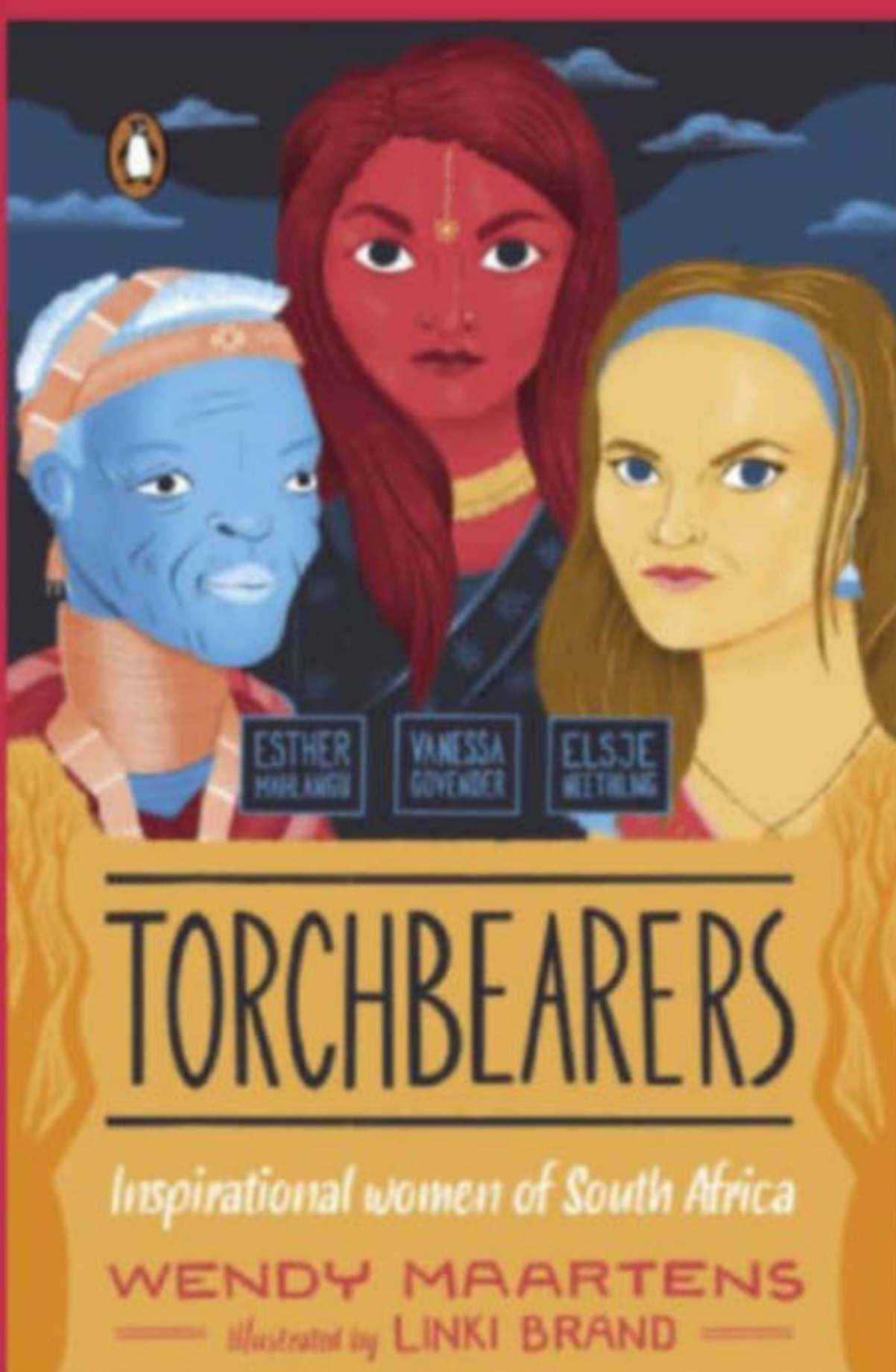
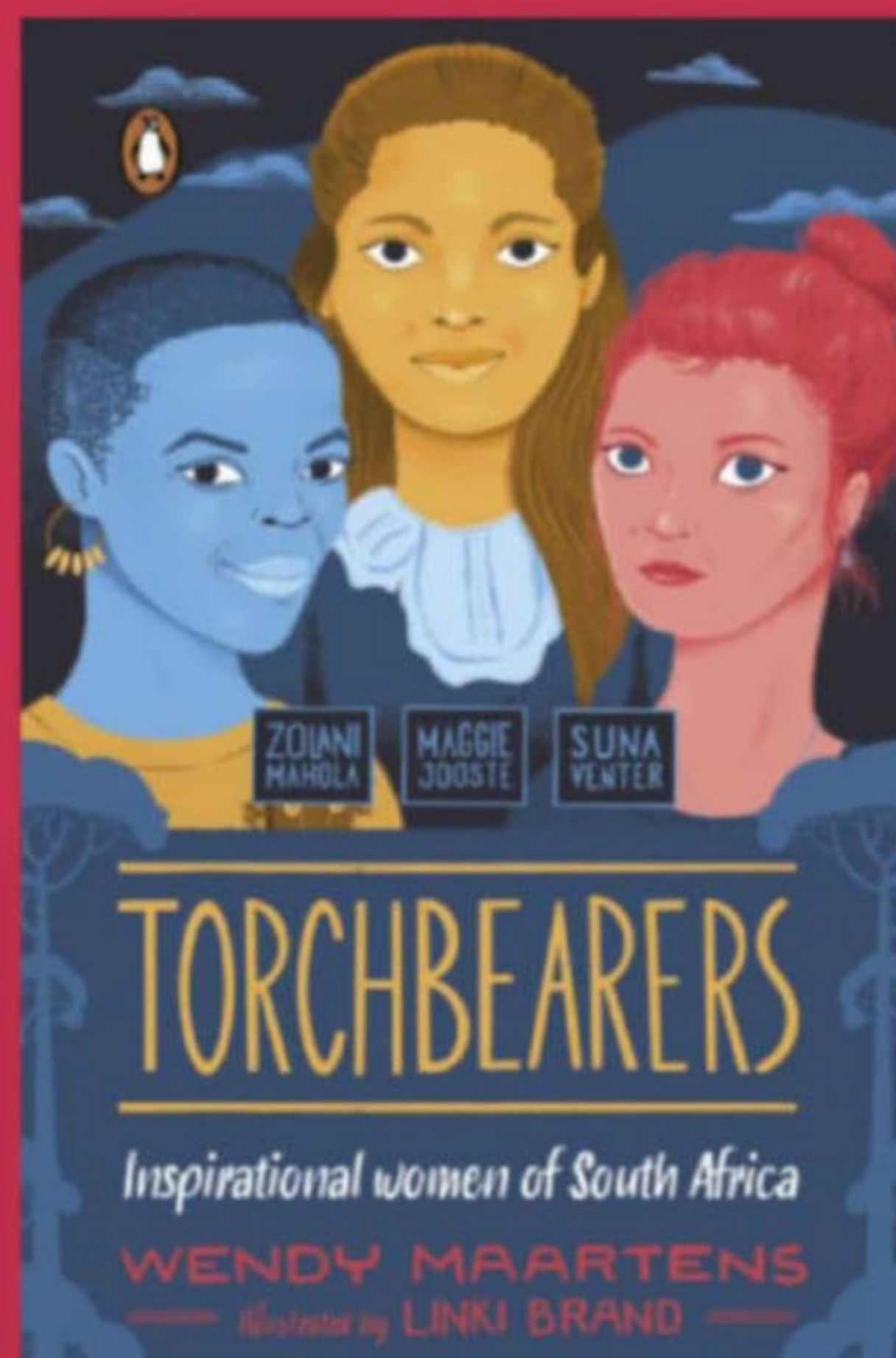
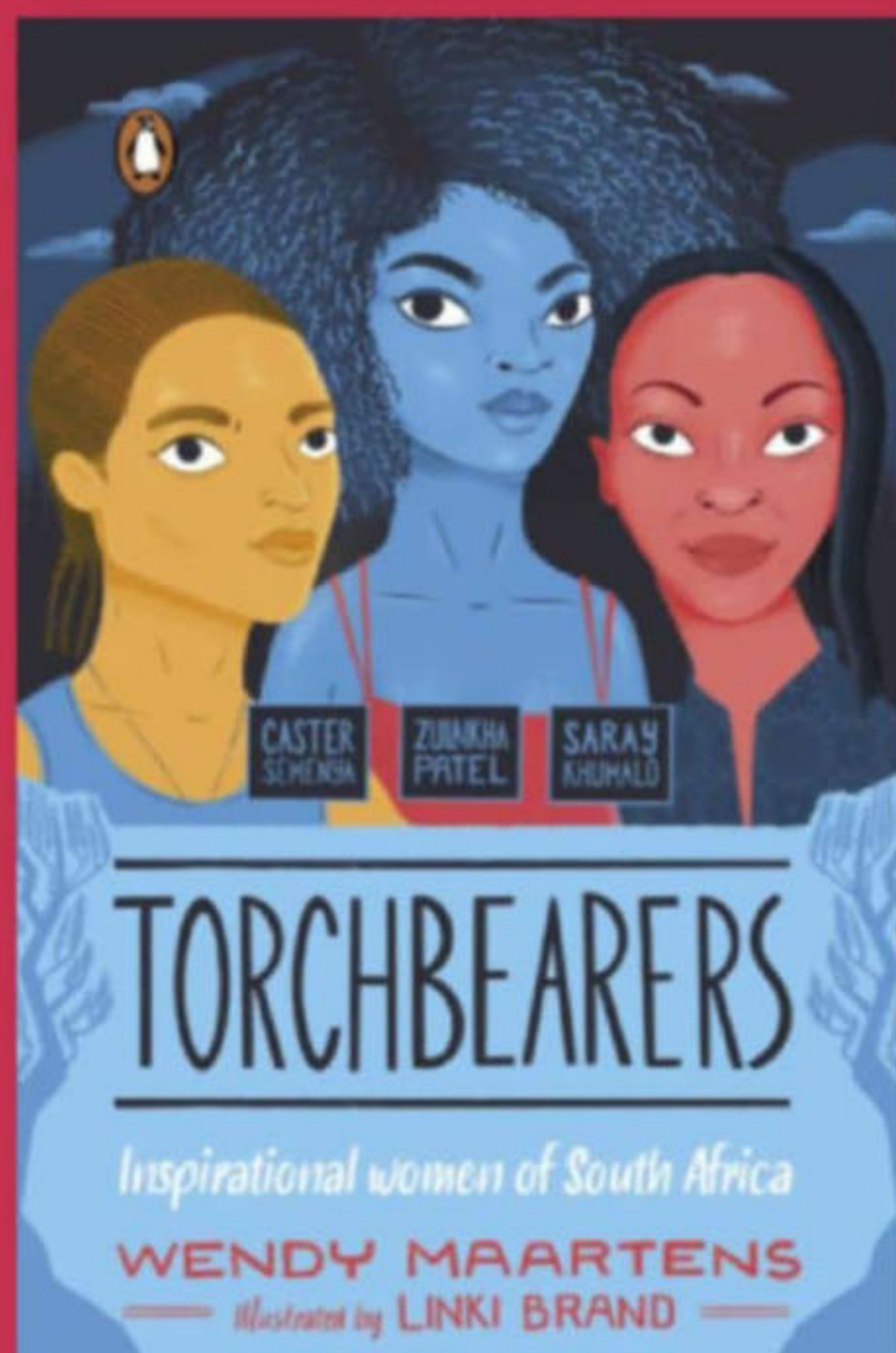
ONE OF THREE BOOK HAMPERS

Celebrate the amazing women of South Africa with the Torchbearers series for young readers



WHAT IS TORCHBEARERS: INSPIRATIONAL WOMEN OF SOUTH AFRICA ABOUT?

The women of South Africa are a great cause for celebration. This inspirational series by Wendy Maartens tells the stories of 12 women who deserve to be recognised and admired – from well-known women like Thuli Madonsela and Caster Semenya, to some unsung heroes children can aspire to be like. The books are colourfully illustrated by Linki Brand, and they are a great read for children aged nine to 12.



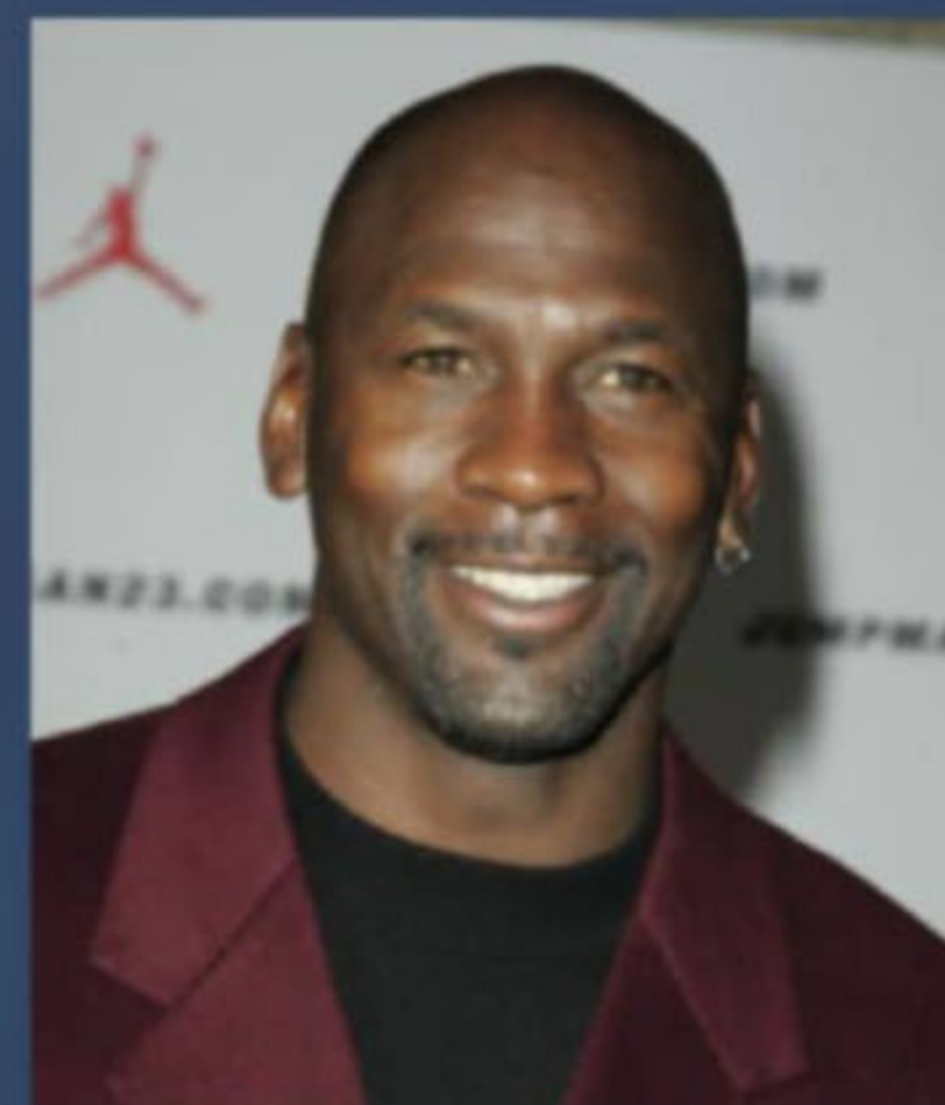
We have three sets of four books each up for grabs! To enter, simply tell us about a woman who has inspired you, and the reason why you admire her.

HOW TO ENTER:
Send an email with the words 'VI Junior Torchbearers' in the subject line to vjunior@panorama.co.za. Please include your name, age, a daytime delivery address and a daytime contact number, as well as your story about the woman who has inspired you. Entries close 31 July 2021.

10 COOL FACTS ABOUT MICHAEL JORDAN

Things you should know about this famous basketball pro and businessman

- 1** Michael Jordan was born in Brooklyn, New York, on 17 February 1963. His natural talent for basketball saw him crowned College Player of the Year and be selected for the US basketball team, which went on to win gold at the 1984 and 1992 Olympic Games.
- 2** In 1984, Jordan was signed up by the Chicago Bulls basketball team. He topped the NBA (National Basketball Association) scoring rankings for seven seasons in a row, averaging 33 points per game. In the 1986-87 season, he became only the second player in history to score 3,000 points in a single season.



1,072

The number of NBA games Jordan played.

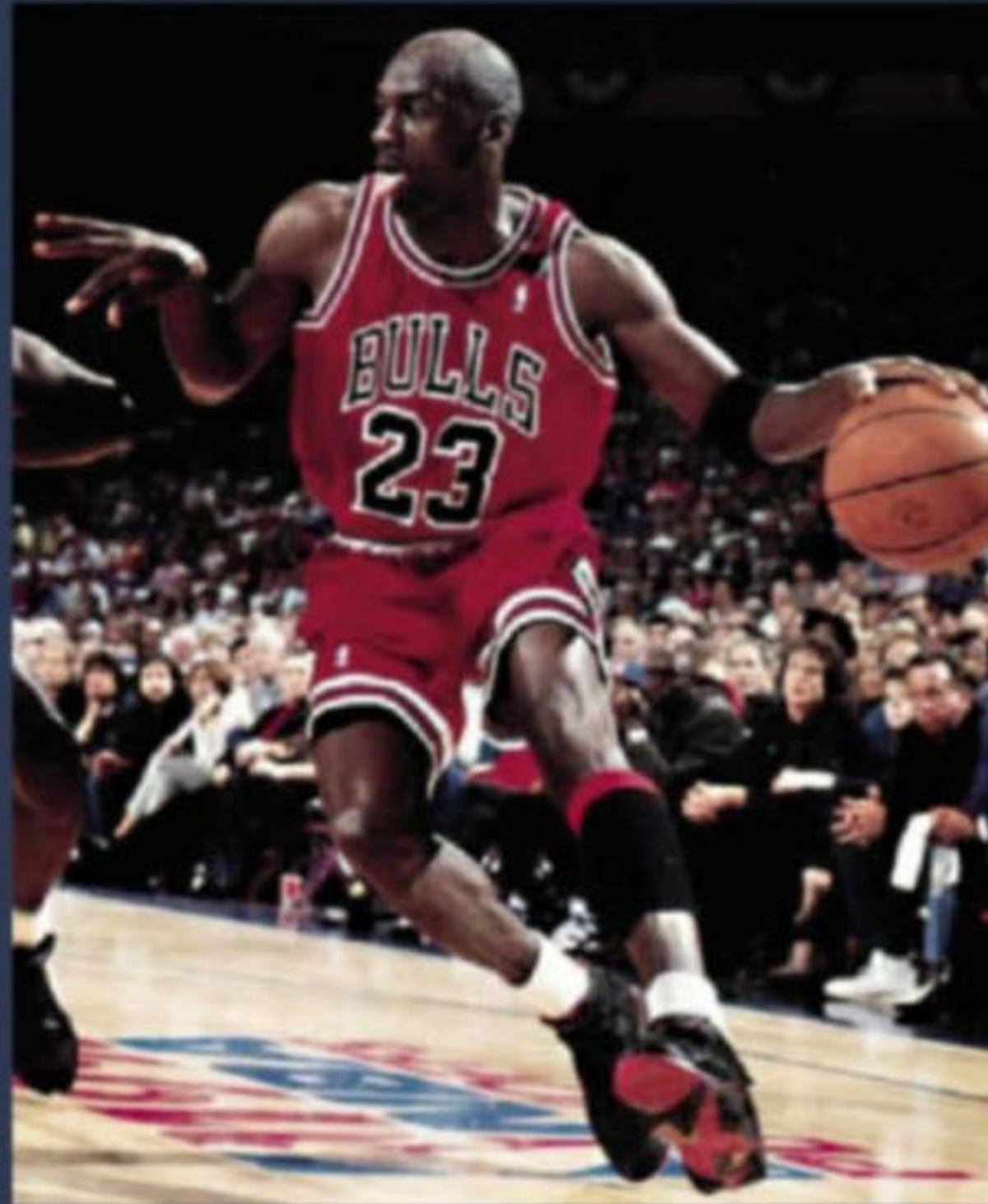
- 3** Jordan was named the NBA's Most Valuable Player five times! He was also nicknamed 'Air Jordan' because of his amazing jumping ability.
- 4** In 1993, Jordan took on a new challenge. He retired briefly from basketball and tried his hand at professional baseball. But, by 1995, he was back on the basketball court and led his team to a season record. He retired again in 1998.
- 5** In 2000, Jordan bought shares in the Washington Wizards team and, after serving as president of basketball operations, decided he wanted to return to the court. So, he did. His fans were thrilled. Jordan played until the end of the 2002-03 season and then retired for good.

DID YOU KNOW?

Jordan realised he wasn't quite cut out for a baseball career and, in March 1995, he announced his return to basketball with a two-word press release: "I'm back."

1.98m

Michael Jordan's height.



By Unknown author - El Gráfico, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=86281370>



USD\$1 billion

What Forbes estimated Jordan's net worth to be in 2018.

"You have to expect things of yourself before you can do them." - Michael Jordan

- 6** In 2006, Jordan bought shares in the Charlotte Hornets. In 2010, he became the majority owner, becoming the first former NBA player to do this.
- 7** Jordan earned millions outside of basketball through endorsements - most notably Air Jordan basketball shoes.
- 8** Jordan starred with Bugs Bunny and Daffy Duck in the half-animated, half-live-action 1996 film, *Space Jam*.
- 9** Jordan is a philanthropist (person who helps charities). In 2009, he became the 'Chief Wish Ambassador' for the Make-A-Wish Foundation; in 2017, he gifted USD\$7 million to build healthcare facilities in North Carolina; in 2018, he donated USD\$2 million to Hurricane Florence relief efforts; in 2019, he donated USD\$1 million to relief efforts in the Bahamas from Hurricane Dorian; and in 2020, he and his brand pledged USD\$2.5 million toward fighting black voter suppression.
- 10** Last year, Jordan and a partner announced they were starting a new NASCAR team.



A silhouette that is used for his Air Jordans.



32,292

The total number of points Jordan scored over his career.



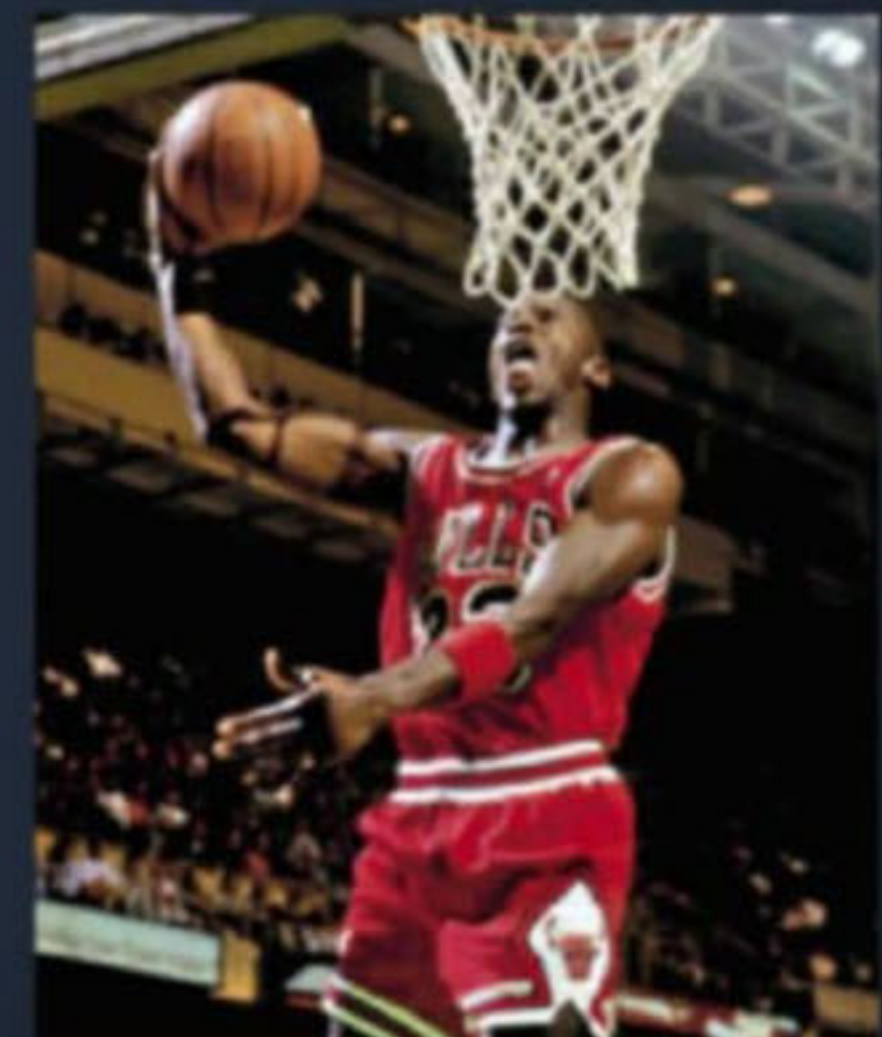
Wikipedia image with credit: By Pete Souza - <https://www.instagram.com/p/BNKNo4fDzcy/?taken-by=petesouza>, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=53480787>

30.12

The average number of points-per-game scored by Jordan over his career.

2016

The year Jordan was awarded the Presidential Medal of Freedom by President Barack Obama.



By Steve Lipofsky at basketballphoto.com, CC BY-SA 3.0, <https://commons.wikimedia.org/w/index.php?curid=1718870>

LET'S GET NOSEY



Learn how your body interprets different smells

HOW DOES SMELL WORK?

If you've ever stopped to smell the roses, a cocktail of hundreds of different odour molecules will have wafted through the air and up your nostrils. At the top of your nose, the molecules bind to special smell receptors on the surface of nerve cells, which send a signal to the brain's olfactory bulb, located just behind the bridge of the nose.

Humans have around 400 different smell receptor types, and one odour molecule may bind to many of them. Together, the odour molecules create a pattern of activation in the nerve cells that our brain interprets as a 'smell'.

DID YOU KNOW?

Loss of smell is one of the symptoms of COVID-19.

Luckily, in most cases, the sense of smell returns as the patient recovers.

WHY DO WE LIKE CERTAIN SMELLS, BUT NOT OTHERS?

Smells can warn us about danger – we're repelled by the smell of sewage and rotting food, for example. But according to smell expert Dr Andreas Keller from Rockefeller University, it's difficult to tell whether we're born with these preferences, or whether they're learnt. Context plays a big role.

Butyric acid is a chemical that contributes to the smell of Parmesan cheese, so it may smell repulsive or appetising, depending on the situation. The answer is also partly down to our DNA – the genes that code for our smell receptors can vary between people, so we don't all respond to odour molecules in the same way.

DID YOU KNOW?

Yogis (people who practice yoga) from India have been convinced for centuries that you can influence your body with your breathing. They believe that breathing through your right nostril will make you more active and alert and breathing through the left one makes you more relaxed.

Nerve tract

Jacobson's organ

Flavour

Olfactory

Olfactory region

10,000

The estimated number of different smells your nose can detect, though some studies claim that it is WAY more than that!

WHAT HAPPENS WHEN WE LOSE OUR SENSE OF SMELL?

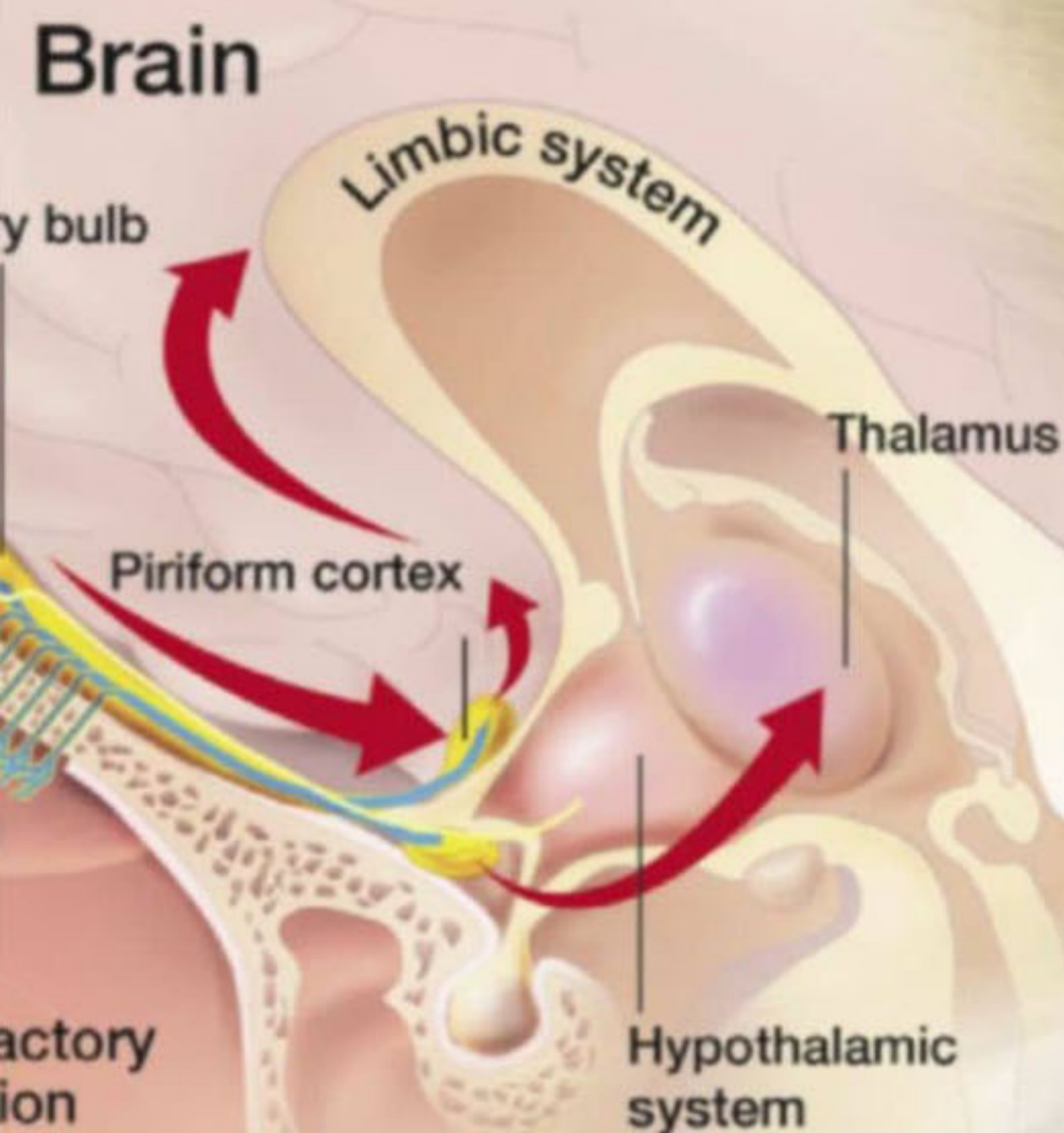
We all have at least one genetic 'blind spot' in our sense of smell, which means we simply can't detect certain odour molecules. One famous example is how only some people notice a strong odour in their urine after eating asparagus.

Anosmia – a complete loss of smell – can occur after a cold, sinus infection, or even a bump to the head. Anosmia impacts the flavour of food, but goes far beyond that – one anosmiac has described it as being like "living behind a pane of glass".

Luckily, anosmia isn't always permanent, and may recover naturally or through exercises like 'smell training', which uses distinctive smells, such as essential oils, to re-stimulate the olfactory system.

SMELL STEP-BY-STEP

1. Odour molecules float in the air. When they enter your nostrils, they reach the lining of your nasal cavity, called the olfactory epithelium.
2. Here, they bind to specialised receptor cells (olfactory receptor neurons). These are used to detect smells (they can detect thousands of different smells!).
3. The olfactory receptor neurons take info about the smell to the olfactory bulbs, which are found at the back of your nose and are actually part of your brain.
4. These messages now move to the olfactory area of the brain and send messages to various other parts of the brain. They help to trigger emotions and memories (like remembering the smell of Granny's chocolate chip biscuits as she baked them) and also help you form thoughts about the smell ('Yuck! That's vrot!').



Sniff, sniff...
Is that Parmesan
cheese?!



DID YOU KNOW?

Recent studies have shown that the African elephant has the strongest sense of smell in the animal kingdom. Scientists found them to have the greatest number of genes associated with the sense of smell, claiming that elephants can smell water up to 19.2km away!

MURAL, MURAL ON THE WALL...

George Town in the Malaysian state of Penang is home to these amazing, lifelike outdoor illustrations

WHAT IT'S ABOUT

George Town is steeped in history and is classed as a UNESCO World Heritage Site. It is known for its architecture, food, blend of cultures and its street art. The George Town Festival was first held in 2010 and has since become a major tourist attraction and one of the continent's top art festivals.

At the 2012 festival, street artist Ernest Zacharevic took to the walls to create these amazing murals, that are incredibly lifelike. He used locals as his inspiration, and what was left behind has now become one of the biggest reasons people visit the city.

It also started off a booming street art scene, making George Town a beauty to behold.

2012

The year in which Ernest Zacharevic held his solo art show, *Art is Rubbish Rubbish is Art*, in which he used reclaimed materials to create his art pieces.



1. Little Boy with a Pet Dinosaur.
2. The Boy and his Motorbike.
3. Little Children on a Bicycle.
4. Trishaw Man.
5. Little Girl in Blue.



DID YOU KNOW?

George Town also plays host to the Penang Hot Air Balloon Fiesta, which attracts around 200,000 visitors.



DID YOU KNOW?

Another popular form of art in George Town are wrought iron structures shaped as cartoon characters, that can be seen in the city centre.



10

6. *Orangutans in a Wheelbarrow* in Kuching, Sarawak, East Malaysia.
 7. This little fella is also part of the Kuching orangutan mural – seems he got left behind when the others got into the wheelbarrow!
 8. Ipoh wall art mural in Perak State, Malaysia.
 9. *Paper Plane* in Ipoh Old Town.
 10. *Boy on a Chair*.
 11. *Shopping cart kids*, completed in 2013 in Singapore.



11

DID YOU KNOW?

Zacharevic takes part in what is known as 'artivism' (art + activism), where he uses art to highlight an issue. His cause is palm oil production in South East Asia, which is causing massive deforestation and threatening the lives of highly endangered species, most notably orangutans.



8

9



TEST YOUR ART SKILLS!

Scan the QR code to check out how to turn the words 'Among us' into *Among Us* crewmates and pets. If you try it out, please send them in to vjunior@panorama.co.za – we'd love to see!

Oh, and while you're there, check out other Pin Koro drawing tutorials. The Harry Potter one is pretty amazing! Please always visit YouTube with a parent though.

2016

The year Zacharevic had to retouch his mural *Little Children on a Bicycle*, because it had been vandalised.

MEET LOVELY LERAI

She's breaking ground as the continent's first Nickelodeon presenter. Learn more about Leraï Rakoditsoe...

Congratulations on your new role! Can you tell us a bit more about what we can expect from *NickMusic*?

NickMusic is a fun-filled, family-friendly music show, playing fan favourites and up-and-coming tunes that both parents and kids can enjoy together after school. The proudly locally produced music show will feature music from African artists and across the world. We count down the coolest tunes topping music charts both locally and internationally. Each 30-minute episode includes five or six A-list, Top 10 music videos. It's all the freshest music, but it's family-friendly too. You could dance along to the likes of Costa Titch's *Areyeng*, DJ Stokie's *Superman*, or Omah Lay's *Lo Lo*. It's not just music - we also have a DID YOU KNOW? segment where you get to grill your mind and learn about music trivia and general knowledge. Whether you are young or old, *NickMusic* is the place to be for

WIN A **nickmusic**™ HAMPER, WORTH R5,000!

Celebrate the launch of Nick Music by entering to win one of two amazing hampers. Each one contains Nickelodeon branded items:

- ☑ Hard luggage case
- ☑ Puffer jacket
- ☑ Instax mini camera
- ☑ Instax accessories, including photo frames and album
- ☑ Volcano light-up sign board

To enter, simply tell us what your favourite song is! Send an email with the words 'VI Junior Music' to vjunior@panorama.co.za, and include your answer, your name, age and a daytime contact number. Entries close 31 July 2021.

“I aspire to be a strong female voice in Africa who addresses issues amongst the youth, as well as working towards the empowerment of women.”

family-friendly music. So, Mom, Dad and kids, put on your dancing shoes and catch all the music and entertainment on NickToons DStv Channel 308 at 16:25 CAT (Central Africa Time) or 15:25 WAT (Western Africa Time).

We hear you have a background in modelling and that you have been into drama since you were very young. What made you want to follow this career path?

Practice. It's one thing to have a naturally God-given talent and another to actually work on your craft and hone it. For six years, I spent every Saturday going to drama classes. Over time, I realised how much I was improving, to the point that it almost became second nature to me. I was competing at a national level and had been selected to represent the country multiple times. I became so used to achieving awards at school, and now I'm in the next phase of doing it professionally. TV presenting is an extension of performing, which I've always loved to do.

It is a bit challenging because I don't have a live audience whose energy I can feed off. It really gets me out of my comfort zone because I've got to channel my own energy and I get to share a fun, quirky side of myself that not many people get to see.

You are the first African presenter on Nickelodeon. Can you explain how you felt when you found out you had earned the role?

It's so surreal! I've always thought that only really special and amazing people make history. Nelson Mandela, Serena Williams, Oprah, Miriam Makeba, Trevor Noah - THOSE people have made history.

I definitely don't take it lightly either; we live in a world where firsts are very rare. It's 2021, everything has been done before or invented already, so to be the first on my continent, the continent that houses the world's youngest population and has the most opportunity for growth and innovation in the world, is amazing. It's also A LOT of responsibility. I've got so many young people watching me, and I have to be cognisant of what that stands for and what it brings.

Can you tell us how you view the importance of having African representation on children's TV?

Having grown up watching the channel myself, I know how important it is for a young mind to see someone like themselves on screen, as I never saw black faces on the screen. However, growing up, I started to see more and more faces of colour on TV. This goes to show that the world is moving in the right direction, where authentic African representation is really key. And to see my face on the channel is mind-blowing too.

What is your favourite type of music to jam to?

Pop music - I like anything that makes me feel good.

You are an executive at Girl Up Johannesburg. Can you tell us what Girl Up is about and why you wanted to be involved?

Girl Up Johannesburg falls under the international Girl Up brand and is housed under the United Nations Foundation. What I love about this campaign is that it allows

us the opportunity to assist adolescent girls with science and technology subjects. We are also advocating for women and GBV (gender-based violence) by raising funds for 1,000 refugee girls. When we launched the campaign, we were all in matric and it feels amazing to be part of young voices who want to make a difference. We're currently involved in the '1000 Girls Campaign', which has the goal of raising funds for hygiene and sanitary packages for 1,000 refugee girls in South Africa.

Can you describe Lerai in three words?

Authentic, hardworking, loving.

Do you get nervous at all when you're in front of the camera? If so, how do you calm your nerves?

Yes, in the beginning, but I am fine now. I had to make sure that I focused my energies on knowing my scripts well, to help calm my nerves.

What do you like to do for fun?

Cooking. I like to try out new recipes.

You have accomplished a lot at such a young age. What message do you have for young people who have big dreams, like yourself?

I realised my purpose from a very young age. It's my responsibility to continue walking in it. If God wants me to be there, I will be. My advice would be to stay true to yourself and what you love and keep working on that. You'll find that you discover your purpose along the way. The point is to START, not to have it all figured out. There's no secret formula; you've just got to keep going.



nickmusic

1. SUSPENSION BRIDGES

INVENTORS: SPIDERS

Spider webs are an inspiration in design. Suspended between two branches (or similar objects), they are incredibly strong, able to withstand strong wind and the impacts of quite large insects, and are under constant tension. Spiders start building with a Y-shaped structure that provides a core support for the web. Then they incorporate triangular shapes, criss-crosses and spiral structures to strengthen the web.

DID YOU KNOW?

Some tarantulas can fling little hairs (which cause irritation) at potential threats, similar to the way in which a porcupine throws quills at his enemies.



5 ANIMAL INVENTORS

So we think humans are geniuses. Not quite. It seems that nature has beaten us to the punch in many aspects

2. INCUBATORS

INVENTORS: BEES

All the bees in a hive have specific jobs. Recent research has shown that the hive also contains 'heater' bees. It's their job to maintain the temperature of the nest. Interestingly, temperature determines what type of bees the pupae will become. If a hive gets too hot, heater bees will flap their wings to bring the temperature down. If it gets too cold, they flex muscles that would normally move their wings and, in doing so, increase their body temperature.



DID YOU KNOW?

Incubators were first used to help premature babies (those who are born early) in 1880, when a French doctor saw how warming chambers worked for poultry at the Paris Zoo. He made similar ones for babies he was looking after and saved countless babies who were battling with thermoregulation (maintaining their core temperature).



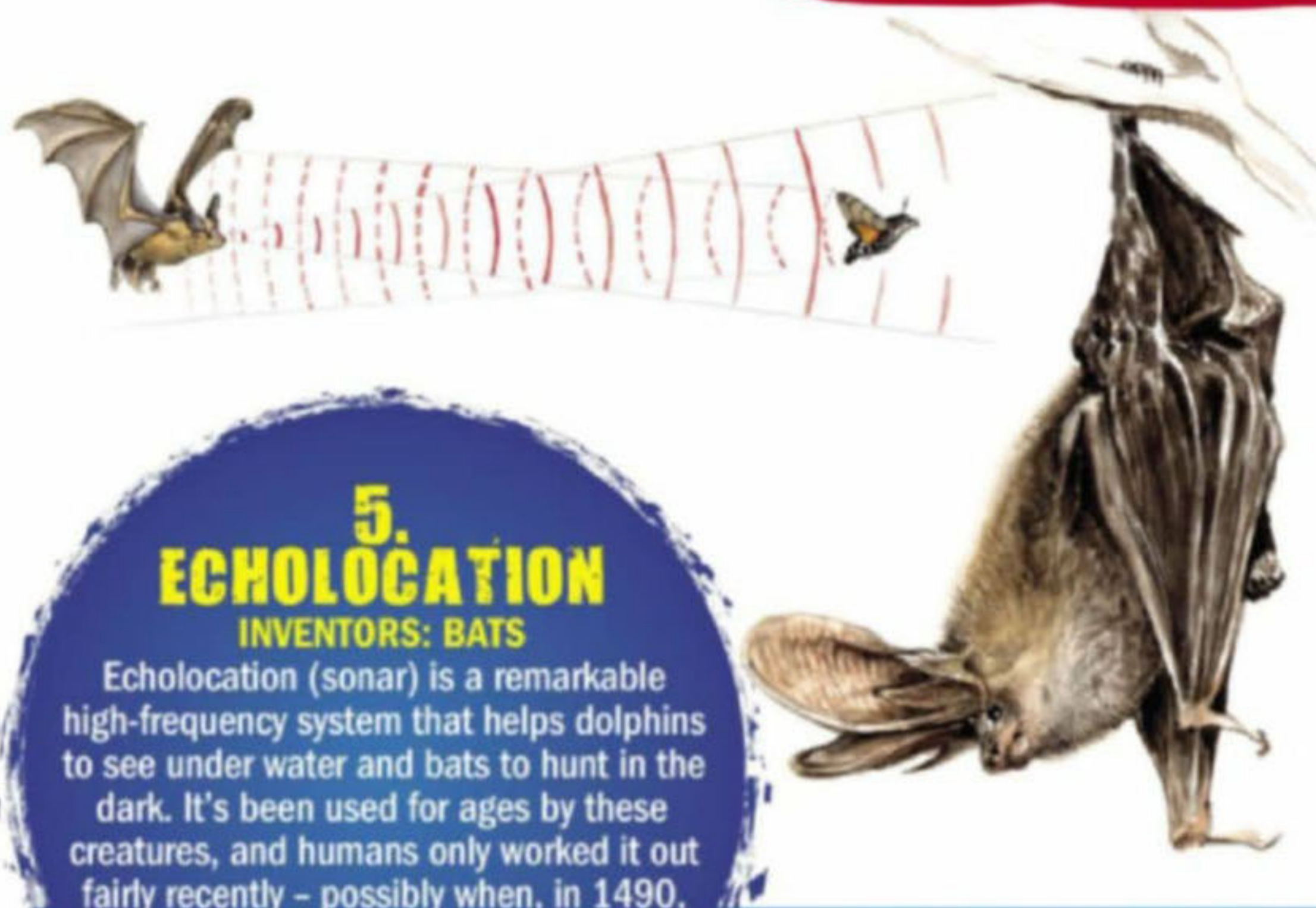
Sources: Brainainment magazine, Smithsonian Stories si.edu/stories, columbiasurgery.org, sciencedirect.com



3. SKYSCRAPERS

INVENTORS: TERMITES

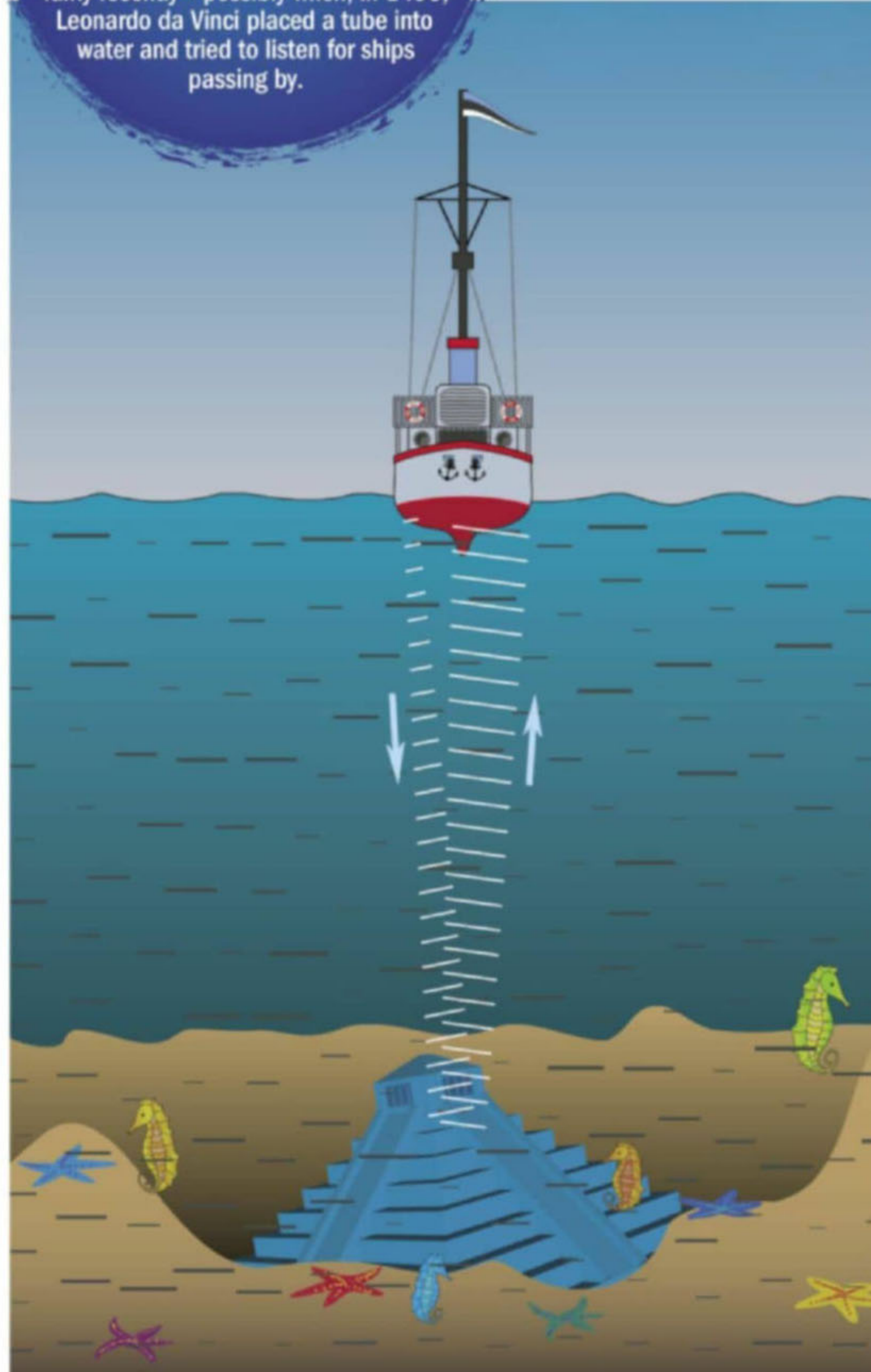
These little insects build some of the most complex structures in the world, constructing enormous mounds that reach heights of up to 8 or 9m. They also have added extras like chimneys, ridges and pinnacles (high, pointed pieces).



5. ECHOLOCAATION

INVENTORS: BATS

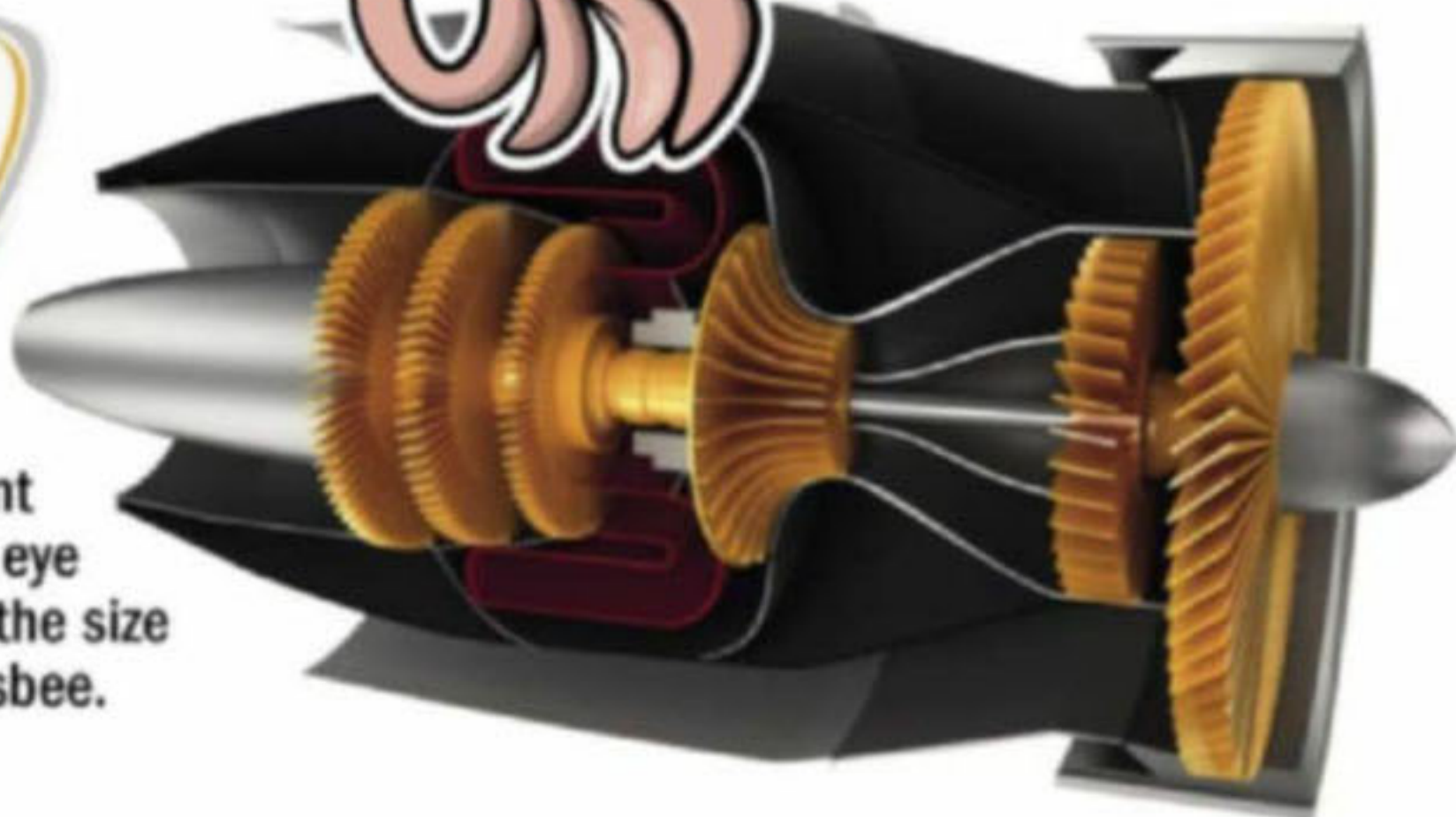
Echolocation (sonar) is a remarkable high-frequency system that helps dolphins to see under water and bats to hunt in the dark. It's been used for ages by these creatures, and humans only worked it out fairly recently - possibly when, in 1490, Leonardo da Vinci placed a tube into water and tried to listen for ships passing by.



4. JET PROPULSION

INVENTOR: SQUID

Squid are some of the fastest marine invertebrates, using jet propulsion to swim more than 40km/h in short bursts. They perfected the art of jet propulsion to make a quick getaway. Water flows in through an opening near the head, over the gills and through the mantle cavity (the main body mass is inside this cavity). The mantle seals off all openings, excluding the funnel, and the thick muscle walls then contract, squeezing water out of the narrow funnel, propelling the squid forward at speed.



DID YOU KNOW?

The giant squid's eye can be the size of a Frisbee.

CHEW ON THIS!

In this first article in our new series about well-known South African brands, we look at how Chappies came to be

Written by Claire Rencken



Who doesn't know Chappies? With its characteristic yellow wrapper with the blue and red stripes, and the chipmunk, this distinctive brand has been the bubblegum of choice for youngsters in South Africa for decades.

HOW DID IT ALL START?

Arthur Ginsburg created Chappies in the late 1940s. After finishing high school, he started working at the Chapelat Sweet Factory, which was in Troyeville (in Joburg). He became the company's cost accountant while studying at Wits University at night, to complete his BCom degree. By the early 1950s, he had been made head of marketing and sales at Chapelat.

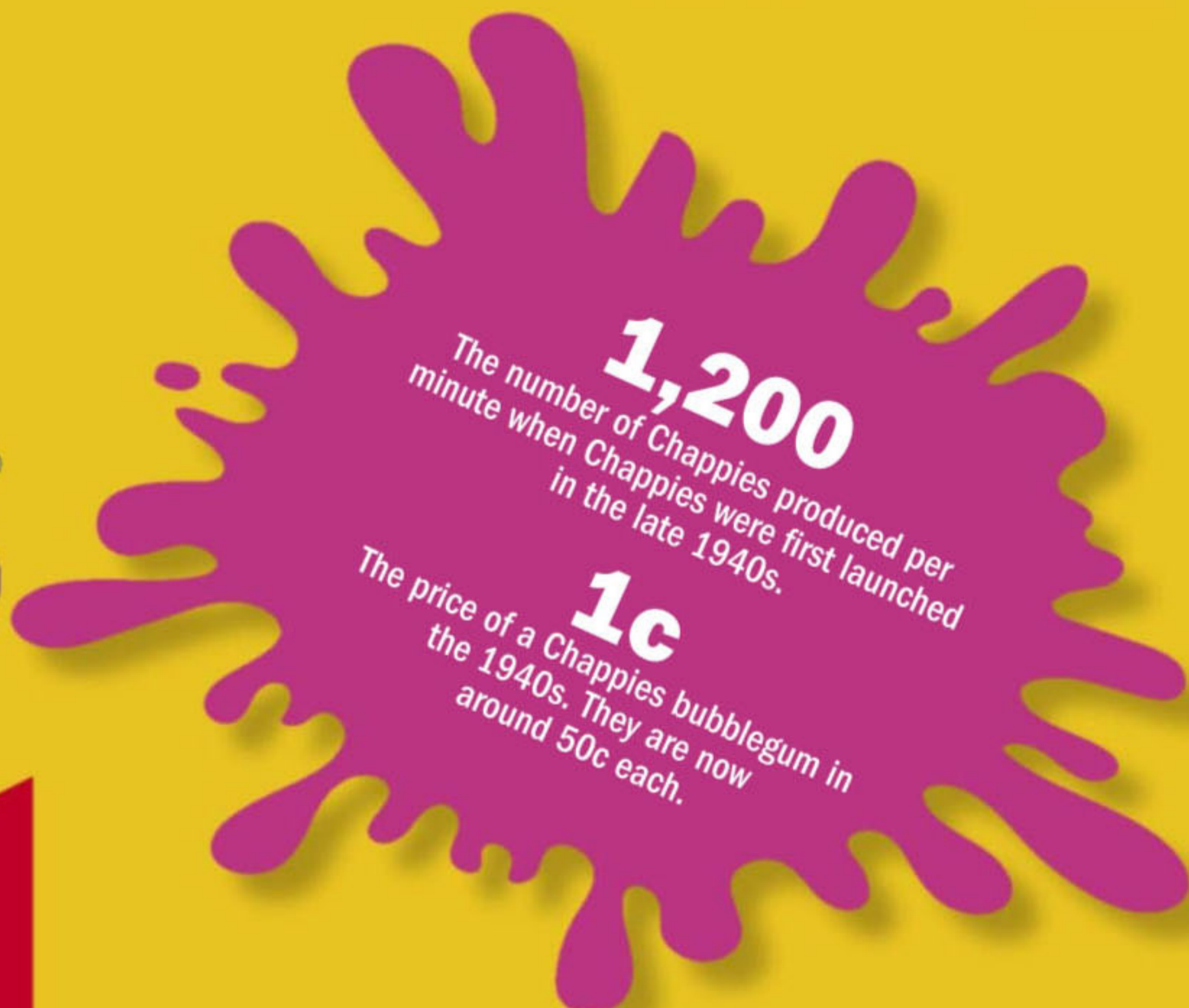
Chapelat produced a range of confectionery (sweets and chocolates). Their major customer was OK Bazaars (now Shoprite Checkers). OK then bought another confectionery supplier and dropped Chapelat, who then needed a new product and a new business. Mr Ginsburg came up with the bubblegum brand, which he named after the nickname of the factory.



DID YOU KNOW? 001

ORIGINALLY, CHAPPIES CAME IN FIVE FLAVOURS: LEMON, ORANGE, STRAWBERRY, CHERRY AND PINEAPPLE. TODAY, THE FLAVOURS ARE SPEARMINT, ASSORTED FRUIT, WATERMELON, GRAPE AND COOL CHERRY.





1,200

The number of Chappies produced per minute when Chappies were first launched in the late 1940s.

1c

The price of a Chappies bubblegum in the 1940s. They are now around 50c each.

MAKING THE BRAND FAMOUS

Mr Ginsburg turned out to be quite the marketing and advertising guru. To make the brand more appealing to kids, he added the famous 'Did you know?' facts. People growing up in the '50s and '60s still remember these – just ask your gran or grandpa! Today, the 'Did you know?' facts are still printed on the inside of each bubblegum wrapper.

Mr Ginsburg was also the first person who took advertising space in *The Sunday Times* magazine in the form of a cartoon. Every week, a Chappies cartoon ran in the magazine. The cartoons were simple, but effective – for example, a hot air balloon or a submarine sprung a leak, and it was plugged with Chappies.

Occasionally, gimmicky versions of the brand were produced – like a Beatles bubblegum with pictures of the band, or a Donald Duck bubblegum.

SOME EXAMPLES OF CHAPPIES 'DID-YOU-KNOWS':

- 508:** Even if 75% of the human liver is removed, it can grow back to its original size.
- 509:** Every year in Sweden, a hotel is built out of ice and occupied until it melts.
- 535:** Squid communicate with one another by changing the colour of their bodies.
- 537:** Strawberries have more vitamin C by weight than oranges.
- 543:** The first computer programmer was a woman called Ada Lovelace.



DID YOU KNOW? 002
 CHAPPIES IS ROUGHLY THE SAME AGE AS YOUR GRANDPARENTS... IT'S OVER 70 YEARS OLD!



DID YOU KNOW? 003
 CHAPPIES GOT THEIR NAME FROM THE FACTORY IN WHICH THEY WERE FIRST PRODUCED – CHAPELAT.

THE MORE YOU CHEW, THE MORE YOU LEARN!

The first set of 'Did you know?' facts was sourced from the 'Three Wise Men' team on the quiz show *Test the Team*, which aired on what is now Springbok Radio. Chappies later approached Wits University for lists of interesting facts. Between 5,000 and 6,000 facts were collected during those first few years, when questions were used more than once.

More recently, when the facts needed a bit of a refresher, a campaign to crowd-source new facts from the SA public was created. Fans were able to submit their facts through the Chappies social media pages and, in total, over 50,000 facts were submitted. These were whittled down to a select few, through a rigorous fact-checking process.

HOW IS CHAPPIES MADE?

A bubblegum base – which comes in big, greyish lumps – is heated and then put into a large metal container to be mixed. Flavourants and colourants are added, as well as glucose and sugar. The glucose, which is made from mealies, helps to keep the sugar in a liquid state, as well as giving the chewer a bit of energy.

From here, the bubblegum goes through an extruder (a machine that forces it out through a mould) and comes out in long strips. These are then sent through cut-and-wrap machines. The gum is wrapped in waxed paper so that it doesn't stick to the wrapper.

10 COOL THINGS ABOUT THE CAPE DWARF CHAMELEON

This little colour-changing reptile is proudly South African

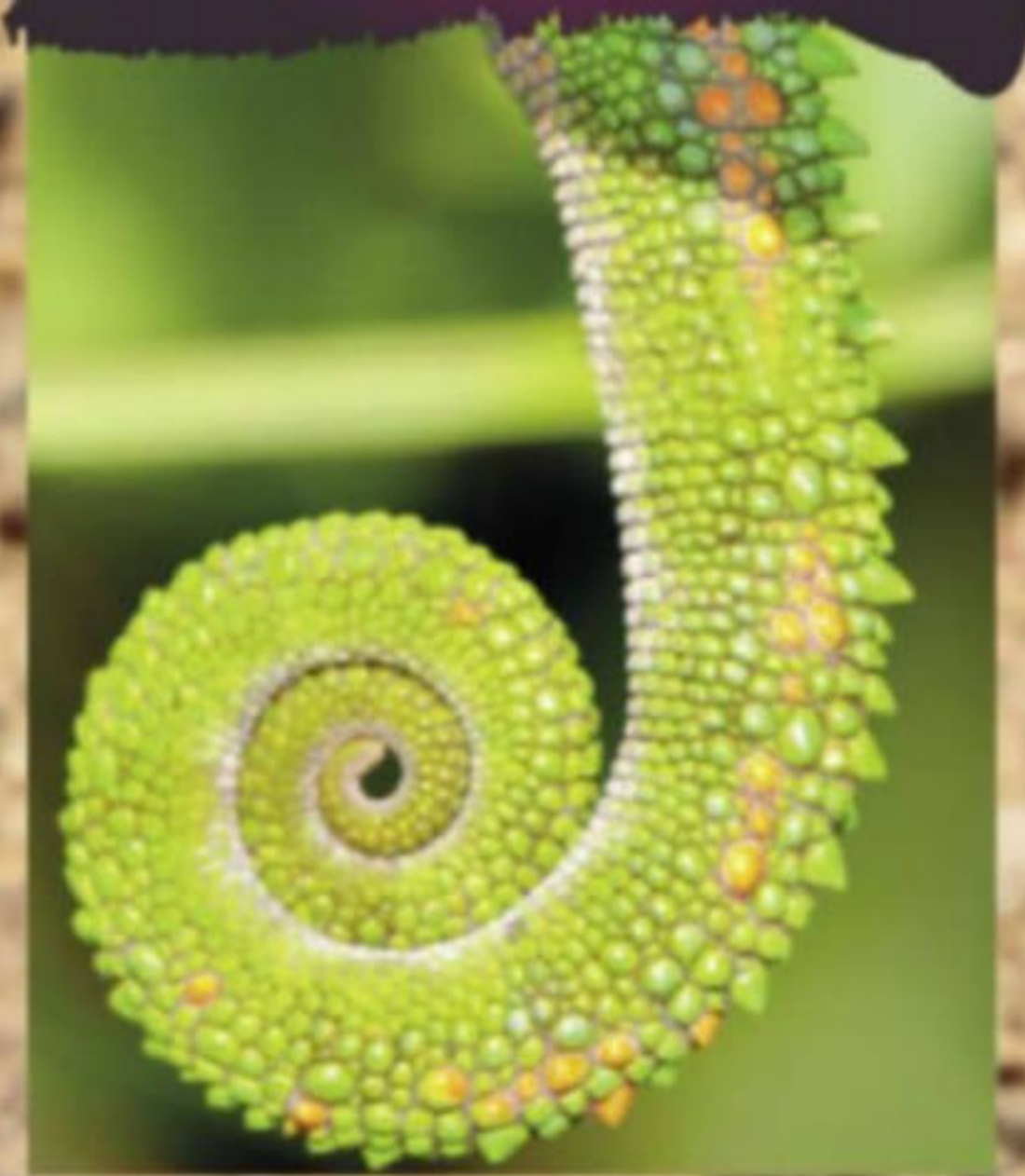
1. WINELANDS

The Cape dwarf chameleon can be found around the Cape Town area in the Western Cape, and is native to South Africa. This chameleon enjoys habitats where they have plenty of hiding places in bushy scrubs and trees. Therefore, they can be found in bushveld areas, urban gardens and often in the Cape winelands.



5. REPTILE AND LIZARD

Chameleons are reptiles, and the Cape dwarf chameleon is part of a small group of chameleons endemic to South Africa. Being the largest of the group, the Cape dwarf is one of 13 other species found in southern Africa. They may look similar, but each species is different and lives in different areas. Chameleons are also part of the family of tree-dwelling lizards. Small granular scales cover their entire body.



2. SLOW FOOT

The scientific name for the Cape dwarf is *Bradypodion pumilum*. 'Bradypodion' is taken from the Greek word meaning 'slow foot', describing the slow movement of the chameleon.

4. GET A GRIP

Chameleons have feet that are perfectly engineered for climbing stems and branches. Each foot has five toes and at the end of each tow is a tiny claw, which aids grip as he moves along the branches.

3. THOSE EYES

They have bulging eyes that can look in different directions at the same time. A chameleon can rotate his eyes to see 360° around his body. The chameleon has good eyesight and is able to see small prey over 5 to 10m away.



6. LOOOOONG TONGUE

The Cape dwarf chameleon has an exceptionally long tongue and can grab a meal from quite a distance. His tongue is twice the length of his body, and he can shoot it quickly out of his mouth to grab bugs, crickets, flies and other insects.

7. PRETTY CREST

An adult Cape dwarf chameleon is about 15cm in length, and the females are slightly larger than the males. Both males and females sport a nifty crest of spines called tubercles along their back and down their tails. Another crest is also found hanging from the throat. Chameleons have a prehensile tail, meaning it can be used as a fifth limb, assisting with climbing and balance.

8. ROCK-A-BYE BABY

These chameleons are ovoviviparous, meaning that females don't lay eggs but they develop inside her body. Up to 12 babies may be born in a litter, and they are less than 5cm in length. They take about a minute to break out of the soft membrane that covers their bodies, and are then instantly able to care for themselves. Babies shed their skin every few weeks as they grow and adults shed every four months or so.



9. PIGMENTS

Chameleons have colour pigments in their bodies. Cells which produce these pigments lie in different layers of the chameleon's skin. Upper layers have red and yellow pigments, while the lower layers have blue and green. The darkest colours are found in the lowest layer. As the brain senses changes, hormones are released and tell pigment-bearing cells to sink or enlarge. The pigments then mix, causing a colour change on the chameleon's outer skin.

10. CHANGING COLOURS

Contrary to popular belief, chameleons don't turn the colour of the object they are sitting on. Ultraviolet light, changes in temperature and mood cause chameleons to change their colour. The chameleon can't control his colour changes - they're involuntary and controlled by hormones. Scientists now believe that some species of chameleon may actually use the colour change to communicate with each other.

Keep an eye out for me - I'm so tiny!



GET IT NOW!

For more cool articles about animals, be sure you get your copy of *Animaltalk* magazine, on sale now at leading retailers or www.coolmags.co.za.

Hiding again?



Thunderstorms, fireworks, vet visits or even just staying at home alone can be scary...

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Available through all major veterinary practices, vet shops, pet online stores and pet shops.



HOW SHOULD I KEEP CLEAN?

Bath or shower? Shower gel or soap? Find out here...

**DON'T WASH
WE'RE JOKING.
DON'T DO
THIS!**

WASH



WASH BODY
EVERY DAY



WASH HAIR
EVERY 3 DAYS

***TAKE A BATH**

A study at the University of Freiburg in 2018 concluded that a warm bath twice a week is better than physical exercise for fighting depression.

****SWITCH TO SOAP**

Shower gel requires five times more energy than soap to produce, and the packaging it comes in uses 20 times more energy to manufacture.

*****TURN IT DOWN**

As well as stripping more of your skin's natural oils, a very hot shower brings blood to the skin's surface, which might make you itchy. This encourages you to scratch your scalp when the skin has lost the oils that keep it flexible, potentially leading to infected scratches.



13
MINUTES
OR LESS



A BATH USES THE SAME AMOUNT OF WATER AS A 13-MIN SHOWER = 140 LITRES OF WATER = 70 TWO-LITRE COKE BOTTLES

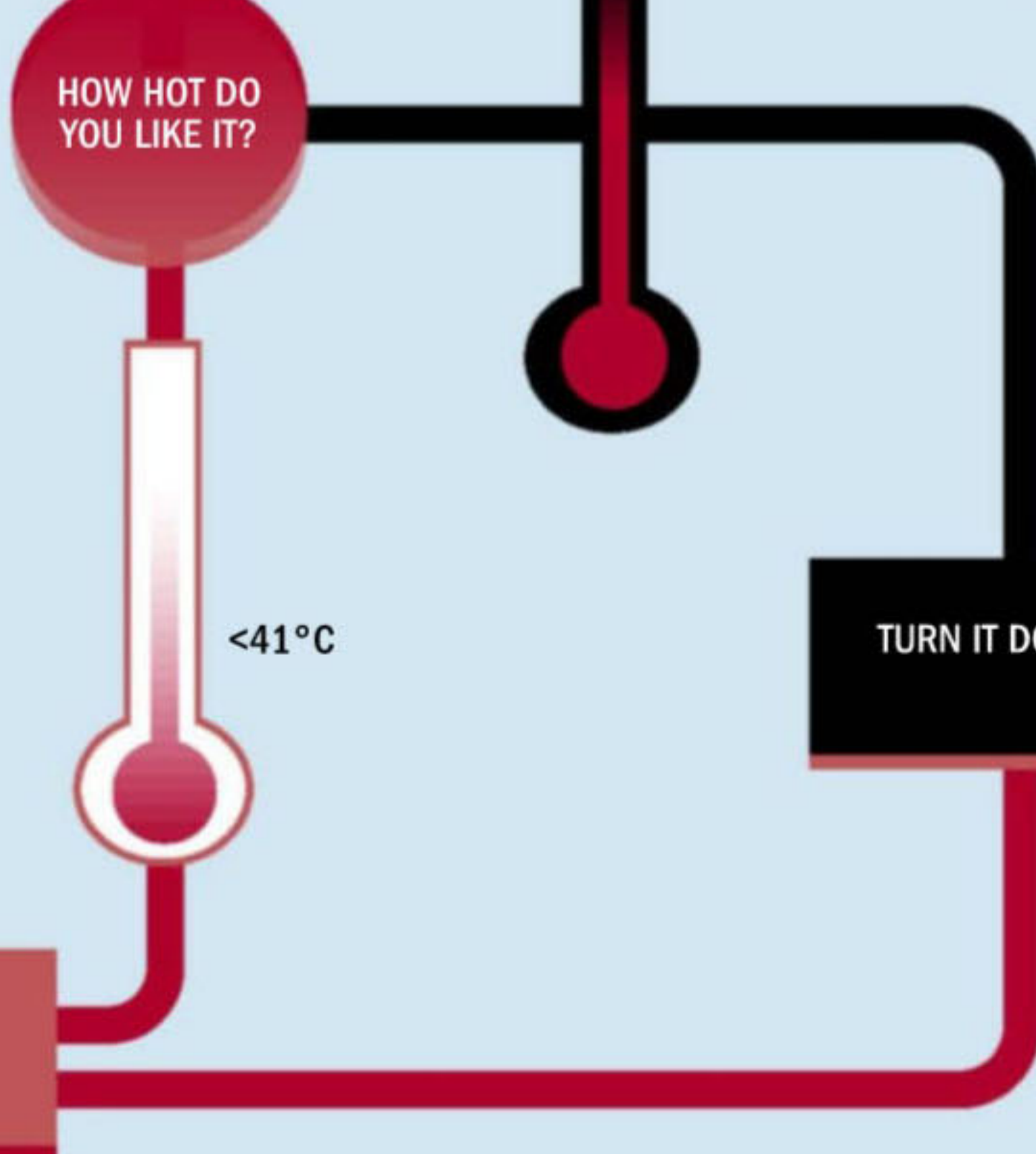


YES



WE USE SIX TIMES MORE SHOWER GEL THAN SOAP TO GET CLEAN

SWITCH TO SOAP**



Can a bar of soap carry germs? Find out on page 20.



Source: Very Interesting magazine. Images: Getty Images, Acute Graphics, Dan Brightw

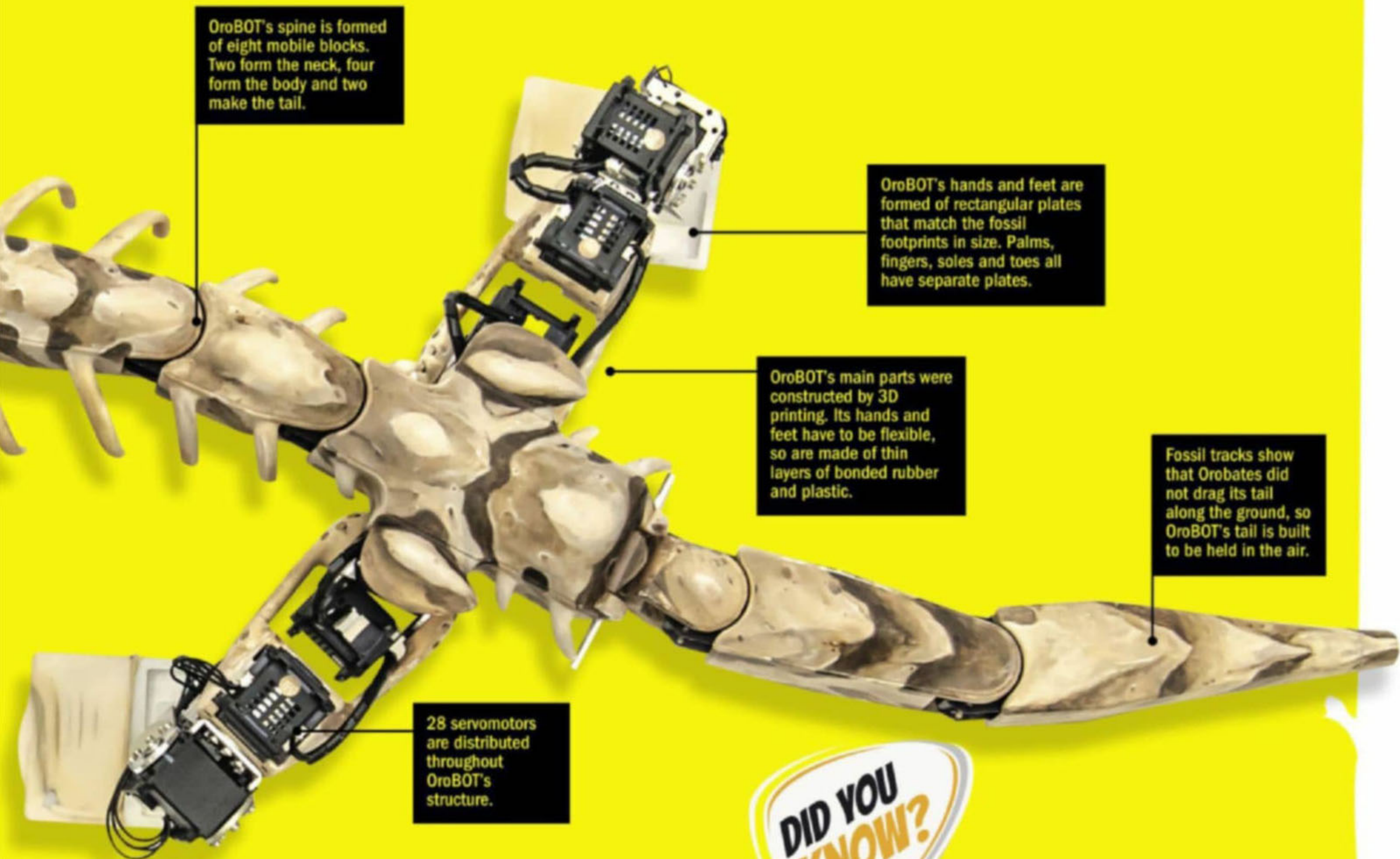
Sensors placed throughout OroBOT's structure keep track of the position of its limbs.

To make study easier and house the robotics, OroBOT is about 1.6 times larger than the real *Orobates*. OroBOT is 1.4m.

Mobile joints in all limbs give OroBOT flexible shoulder, elbow and wrist joints in the forelimb, and hip, knee and ankle joints in the hindlimb.

WALK LIKE A DINOSAUR [WELL, SORT OF...]

Scientists are using computer simulations and robotics to recreate the movement of a creature who lived before the dinosaurs



OroBOT's spine is formed of eight mobile blocks. Two form the neck, four form the body and two make the tail.

OroBOT's hands and feet are formed of rectangular plates that match the fossil footprints in size. Palms, fingers, soles and toes all have separate plates.

OroBOT's main parts were constructed by 3D printing. Its hands and feet have to be flexible, so are made of thin layers of bonded rubber and plastic.

Fossil tracks show that Orobates did not drag its tail along the ground, so OroBOT's tail is built to be held in the air.

28 servomotors are distributed throughout OroBOT's structure.

4kg

The weight of orobates.

DID YOU KNOW?

Orobates lived in the Permian Period, which was after the Carboniferous Period and before the Triassic Period.

Around 400 million years ago, the land-living, four-legged vertebrate animals called tetrapods evolved from their fish ancestors. Early land-going tetrapods were seemingly slow, clumsy walkers who kept their bodies close to the ground, and appeared to lack agility or speed when living on land.

But if we look at the enormous number of land-living creatures who evolved later during Earth's history, including those who live alongside us today, it's obvious that far greater agility, speed and efficiency eventually evolved. It is assumed that when more modern tetrapods, such as reptiles and the ancestors of mammals (a group

known as amniotes), evolved, that is when things changed. These new animals slowly evolved to save energy and hold their bodies up above the ground.

A team led by Prof John Nyakatura from the Humboldt University of Berlin wanted to find out when the 'advanced tetrapod gait' developed. They used computer modelling and robotics and focused on Orobates (an early tetrapod), who lived in what is now Germany, some 260 million years ago.

Orobates were a good choice, because excellently preserved remains are available, and enough is known about their skeletons that researchers could accurately reconstruct the way their bones

fitted together when they were alive. Also, a set of fossilised tracks was found in 2007 matching the size, shape and geological timing of Orobates, so we have some evidence of the way they moved.

They set about analysing the gait and posture of Orobates and created digital and real-world robotic skeletons. The robot skeleton was custom-built and showed how the animal placed her feet. Called OroBOT, the robot has a range of movements in its limbs and body designed to mimic that of the real Orobates. When in action, it looks very realistic, moving and flexing with a real-world feel. The team used

information from four living animals (a salamander, skink, caiman and an iguana) to figure out which of OroBOT's poses and postures were biologically most likely. They also measured the robot's centre of mass and the way it distributed its weight across the different parts of the body.

They explored a large number of gaits and evaluated each. Some made the OroBOT fall over or bang its limbs together, so were considered unlikely to have been used by the animal.

Surprisingly, the most efficient and highest-scoring gait was to walk with erect

You can find out more about a giant salamander species on page 4!

limbs and its body held high off the ground, with limbs close to the body, similar to an iguana. From this, it is thought that Orobates walked in an efficient 'modern' way, more in line with modern reptiles, like crocodiles. This indicates that tetrapods evolved a more sophisticated way of walking on land earlier on in their history than previously thought.

Where to from here? The success of the OroBOT means that work of this kind will surely be applied to other ancient animals from important parts of evolutionary history. Imagine creating robotic, realistic-moving dinosaurs!

SALAMANDER

PLUS

LIZARD

EQUALS

OROBATES

DID YOU KNOW?

Tetrapod means 'four feet', and includes all the species alive today that have four feet.

But, confusingly, snakes and humans are also tetrapods. Why? Because they are all descendants of a tetrapod ancestor, even if they no longer walk on four feet.

WHAT WAS OROBATES?

They weren't much like modern amphibians, nor were they reptiles or relatives of mammals. According to Prof Nyakatura, they were medium-sized creatures, about 85cm long, and had a mixture of what could loosely be called amphibian-like and reptile-like features. He describes them as "salamander-y lizard-y things".

Orobates were chunky and ate plants (and perhaps small animals, too). It's a relatively new find, only scientifically named in 2004. When they lived, Germany was landlocked and part of the supercontinent Pangaea. The environment was hot and mostly dry and land-living animals were adapted to cope with the conditions. Many were capable of building burrows, where they hid during the day, and this was likely the case for Orobates.



WATER WISE



Why would you drop plastic balls into a reservoir?

To keep the water safe, of course.

In 2007, high levels of bromate were found in Los Angeles' Ivanhoe Reservoir. That was a problem, because bromate is formed when bromide and chlorine react with sunlight, and it is carcinogenic (having the ability to cause cancer).

When the Department of Water Protection realised the problem, they began building a new underground reservoir. But, while the new facility was being constructed, they had to find a way to keep sunlight out of the water. They thought about using tarps or metal coverings, but they were either too expensive or would take too long to install. Then someone suggested they use 'bird balls', which airports had been using to prevent birds from hanging out in wet areas alongside runways. This was the perfect solution – the balls were inexpensive and they deflected UV rays. Over 3 million of them were released into the reservoir and the problem was solved. Clever!

TEST YOURSELF



Four pages of puzzles and activities to keep you busy!

Train your brain by challenging yourself with these tricky puzzles

CODE BREAKER

Use the key to work out the hidden phrase.

A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z

Key:

SUDOKU

Fill in the missing numbers so that each row, column and 3x3 block contain all the numbers from 1 through 9 only once.

2		9				6		
	4		8	7			1	2
8				1	9		4	
	3		7			8		1
	6	5			8		3	
1				3				7
			6	5		7		9
6		4					2	
	8		3		1	4	5	

MATHS SQUARE

Work out the sums to find the solution at the bottom right.



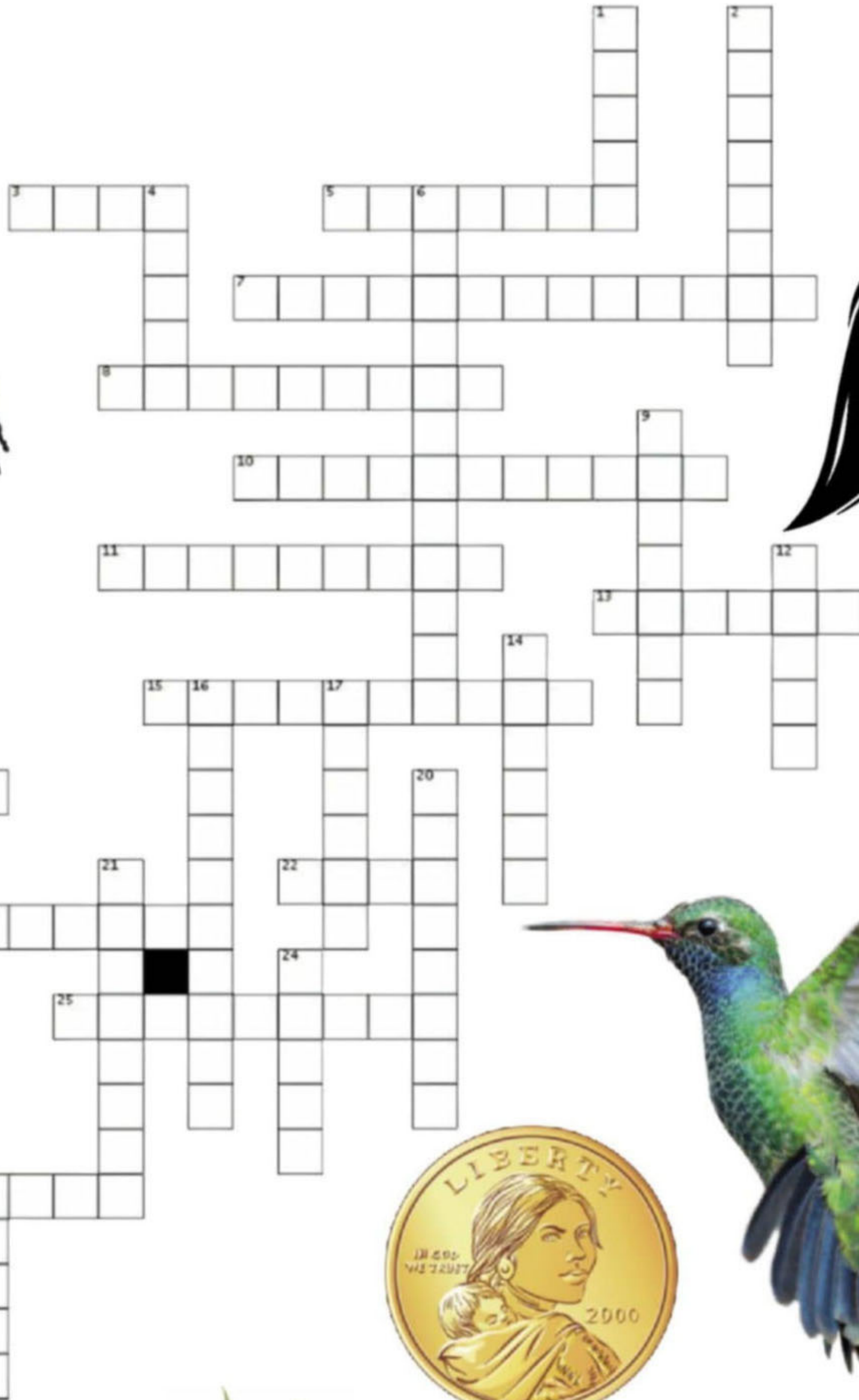
7	+	6	+	10	=	
+		+		+		+
10	+	7	+	9	=	
+		+		+		+
10	+	9	+	10	=	
=		=		=		=
	+		+		=	

FRUIT RIDDLE

Can you work out which number each fruit represents and use them to work out the solution?

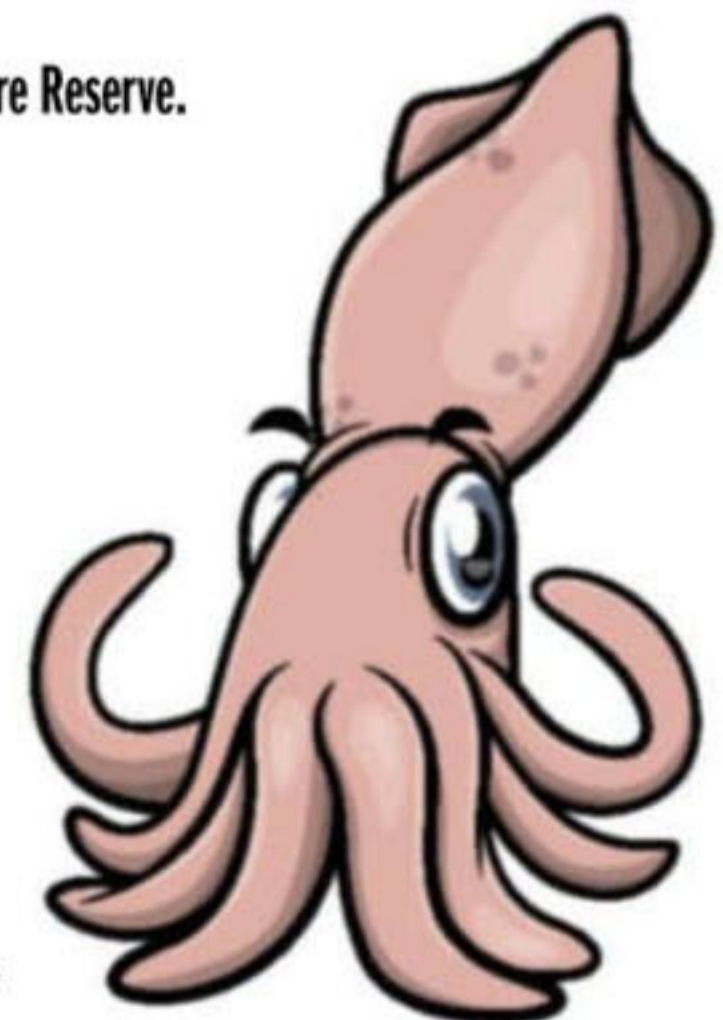
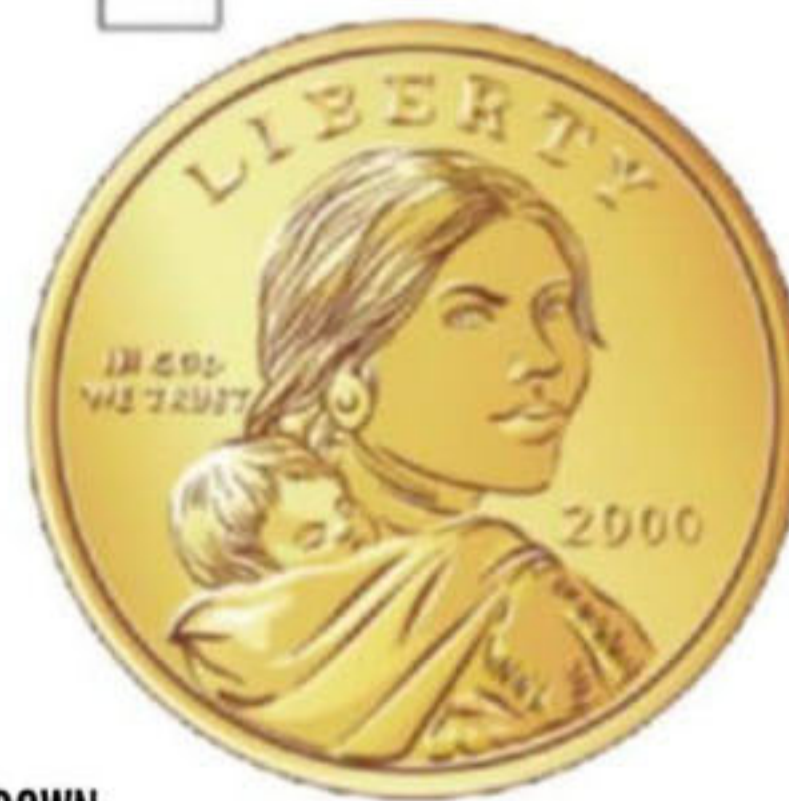
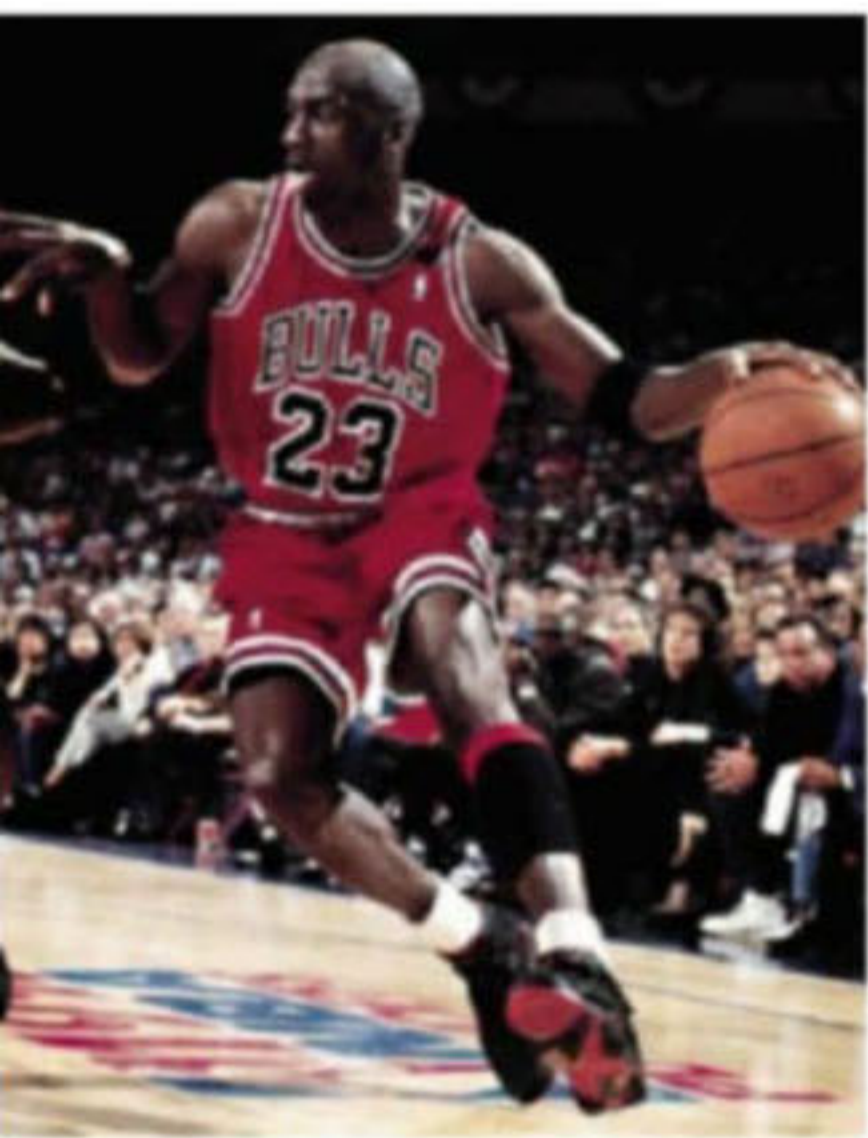
+ =
 8 = +
 = × 3
 - = 1
 + × = ?

TIP: Remember, you must always complete multiplication or division before addition and subtraction.



CROSSWORD

Make sure you've read the whole magazine before you complete this puzzle - the answers can be found in the articles.



ACROSS

- 3. A famous Mark Twain novel is *The Adventures of Huckleberry* _____.
- 5. Spider webs served as inspiration for suspension _____.
- 7. Scrapyards use this device to lift metal and move it.
- 8. One of the original five flavours Chappies bubblegum came in.
- 10. The only bird who can fly backwards.
- 11. The name of the woman who helped Lewis and Clark on their expedition.
- 13. Mark Twain's real first name.
- 15. Paraceratherium is an ancestor of this horned creature.
- 18. Birds cannot see this, resulting in millions of bird deaths a year.
- 22. Tetrapod means _____ feet.
- 23. One of Ernest Zacharevic's famous murals is *Little Boy with a Pet* _____.
- 25. The country where the world's largest Goliath bird-eating spider was found.
- 26. Anosmia is a complete lack of _____.

DOWN

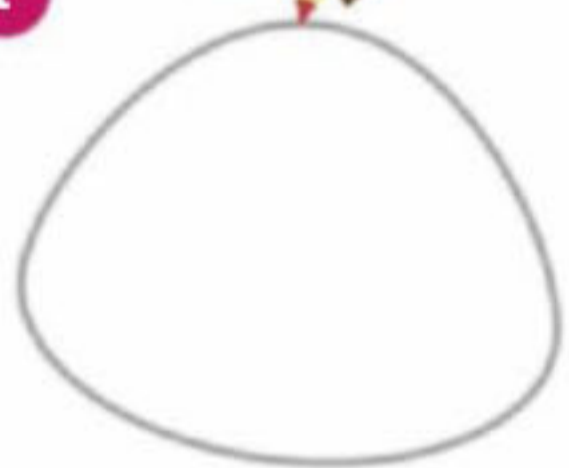
- 1. Michael Jordan played basketball for the Chicago _____.
- 2. The brand of bubblegum that was created in South Africa in the 1940s.
- 4. The name of the cheetah who was thought to be missing from Rietvlei Nature Reserve.
- 6. IQ stands for _____ quotient.
- 9. This is formed when bromide and chlorine react with sunlight.
- 12. The name of Kanye West's clothing and sneaker brand.
- 14. This blue whale body part can weigh four tonnes.
- 16. Eating as much as a lion would mean scoffing 70 of these a day.
- 17. The name of the robot that helps us understand how Orobates moved.
- 19. The creature who 'invented' jet propulsion.
- 20. The Louisiana _____ saw America double in size.
- 21. The sport Michael Jordan briefly gave up basketball to pursue.
- 24. Lerai is the presenter for *Nick* _____, a new show on Nickelodeon.
- 27. A common housefly does not have this.

LEARN TO DRAW

Improve your art skills! Follow the steps and draw a cute fox.



1



2



3



4



5

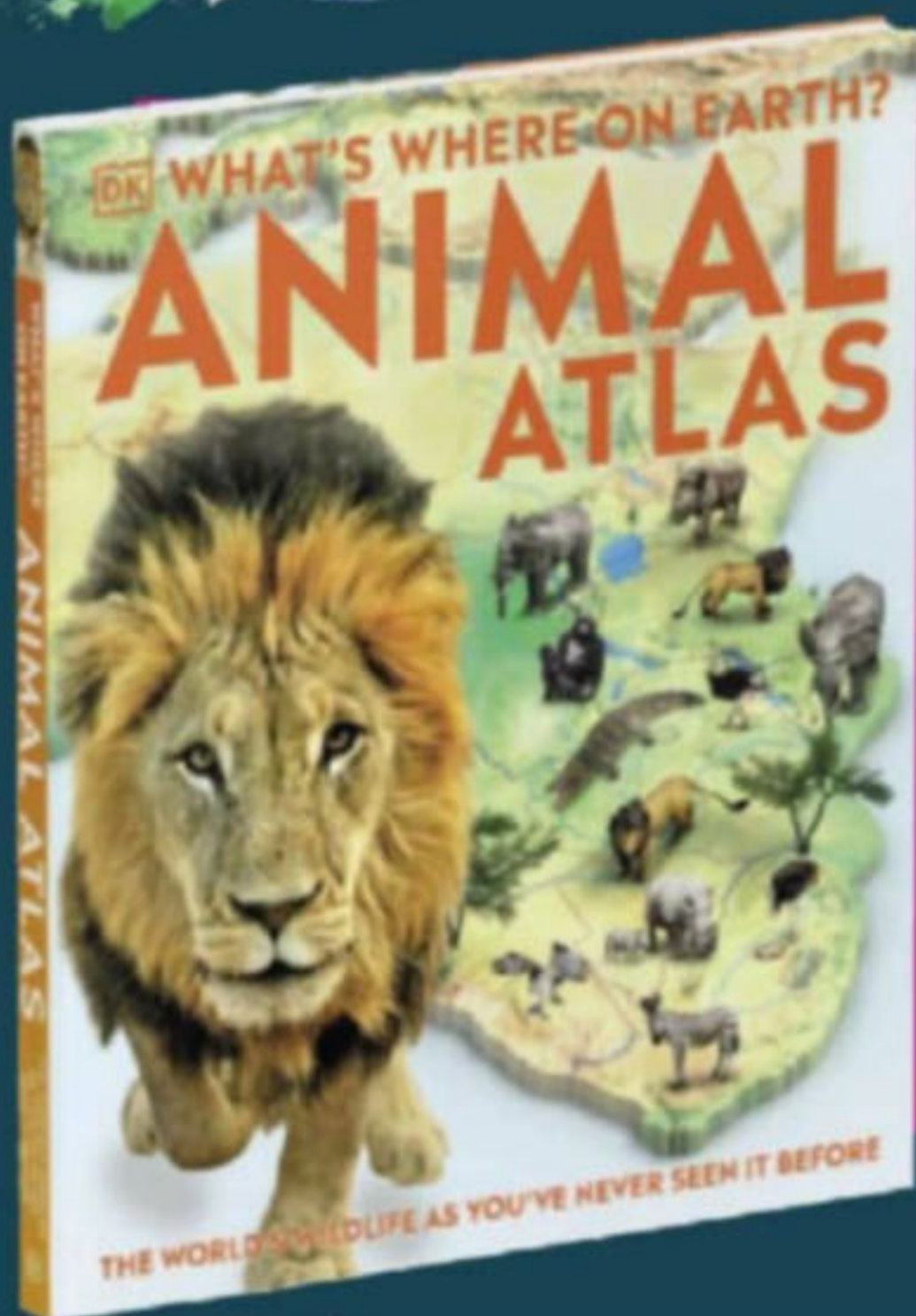


6



Totally trending

THE COOLEST STUFF OUT THERE



WHAT'S WHERE ON EARTH? ANIMAL ATLAS

Using 3D maps, this awesome atlas shows the habitats of more than 100 incredible animals, and explores and explains their unique behaviour. Find out which penguin lives closest to the South Pole, where you may encounter the world's deadliest snake and where sloths climb slowly through forest trees.

QUOTE OF THE MONTH

THE BEST VIEW
-COMES AFTER-
THE HARDEST
CLIMB

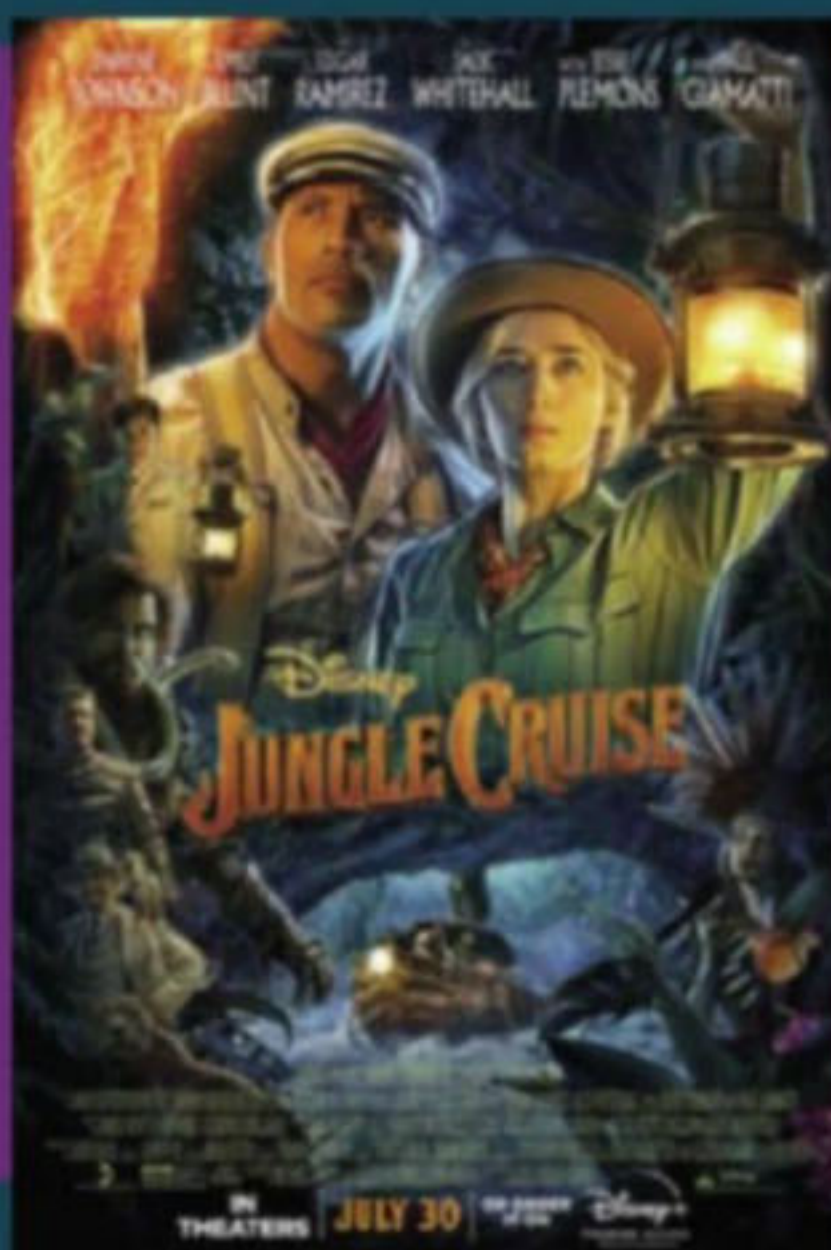
DID YOU KNOW?

The original *Space Jam* movie starred Michael Jordan. See page 24 for more about this basketball star.

ON THE BIG SCREEN – JUNGLE CRUISE

Releases 30 July 2021

Set during the early 20th Century, a riverboat captain named Frank (Dwayne Johnson) takes a scientist and her brother on a mission into a jungle to find the Tree of Life, which is believed to possess healing powers. All the while, the trio must fight against dangerous wild animals and a competing German expedition.



ON THE BIG SCREEN – SPACE JAM: A NEW LEGACY

Releases 16 July 2021

Welcome to the Jam! NBA champion and global icon LeBron James goes on an epic adventure alongside timeless *Looney Tunes* character Bugs Bunny. When LeBron and his young son Dom are trapped in a digital space by a rogue A.I. (named AI-G Rhythm), LeBron must get them home safely by leading Bugs, Lola Bunny and the whole notoriously undisciplined *Looney Tunes* gang to victory over the A.I.'s digitised champions on the court: a powered-up roster of professional basketball stars as you've never seen them before. It's Tunes versus Goons in the highest-stakes challenge of LeBron's life.

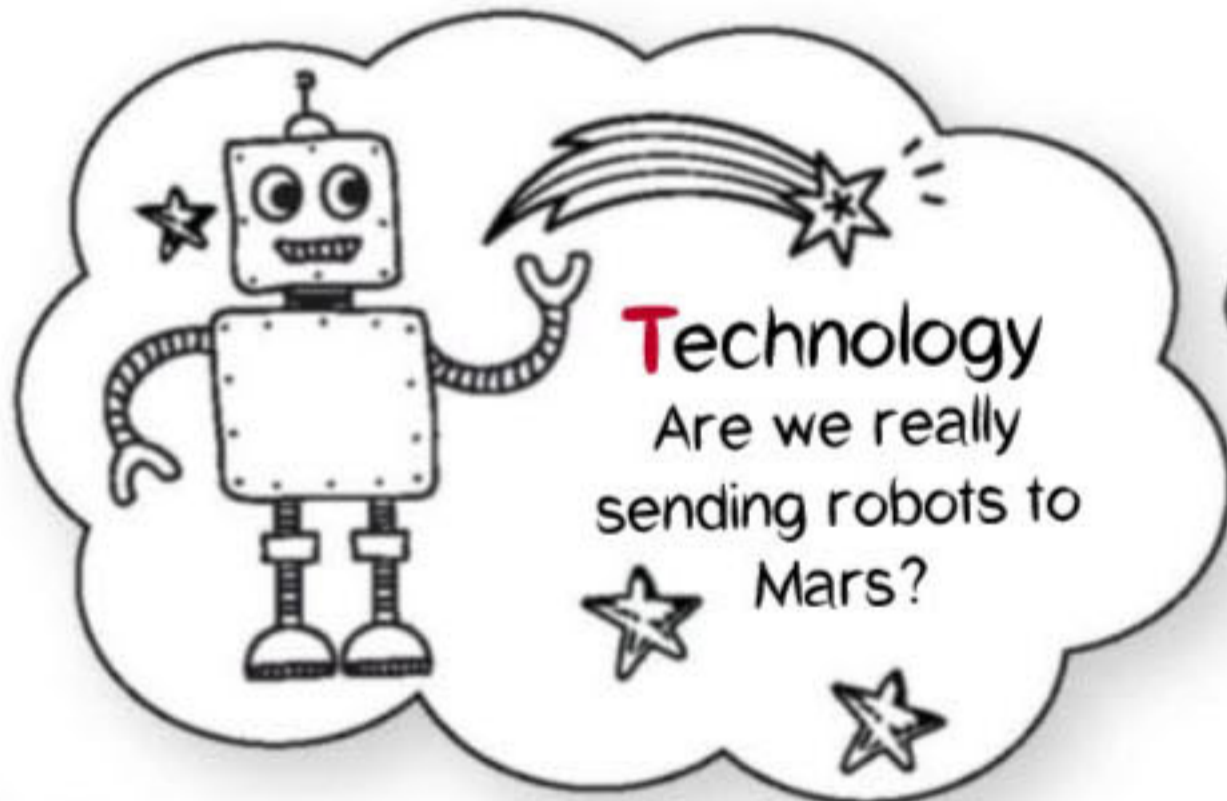


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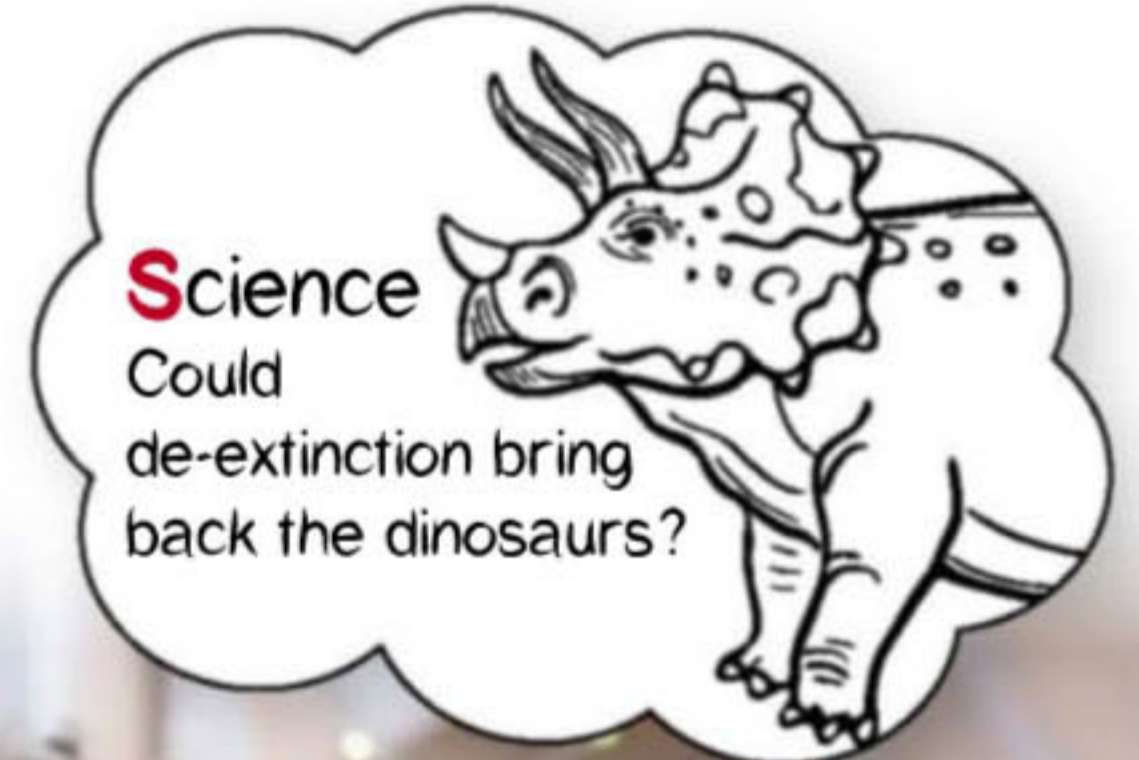
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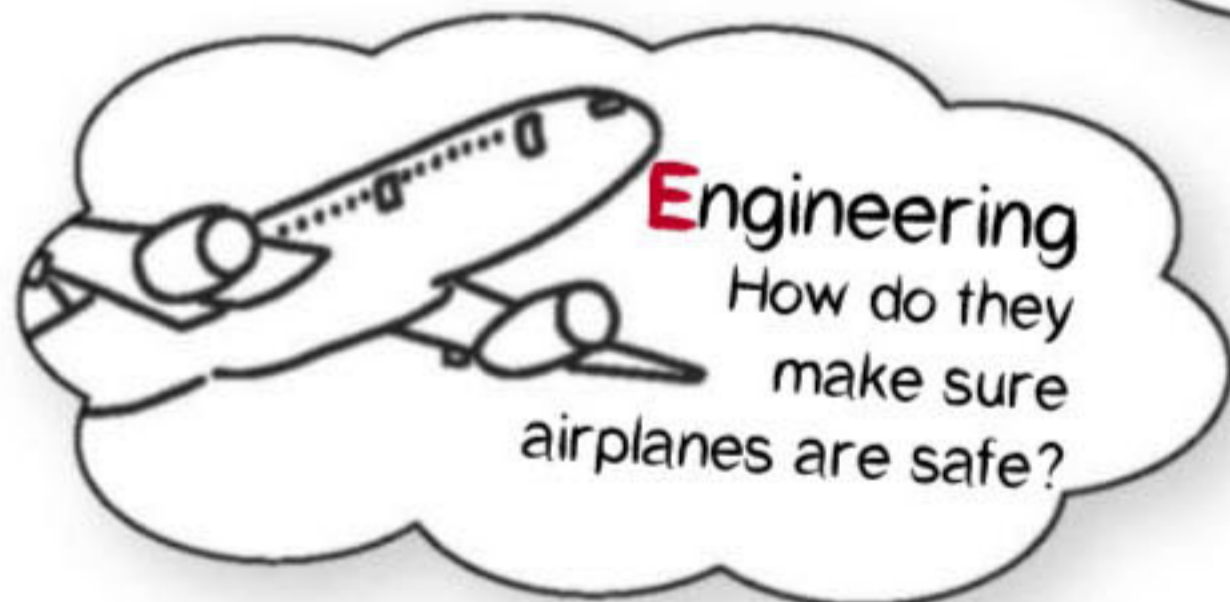
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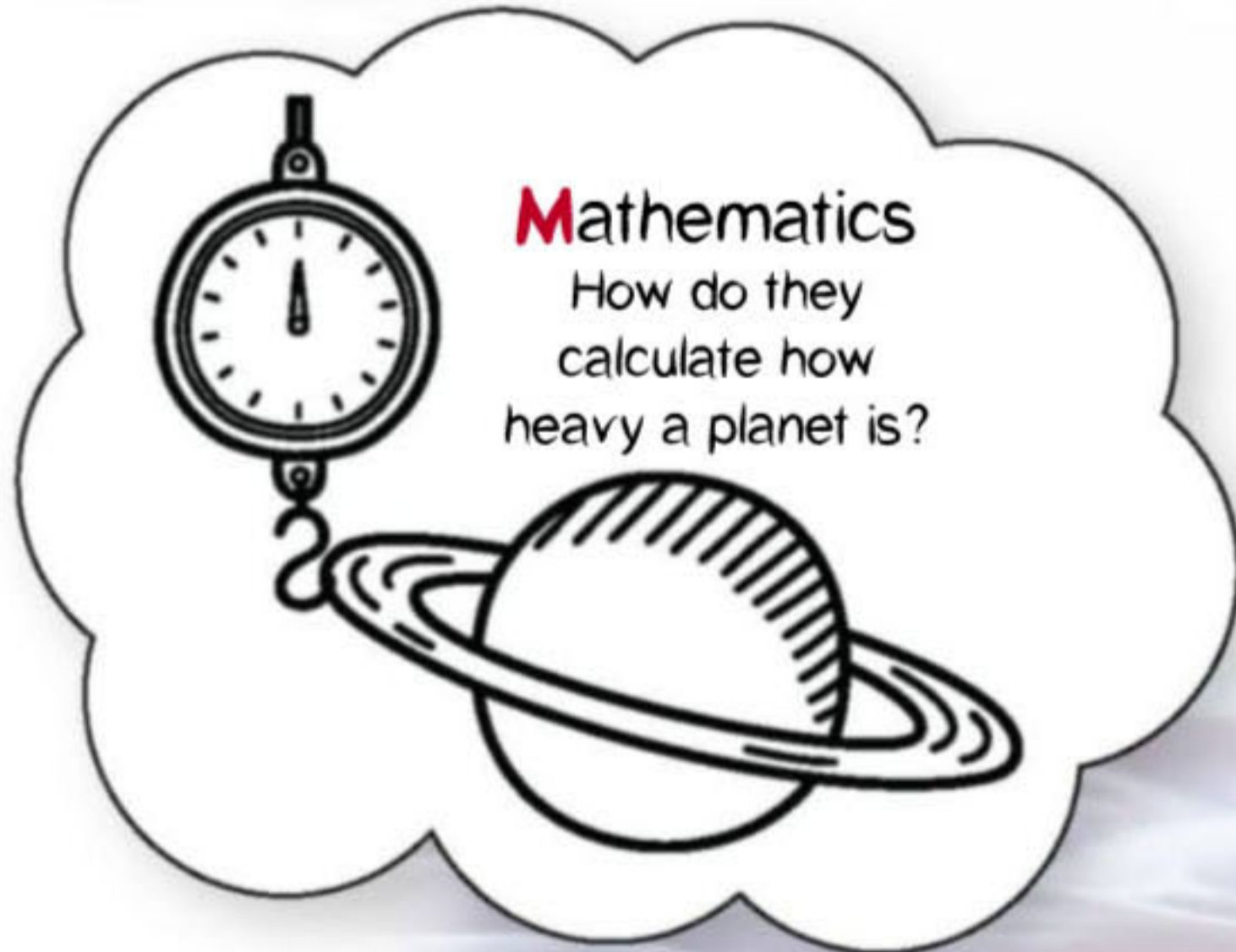
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 Are we really sending robots to Mars?



Science
 Could de-extinction bring back the dinosaurs?



Engineering
 How do they make sure airplanes are safe?



Mathematics
 How do they calculate how heavy a planet is?



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