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POB
LOVO

supernova

THE MAG FOR CURIOUS KIDS



THE HISTORY OF VIDEO GAMES

- THE HUMAN EAR - THE MAASAI - LITRE OF LIGHT
- GROOVY MANGROVES

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ISSN 0024-1444
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AFRICA
CELEBRATING OUR
HERITAGE TOGETHER

The NOVA Note



Hi SuperKids

One of my absolute favourite things to do when I have some free time, which is not often, is to learn more about my ancestors. You see, I'm such a large mixture of different cultures that to learn more about just one

branch of my extended family can keep me busy for hours.

As I learn more about my great-great grandparents and beyond, I also learn more about the countries from which they came, the languages they spoke, their different customs, and the times in which they grew up. It fascinates me more and more, the deeper I delve into my family's history. It even makes me feel like some kind of obsessive detective, trying to uncover the hidden truths about the past...

What interests you to the point that many hours can go by without you even noticing? Do you have a passion for something of which you'll never be bored? Let me know what keeps you busy in your free time! (I hope one thing is reading *Supernova* and learning all the cool stuff in it!)

Stay curious!



ANDY

The Supernova Team



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Talk to us

WE WANT TO HEAR FROM YOU! TELL US WHAT YOU THINK OF SUPERNOVA, ASK US QUESTIONS AND VOICE YOUR OPINIONS ON THE STUFF THAT INTERESTS YOU.



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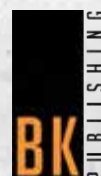
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Photographs:
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PUBLISHED BY:



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ISSN: 2224-1442
Legal deposit: 06/2015

The Pinboard

Alex (12) asked me why we have funny things sticking out from the sides of our heads to help us hear. This is what I found out to give him an answer...



Here is Lungelo Zezi's (18) latest instalment in the *Evan and Ash* comic series. If you have a comic you would like to submit, please send an email to supernova@bkpublishing.co.za.



Ask Jules

Evolution of the Ear

Say you find yourself standing on train tracks and you want to know if a train is approaching. You can't hear the train, but if you place your ear on the tracks, you might feel the vibrations of the faraway locomotive.



Millions of years ago, animals didn't have ears, but these animals could sense vibrations. At first, these animals sensed waves through water and then later through vibrations in the ground. This was much like how we would sense vibrations on train tracks.

With their heads to the ground, these animals gradually evolved ears. Scientists believe that parts of the jaw bones became redundant and then gradually evolved into the teeny tiny bones which make up the mammalian middle ear today.

Some evidence of this can be found when looking at reptile ears. Ever notice that reptiles don't have ears that stick out of the sides of their heads like ours?

The middle ear contains three bones which help interpret vibrations into the sounds we hear: The three bones are the anvil, hammer and stirrup. They are the smallest bones in the body and they are very, very sensitive to vibrations in the air. By interpreting vibrations, they help our brains determine the pitch, intensity and location of sounds.

Do you have a question for me? You can ask me anything and I will do my best to answer you in the next issue of *Supernova*. Email me at supernova@bkpublishing.co.za.



EVAN AND ASH



SEND US YOUR PHOTOS, LETTERS AND ARTWORKS TO
 SUPERNOVA@BK PUBLISHING.CO.ZA AND WE LL PASTE THEM
 UP ON THE BOARD FOR EVERYONE TO SEE!



Yolanda sent us this thought-provoking poem about a very serious issue in SA at the moment. Read it and consider her great advice.

LOVE YOUR FAMILY (STOP XENOPHOBIA)

SOUTH AFRICA, RAINBOW NATION,
 FREE COUNTRY, WHAT HAS COME
 OVER YOU?
 YOU CALL YOURSELF SUCH
 BEAUTIFUL NAMES WITH SO MUCH
 PRIDE, BUT WHAT'S THE SHAME FOR?

YOUR MOTHER'S NAME IS AFRICA.
 YOUR BROTHERS AND SISTERS ARE
 ZIMBABWE, GHANA, NIGERIA, ZAMBIA
 AND MANY MORE, AND ALL YOU
 DO IS TREAT THEM LIKE TRASH.

HOW COULD YOU BE SO SHAMELESS,
 SO BITTER, SO MEAN AND EFFORTLESSLY CARELESS?
 HOW WOULD YOU FEEL IF YOU WERE
 TREATED AS BAD AS YOU TREAT
 YOUR BROTHERS AND SISTERS?

YOLANDA TITO, (GRADE 9)
 PORT ALFRED PRIMARY SCHOOL
 STATION HILL, MAY 2015



Yolanda Tito, left, with her friend Naloyiso Gaga. Both are in Grade 9s at Port Alfred Primary School, Station Hill. They love writing poetry and are also writing a play together.

DON'T YOU FEEL THE GUILT OF
 CAUSING THE HAVOC IN YOUR
 SIBLINGS' LIVES? WHY CAN'T YOU
 JUST STOP THE FLOODS OF TEARS,
 RIVERS OF BLOOD AND THE
 UNBEARABLE PAINS YOU CAUSE?

DON'T YOU THINK IT'S NOW TIME
 TO TURN OVER A NEW LEAF
 AND START ALL OVER WITH PEACE?
 BY THAT, YOU'LL ALSO BE MAKING YOUR
 MOTHER, AFRICA, PROUD SO
 STOP XENOPHOBIA.

Last issue, Jessica showed us how to
 make recycled shoes. This issue, she
 chats about her cool digital microscope
 and what she's discovered under the
 lens...



Under the Microscope

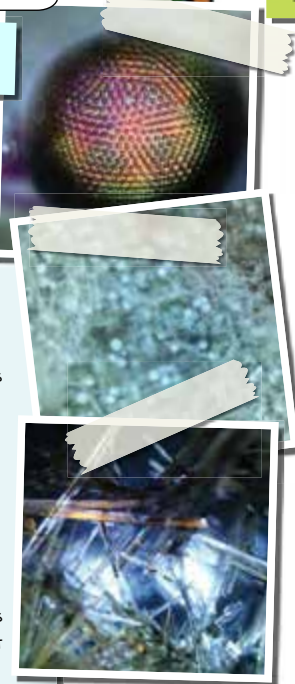
My name is Jessica Lloyd, I am 8-years-old and I go to Kings College and Preparatory School in Bryanston.

I was lucky enough to be given a digital microscope for my laptop for Christmas. I looked at lots of things, for example, I looked at a fly's eye, and it looked like a speaker to me. When you look at something close up, it looks rather different.

When you take a picture, you have to press a button on the microscope and the picture appears on the laptop screen. Sometimes it looks pretty, dull or disgusting, but the more pictures you take, the more you learn.

While I have been doing this, I have learnt a lot. For example, I learnt that mould is living because it moves very slowly when you look at it up close. Now I can actually understand things better:

This has been a fun, scary and confusing experience for me because I have enjoyed looking at crystals, mould and chewing gum. The crystals look like sparkly spike jungles, the mould looks like snowflakes, and last of all, the chewing gum looks yucky but fun because it looks like blue play dough with black holes in it.



NATURAL ANOMALY

Crocodile tears



You may have heard the expression 'weeping crocodile tears'. The phrase refers to crying fake tears when you're not really sorry about something. It comes from an ancient belief that crocodiles cry while eating their prey, as if they're pretending to feel bad, but they're not actually sorry as they munch away.

In reality, crocodiles, alligators and caimans mostly tear-up when their eyes get dry. When they've been out of water for a long time, they shed tears to lubricate and clean their eyes. Tears also help get rid of excess salt that American and saltwater crocodiles take in when they eat.

There is evidence that tears could be triggered by feeding. Research at St Augustine Alligator Farm Zoological Park suggests that warm air is forced through the sinuses while feeding, which stimulates the tear glands. Or... perhaps they are sorry about eating the poor bakkie after all?

African Buffalo rolling in water

The African buffalo is an animal that is never far from water. They are a common sighting in grasslands, savannas and also lowland floodplains. Buffalo spend most of their day laying in the shade of trees and would sometimes take a swim to cope with the heat of the day. Watch the video of the Buffalo enjoying the water on a warm sunny day!

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Andy's Africa

Hujambo! Hello!
I met a Maasai teen, Namelok while visiting her village in northern Tanzania. I learnt so much about her unique culture that I wrote a whole feature, but here are some facts about this breathtaking country...

Tanzania

THE CRADLE OF CIVILISATION

Namelok told me that Olduvai Gorge in northern Tanzania is often called 'The Cradle of Civilisation'. Archaeologists Louis and Mary Leakey led major excavations there in the 1950s. Their discoveries led to the conclusion that the gorge is the location of the oldest human settlements.



Mount Kilimanjaro



Ngorongoro Crater

GET THEE TO THE SERENGETI!

The Serengeti National Park in northern Tanzania is one of 16 national parks in Tanzania. It's famous for white-bearded wildebeest annual migrations. This migration is the largest land mammal migration in the world. This earned it the right to be one of the Seven Natural Wonders of Africa.

AFRICA UNITED!

The Maasai are one of 120 indigenous tribes in Tanzania. They may be a small ethnic group, but they are a well-known group of semi-nomadic pastoralists. The Sukuma is the largest ethnic group. The tribes' languages represent all four of the major African language groups. Despite many differences, Tanzanians have a sense of national identity and are united by speaking Swahili as a common language.

ON TOP OF AFRICA!

Namelok's village has a gorgeous view of Mount Kilimanjaro in the distance. At 5895m above sea level, this dormant volcanic mountain is the highest mountain in Africa. It's also the highest free-standing mountain in the world. It has three volcanic cones: Kibo (the highest), Mawenzi and Shira.

GREAT LAKE!

Lake Victoria, named after Queen Victoria, is the largest of the African Great Lakes. It's also the largest tropical lake in the world, as well as the 2nd largest freshwater lake by area. Its surface area is 68 800km². By volume, it's the 9th largest continental lake of about 2750 cubic km of water.

TANZANIA



Capital: Dodoma
Geography: Consists of mainland Tanzania, and Zanzibar, Pembe and Mafia islands. The mainland is bordered on the south by Mozambique, Malawi and Zambia; west by DRC, Burundi and Rwanda; and north by Uganda and Kenya.
Total area: 945 203 km²
Population: 51 092 501
Currency: Tanzanian shilling
President: Jakaya Kikwete
Official language: Swahili and English
Major religion: Islam and Christianity



Lake Victoria

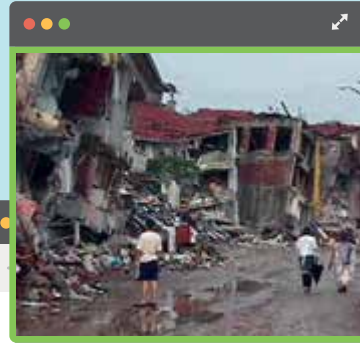


The Amazing AL Manac



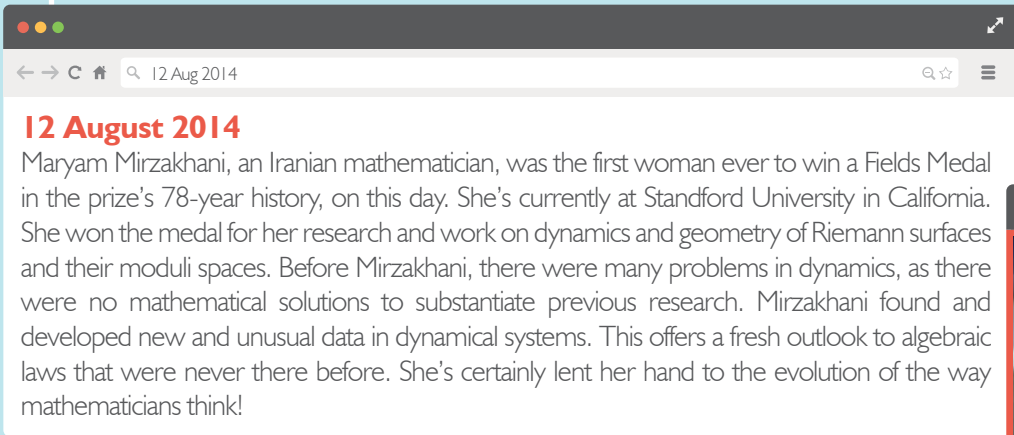
15 September 1997

On this day, Google.com was registered as a domain. It led to the transformation of the Internet as a whole! The name is a play on the word 'googol', a mathematical term that describes ten to the hundredth power. Thanks to Larry Page and Sergey Brin, the founders of the search engine, infinite amounts of information on the Internet is now organised, a feat that seemed impossible at the time. It's made finding information a lot easier!



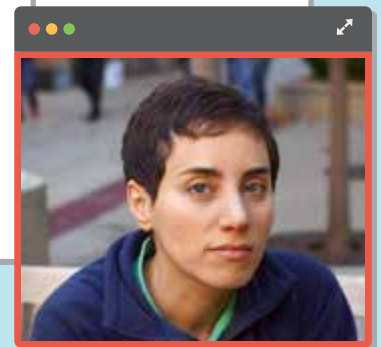
17 August 1999

At 3am on this fateful day, an earthquake shook north-west Turkey, killing over 17 000 people. The epicentre of the quake was 11 km away from the city of İzmit, which suffered the worst effects. The quake took place on the North Anatolian Fault, which runs 20km south of Istanbul. Only lasting 45 seconds, the earthquake measured 7.4 on the Richter scale. Half a million people were homeless and many fighting for their lives. The region of the North Anatolian Fault has a long history of destructive earthquakes, but the İzmit earthquake is by far the largest to have occurred.

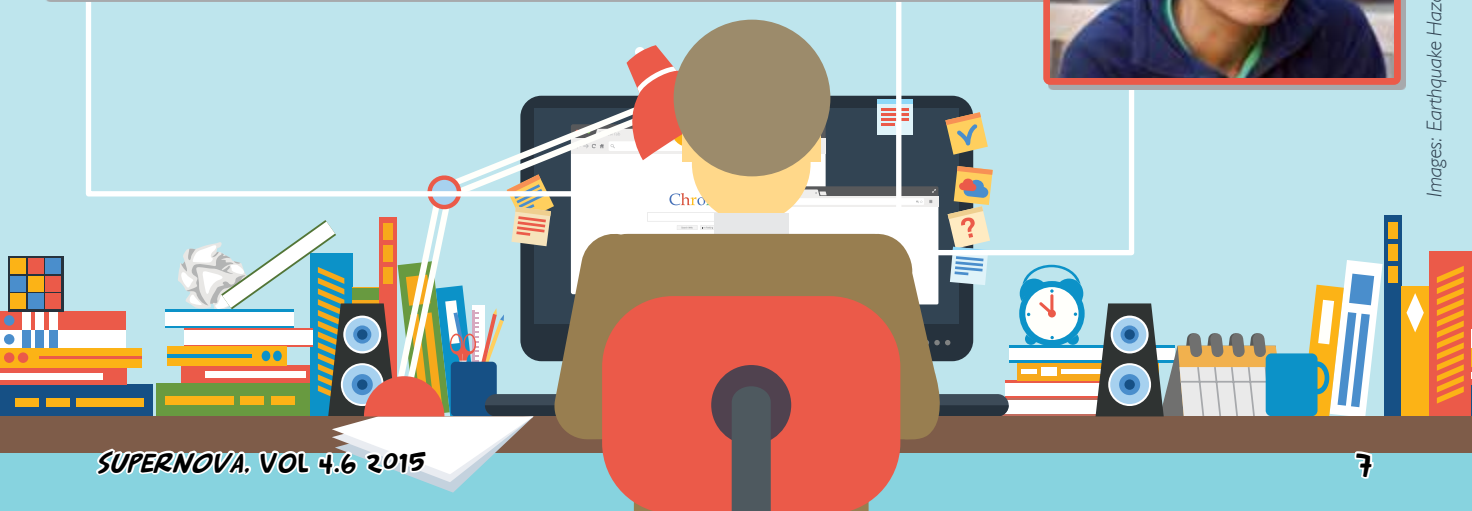


12 August 2014

Maryam Mirzakhani, an Iranian mathematician, was the first woman ever to win a Fields Medal in the prize's 78-year history, on this day. She's currently at Stanford University in California. She won the medal for her research and work on dynamics and geometry of Riemann surfaces and their moduli spaces. Before Mirzakhani, there were many problems in dynamics, as there were no mathematical solutions to substantiate previous research. Mirzakhani found and developed new and unusual data in dynamical systems. This offers a fresh outlook to algebraic laws that were never there before. She's certainly lent her hand to the evolution of the way mathematicians think!



Images: Earthquake Hazards Program, Stanford News Service.



THE LIFE, AND UNIVERSE EVERYTHING

Compiled by Alexander Moolman, illustrated by Benoit Knox

NEUROSCIENCE

Men and women see differently. Men are sometimes better at seeing moving objects at a distance, while women are sometimes better at distinguishing between subtle shades of colour. Scientists have found that where women may see crimson, maroon, cardinal, ruby and scarlet, men may only see red and dark red.



These slippers are crimson, not ruby!

No wonder they don't work!

NATURE

A single worker bee gathers less than a gram of honey in its lifetime. But the hive needs roughly 27kg of honey to survive the winter. There can be over 50 000 worker bees in a single hive. What's more, these bees never stop working – they don't even sleep. If someone had to pay them for all their hard labour, they would have to fork out at least R642 million. Think of this the next time you buy honey at the supermarket.



SOUTH AFRICA

20 years ago, South Africa defeated the All Blacks in the 1995 Rugby World Cup. This was no ordinary rugby final. It was a momentous occasion which helped show the world how our nation had been reborn after years of apartheid. Many think that the final was the most dramatic game in history.



OUR BRAINS

What we hear has a lot to do with what we see. There is an experiment where a person is filmed saying "va," but the audio is replaced with "ba". If you watch this video your brain will get confused with the two impulses. In most cases you will hear "va" even though the person is saying "ba". This freaky phenomenon is called the McGurk Effect.

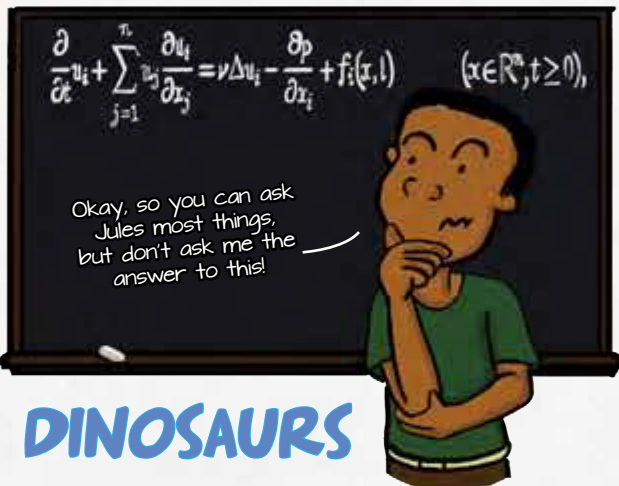


FINANCE

There are more than 1.6 billion credit cards in circulation. This makes up enough plastic to spin a ribbon around the planet 3.5 times.

MATHS

There are still many unsolved maths equations. This is the Navier–Stokes Equation. If you can solve it (or any of the other 5 Millenium Equations) you will be awarded \$1 million by the Clay Mathematics Institute. Good luck.

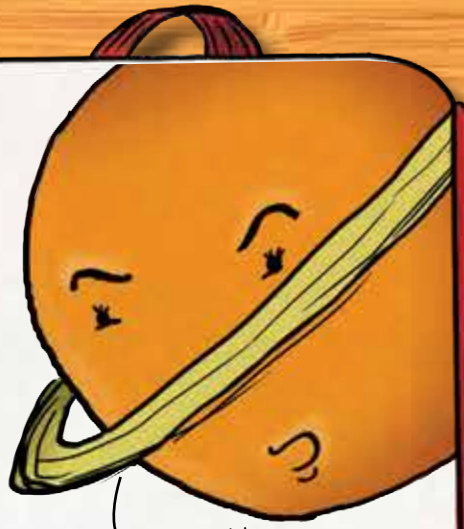


DINOSAURS

Birds are dinosaurs. They are not merely descendants of dinosaurs, but are actual dinosaurs. Paleontologists have found that chickens (or any other birds) have direct links to the *archeopteryx* in their embryonic stage. Scientists are now activating dormant Jurassic genes within chicken embryos. The result of this experiment is 'Chickenosaurus', a terrifying poultry beast with two hands, teeth and a tail. They have not been allowed to be hatched due to ethical reasons.



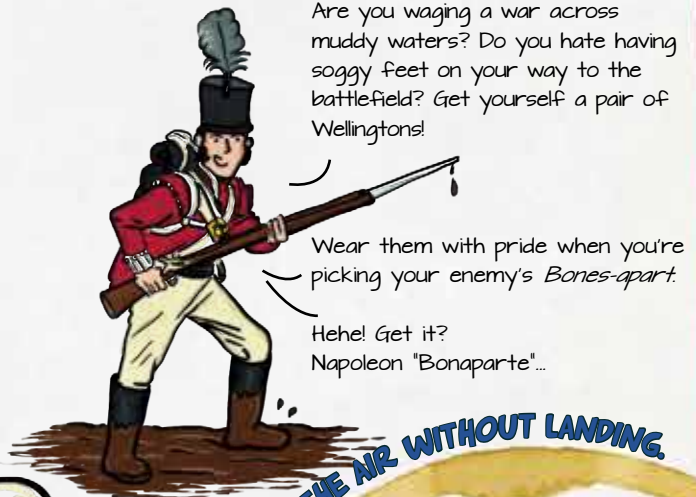
Don't you think my platinum card rings are marvelous?



Well, mine might be made of rocks, but at least they're natural!

HISTORY

200 years ago, the great Battle of Waterloo was waged. It was a vicious and bloody battle. Napoleon commanded the French Imperial Guard, some 72 000 men strong. Wellington commanded his British and Allied army of 68 000 men. Both Wellington and Napoleon are considered to be the greatest soldiers of the age. On a muddy battlefield in Belgium, on 18 June 1815, they finally met in vicious battle. It was a fight that determined the fate of Europe.



SWIFTS CAN SPEND THREE YEARS IN THE AIR WITHOUT LANDING.

FIND OUT IF THIS IS FACT OR FICTION IN THE NEXT ISSUE OF SUPERNOVA.

THE NOVA RED LIST

Words by Antoinette Eyssell-Knox
Illustrations by Benoit Knox

GROOVY MANGROVES

Would you like some sugar on your salty popcorn? How about some salt on your syrup sandwich? Mmm?

Very few of us can tolerate extremes at the same time. But here, I am kayaking through one of the few mangrove forests in our country, exploring an ecosystem that is not just surviving, but thriving between extremes.

Mangroves grow where freshwater from rivers meet the salty sea water, where high tides flood the system and low tides expose it to sun and dryness. Here, only a few hardy species can survive. The Kosi Bay mangroves are quite peculiar, yet mesmerizing!

Look at those strange tree roots growing upwards out of the muddy water. And look at the crab in the tree! How extraordinary is that?

WHERE THE MANGROVES ARE

Kosi Bay

Durban

Nahoon

Mangrove forests occur in the warmer parts of the world and only where a warm ocean current is found. In South Africa, our mangrove forests stretch from Kosi Bay (KwaZulu-Natal) in the north to Nahoon (Eastern Cape) in the south. Most mangrove forests in South Africa are found in estuaries, which is where the freshwater from rivers meet the sea. Although the mangroves grow in intertidal zones, the presence of freshwater is important for mangrove growth.

MANGROVE TREES

In South Africa, the most widespread mangrove tree species are the white mangrove (*Avicennia marina*), the black mangrove (*Bruguiera gymnorrhiza*) and the red mangrove (*Rhizophora mucronata*). Here

in Kosi Bay, another three species occur: the mangrove mahogany (*Xylocarpus granatum*), the Kosi mangrove (*Lumnitzera racemosa*) and the Indian mangrove (*Ceriops tagal*). They have all adapted in the most amazing ways.

ROOTING TO BREATHE

As you know, tree roots need to breathe oxygen from air pockets between soil particles. But here in the intertidal zone, the muddy soils in which the mangrove trees grow are flooded at high tide. The water displaces the oxygen between the soil particles. The soil or mud becomes anaerobic (without oxygen), or with very limited oxygen.

So what did the mangrove trees do? They adapted to grow their roots above the water mark to breathe through them like straws! These are called aerial roots and they differ from species to species. The most common forms of aerial roots are pencil roots, knee roots, and stilt roots. The root systems also provide support for the trees in the soft muddy soils.

SALTY SITUATION

Saltwater can kill plants. Extraordinarily, the mangrove trees have adapted to extract freshwater from the salty seawater. They've also evolved ingenious methods of getting rid of the remaining salt. Some species excrete the salt through glands on the leaves. These

leaves are covered in a crust of saltiness – you can lick it to believe it! Other mangrove species deposit the salt in the older leaves or they may single out leaves and pump them full of the excess salt. These leaves die and fall off the tree, taking the salt with them.



SEEDLINGS IN A TREE

Like most other trees, mangroves produce fruits with the seeds inside the fruit, except for this amazing difference: the seeds germinate in the fruit while the fruit is still on the tree! This ensures maximum survival in this harsh and tidal environment. In some species, the pointy propagule (germinating seed) drops into the

muddy soils during low tide where it quickly continues to germinate and grow. The seeds are also buoyant, allowing them to float on the water. Here is another incredible adaptation: if the propagule floats out to sea with the tide, it will soon grow a few pairs of leaves which act as sails, helping it to drift along to another shore!



Photo: "Avicennia germinans-salt excretion" by Ulf Mehlig

TREES & CREATURES IN THE MANGROVES

The mangrove ecosystem provides habitat to a number of sea animals, birds, turtles and even crocodiles. Numerous fishes use the safety of the mangrove tree roots to mate. Now that it is low tide, I can see the fiddler crabs (*Uca* species) and the mud crabs (*Scylla serrata*). They are awesome! Other favourites are the mudskippers (*Periophthalmus kalolo*) and the beautiful, yet endangered mangrove kingfisher (*Halcyon senegaloides*). These are only a few of the amazing animals found in mangroves. Wow, so much life in this harsh environment!

BLACK MANGROVE (*BRUGUIERA GYMNORRHIZA*)

- Grows about 10m high
- Bark is black and rough. New growth is green, becoming grey.
- Aerial roots: in the form of knee-roots
- Elongated fruit germinate on the tree to form a ribbed, brown hypocotyl (emerging root) about 11 cm long



KOSI MANGROVE (*LUMNITZERA RACEMOSA*)

- The bark is brown to greyish-black and red, while the twigs are reddish-brown or greyish-black.
- Branches root into the substrate
- Flowers are generally small and fragrant



FIDDLER CRABS (*UCA SPECIES*)

- Male fiddler crabs have one greatly enlarged claw, which they use to impress females, as well as to fight off other males. The other smaller claw is used for feeding.
- Females have smaller claws of equal size
- They live in burrows in the mud where they take refuge during the high tide.
- They eat organic litter and plankton deposited on the sand and in the mud.

MUD SKIPPERS (*PERIOPHTHALMUS ARGENTILINEATUS*)

- A fish that can be found in the water or skipping up a mangrove tree root!
- Mottled grey-brown appearance helps them blend well with their muddy surroundings
- Cleverly adapted to survive out of water for several days
- At low tide, they search for food and skip over the mudflats, using their sturdy pectoral fins ('breast fins') as legs! They can also flip themselves up to a metre forward with their tails.

RED MANGROVE

(*RHIZOPHORA MUCRONATA*)

- Also known as the Loop-root mangrove
- Grows about 10 or 15m high
- Aerial roots: stilt roots that prop up the tree and appear from the trunk at various heights. Roots grow downwards in a random fashion, forming a tangled root mass.
- Undersides of the pale leaves have corky warts
- Germinating seeds grow a root out of the fruit and can elongate up to 1m before it detaches, drops down and takes root in the mud below.



MANGROVE KINGFISHER

(*HALCYON SENEGALOIDES*)

- Prefers to live in mangroves during winter
- Hunts from a tree perch and eats insects and fish
- Returns with his victim to the tree perch to feed
- This bird is endangered

RED MANGROVE CRAB

(*SESARMA MEINERTI*)

- Identified by its dull brown-black body and equally sized red claws
- Larger than the fiddler crab
- Burrows in the dryer and shady parts of the mangrove
- Scurry across the mud and between the tree roots during low tide
- Climb into the mangrove trees during high tide where they are safe from the water and its predators
- Feeds on the fallen leaves of the mangrove trees
- Sensitive to vibrations and can detect a leaf falling on the mud while they are hidden within their burrows. They then dash out and grab the leaves, rush back to their burrows and enjoy a leafy snack. A fight often ensues between the crabs for the same leaf!

WHITE MANGROVE

(*AVICENNIA MARINA*)

- Height: small to medium-sized tree (3-11m)
- The trunk is white and straight, with many branches on its rounded crown.
- The bark is pale yellowish-green, with raised dots, and is flaky.
- Aerial roots take the form of pencils that stick up out of the mud in dense stands, spreading out from the trees



GROOVY TERMINOLOGY

- Mangrove: refers to the specially adapted trees or the ecosystem as a whole.
- Intertidal zone: also known as the littoral zone, is the area above water during low tide and under water at high tide.
- Pneumatophores: aerial roots.
- Halophytes: plants that have adapted to grow in salty conditions.

MANGROVES COUNT

Mangroves are considered to be among the rarest and most threatened of forest types in South Africa. Unfortunately, development along estuaries has destroyed many mangrove forests and the resourceful creatures that live here. Damming of rivers limits the amount of freshwater that reaches estuaries, and mangrove trees are harvested for wood.

Many parks and lodges along the coast offer guided tours of the mangroves. If you get the opportunity, I have no doubt that this unique and weird ecosystem will intrigue you so much that you will become an avid mangrove campaigner.

Remember, your litter ends up in rivers, and rivers are the lifeblood of these wonderful ecosystems.



Photo of dead mangroves: www.mphnews.com

Reduce Reuse Recycle

Words by Andrea Vermaak
Concept by Kayla Roelofs

Hanging Herb Garden

Remember, you have the power to change the world around you. Don't wait for someone else to do it for you.

A South African university student designed this cool herb garden, reusing PVC pipes and terracotta containers, as part of a design project for her course. We think it's so cool that we asked her if we could show you how to make it too. She was happy to help, and we're sure the university is proud of her innovative, cost effective design!

1 Drill five evenly spaced holes into the bottom of an old, long terracotta flower pot.

2 Repeat the above step with a PVC pipe, the same length as the pot. Space the holes at the same distance as those in the terracotta pot.

3 Secure small plastic drainage tubes into the three middle holes of each container.

4 Drill two matching holes into ends of another terracotta container. This could be a pipe or an old flower pot the same length as the other two containers.

5 Now make three larger holes in the top of your PVC pipe to plant herbs. If you are using a terracotta pipe as your last container, do the same with the pipe.

6 Thread thick wire or rope through the holes on either end of the containers to make a hanging garden. Secure the wire or rope inside each container with a knot.

7 Fill the bottom two containers with soil and compost.

8 Plant herbs that need lots of water, like basil, cilantro, tarragon and parsley, in the PVC pipe. PVC helps save water as it keeps moisture in the soil.

9 Plant herbs that need less water in the bottom terracotta container. Some examples are chives, sage, lavender, thyme, rosemary, oregano and marjoram. Water drains from the PVC pipe into the terracotta container. Terracotta keeps less moisture in the soil than PVC.

10 Hang against a wall or from the ceiling of a covered patio.

11 Fill the top container with water and watch how water is filtered to your plants in the containers below!

12 Enjoy fresh herbs with your meals!

PVC water pipes are relatively non-toxic.

PVC water pipes do not easily perish.

PVC is recyclable!

Terracotta clay is completely natural!



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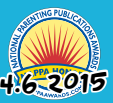
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HISTORY OF VIDEO GAMES

Words and Layout
by
Louis Bester



THE GREAT VIDEO GAME CRASH!

During the 1980s, most people who played video games did so at home. Many companies that made the first video games started making home consoles, featuring all the favourite major arcade titles.

More and more companies sprang up, making games that were... well... not so great. There were too many bad games available for people to play. This was long before the Internet, so video game reviews were not easy to get a hold of.

Many people bought games that turned out to be a waste of money. This meant that even though there were some really great games out there, they were far too risky to buy, just in case they flopped. This led to the Great Video Game Crash in 1983.

During the Video Game Crash, many companies that started the video game craze closed down, including Magnavox and Atari.

REBIRTH OF THE VIDEO GAME

Nintendo, a Japanese video game company, single-handedly brought the video game industry back to life. They did so by implementing new ideas into how games should be presented.

They gave people better graphics, better sound, better games and a better experience with their own home console: The NES (Nintendo Entertainment System). Their most famous game is *Super Mario Bros.*

The same started happening for SEGA, another Japanese-based company. They decided to also step up their game and attempt to become part of the home gaming scene. They did so by introducing the SEGA Master System. It was during this time that the home computer system also started to take off. Apple and Microsoft became household names. That meant that they wanted to be part of the gaming world too!

Thanks to the rise of computers, one of the greatest games of all time was designed. *Tetris* was designed by a Russian man named Alexey Pajitnov.

Many people blame the Video Game Crash of the '80s on E.T. This is because the E.T. video game, based on the movie, was so bad that it caused Atari's downfall.

THE BIRTH OF DISC GAMES

Companies, such as Sony Entertainment, also decided to try their hand at video game creation. With the increase in popularity of CD's as storage devices, games could now become even bigger and even better. Companies such as SEGA and even Nintendo tried distributing games on CD.

Only Sony truly became successful at this within the console market, creating The Sony Playstation.

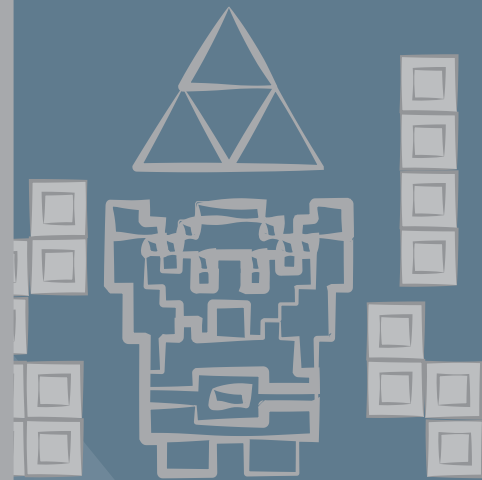
A few years later, computer giant Microsoft stepped into the gaming console market, creating The Xbox.

Alexey Pajitnov, creator of Tetris, received no money for his game until 1996. This is because Russia was a communist country during that time, meaning that the government took the rights to his game and sold them.

THE COMPUTER AGE

The immense popularity of computers led to the enormous growth of the video game industry. People could now learn to make their own games at home. Companies such as Sierra, Electronic Arts and Id Software were all created from people's homes and became extremely successful.

The birth of the Internet helped greatly with the popularity of computer games. Companies gave away the first portion of a game online, hoping that people would buy the entire game later.





THE GAMING INDUSTRY THRIVES AGAIN!

Games are now a part of our everyday lives. We play them to relax and have fun. Some people even play them competitively for a living. Whatever your reason for wanting to play games, it's always cool to know where it started and how it all came to be.



Game on!



Did you know that Sony only started making games because they were angry at Nintendo? Nintendo betrayed Sony during the creation of the Nintendo disc-based game system by asking another company to work with them in secret behind Sony's back.

P1

P2

WE HEAR YOU LOUD AND CLEAR!

WORDS BY
GRAHAM BARLOW

ILLUSTRATION BY
RAQUEL JONES

A CLOSER LOOK AT
THE HUMAN EAR & SOUND

Waves! Every surfer in the world wants many! Waves that arrive at the seashore in a regular pattern, preferably held up by a wind blowing from the land towards the sea so the water surface is smooth.

Although they are great fun, these waves are not the most important waves in your life – not by a long shot!

Waves are everywhere in our lives. Some are visible, while others are invisible. But without them, we would be like moles buried deep under the Earth: blind and deaf with only shock waves that travel through the ground that let us feel that human steps are approaching – danger!

The communication waves we're referring to are sound waves: the waves that bring information to our brains that let us hear. Let's have a look at sound and the flappy organs that stick out from the side of your head – your marvellous ears.



SOUND WAVES ARE NOISY

Sound waves are very slow in comparison to light waves. Sound moves through air at about 1230kms/h (only about 342m/sec. Compare that to light waves that move at almost 300 000km/sec.) Water is a lot thicker than air, right? So you'd expect sound to struggle more slowly through water, but it doesn't! It travels over four times faster at 1482m/sec. Even more interestingly, it travels much faster, at 5960m/sec., through steel.

a vibration. This means that physical energy transfers from one molecule to the next in the medium it's travelling. Energy goes into the creation of sound: a slamming door, a hi-fi speaker or a shout. Then, like marbles banging into each other on a table, the energy is transferred from one moving molecule to the next. The denser the molecules, the faster the energy is transferred.

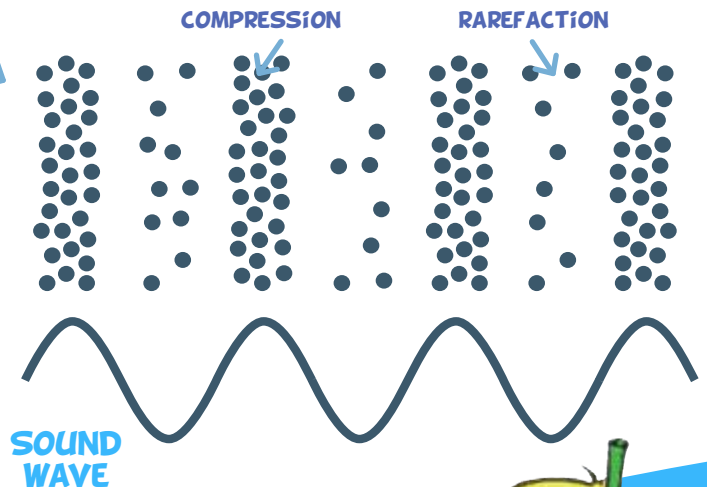
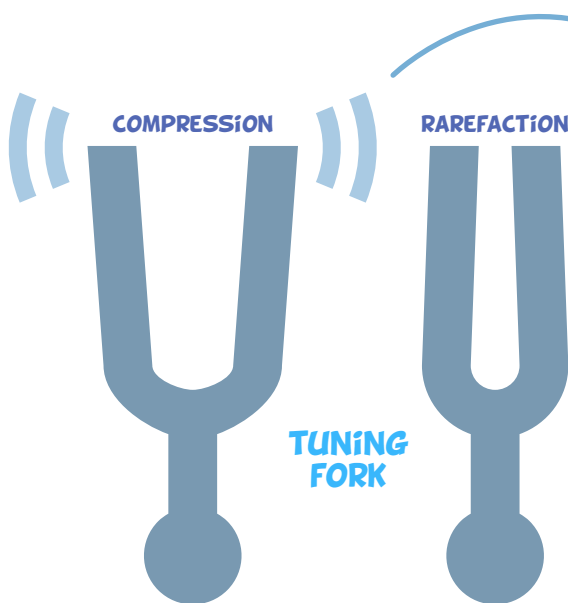
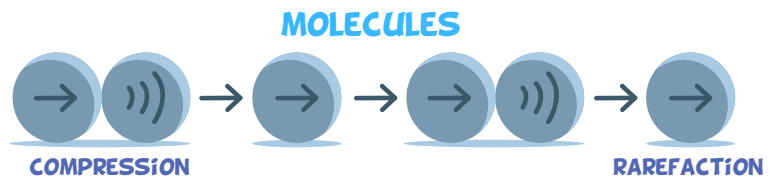
no one can hear you scream!" It's true – there are no molecules in a vacuum, so your scream would leave your mouth in a puff of air and just... vanish.

Why is this important to ears? Our ears are designed to pick up physical vibrations. The energy that's being transferred from molecule to molecule in the air arrives at our ears. Then it's converted to energy that is sent through a nerve to the brain.

Why is this? Sound waves are actually

There's a scary film called *Alien*. It advertised itself, saying that, "In space

VIBRATING TUNING FORKS CAUSE ENERGY TRANSFERS FROM ONE MOVING MOLECULE TO THE NEXT, LIKE MARBLES BANGING AGAINST EACH OTHER. THE MOLECULES ARE CLOSEST TOGETHER IN A COMPRESSION. THE MOLECULES ARE FURTHEST APART IN A RAREFACTION.



"SOUND TRAVELS FOUR TIMES FASTER THROUGH WATER: AT 1482M/SEC!"



SO EARS AREN'T JUST THERE TO KEEP YOUR HAT FROM FALLING OFF?

Without ears, we'd have to rely on touch to pick up vibrations. Ears are sound's windows to the brain. Ears come in three parts: the outer ear, the middle ear and the inner ear. That just about describes them perfectly!

THE OUTER EAR

The outer ear is the flappy external part we spoke about earlier, called the auricle, and the ear canal that leads to the middle ear. The auricle is made of cartilage. It's connected to the skull by ligaments and muscles (which is why some people can wiggle their ears).

They serve an important purpose. Auricles are like ear trumpets. They catch the sound and focus it into the ear canal. On most animals, the auricles are more highly developed, and can move even when the head is still so that animals can focus on noises that signal danger.

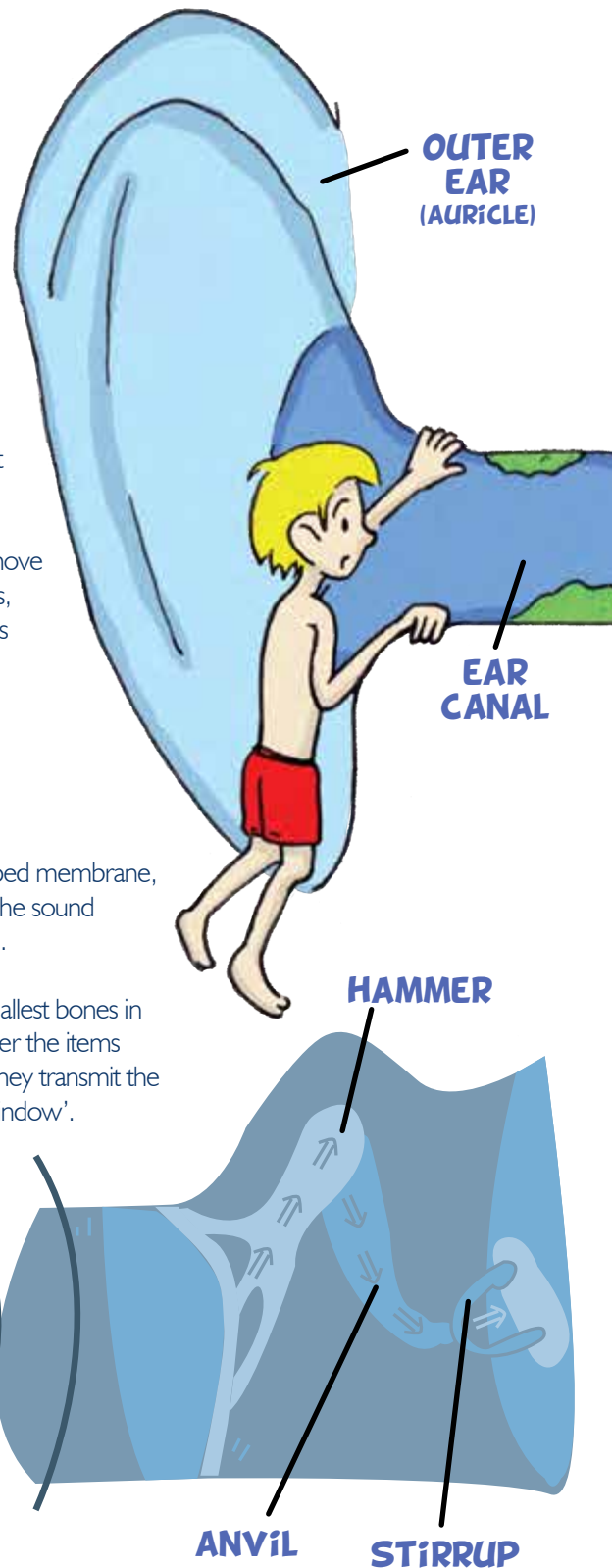
After being caught and focussed by the auricle, the sound waves then move through the ear canal. Both the auricle and the ear canal act as amplifiers, and boost the vibration, also called sound pressure, by almost 100 times before it reaches the middle ear.

THE MIDDLE EAR

Between the outer ear and middle ear is the eardrum, a thin cone-shaped membrane, also known as the tympanum from a Latin word meaning 'doorway'. The sound pressure waves that enter the ear canal cause the membrane to vibrate.

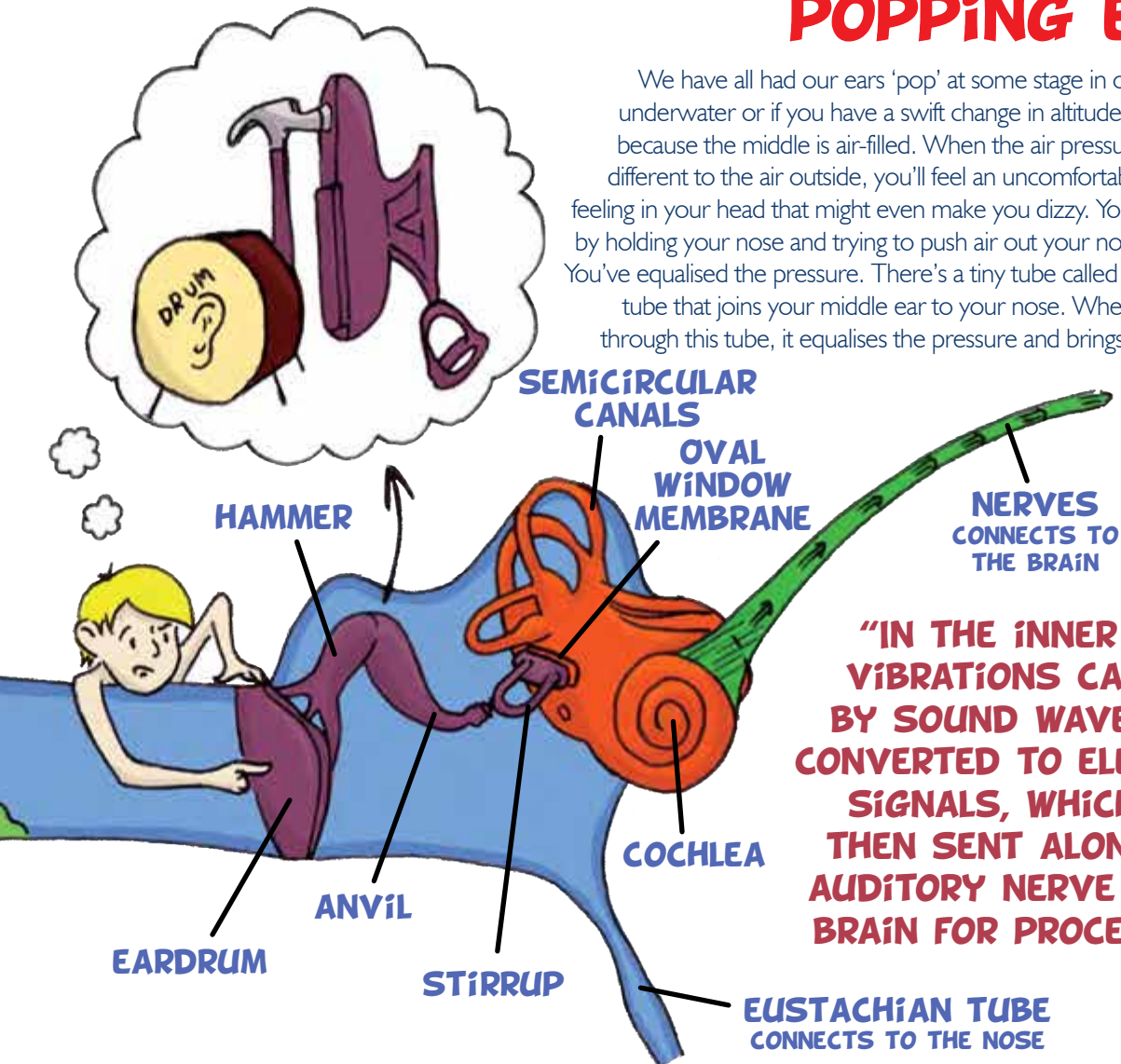
The middle ear is an air filled cavity. It contains the ossicles, the three smallest bones in the human body: the hammer, anvil and stirrup. All three are named after the items they resemble. These tiny bones touch the eardrum and each other. They transmit the vibrations through the middle ear to another opening called the 'oval window'.

Why are there bones in the ear? Good question! The human body is mostly liquid, and a liquid will reflect most of a sound that strikes its surface. The sound that reaches the middle ear needs to be concentrated and transformed from pressure waves into mechanical energy, so the three ossicles act together like a lever. The eardrum vibrates the hammer, which moves the slightly smaller anvil. It, in turn, vibrates the smallest bone, the stirrup. The vibration is concentrated into an area much smaller than the eardrum. This increases the force of the vibration, but slows its speed before reaching the fluid that fills the inner ear.



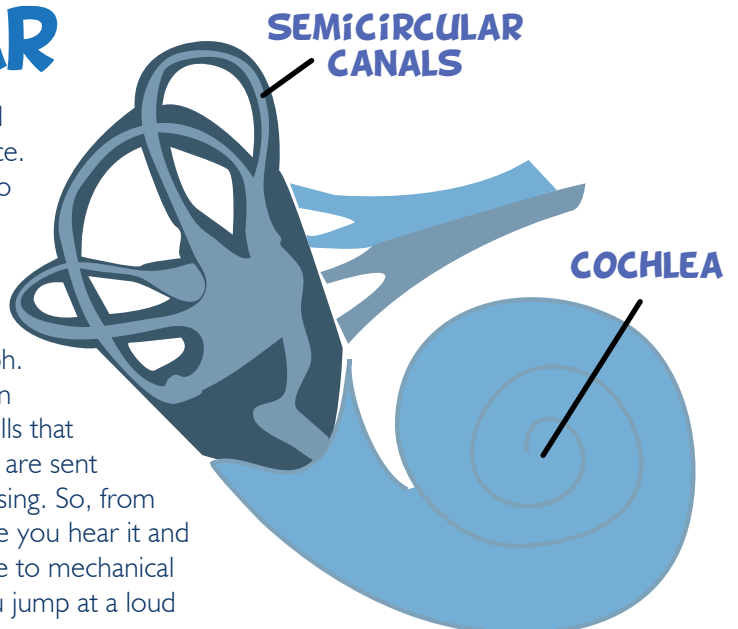
POPPING EARS

We have all had our ears 'pop' at some stage in our lives, either underwater or if you have a swift change in altitude. This happens because the middle is air-filled. When the air pressure in the ear is different to the air outside, you'll feel an uncomfortable pressurised feeling in your head that might even make you dizzy. You can clear this by holding your nose and trying to push air out your nostrils, and pop! You've equalised the pressure. There's a tiny tube called the Eustachian tube that joins your middle ear to your nose. When you blow air through this tube, it equalises the pressure and brings relief. Whew!



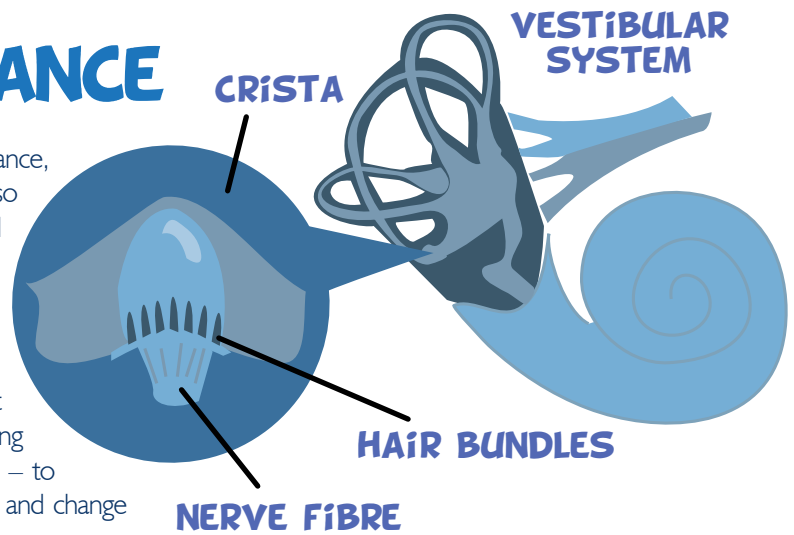
THE INNER EAR

This is the really complicated part of your ear and serves two purposes: sound detection and balance. Once the ossicles have changed sound waves into mechanical movement, the stirrup pushes on the oval window at the entrance to the inner ear. This opening is much smaller than the eardrum, so there is now a much greater pressure on it. The inner ear is filled with a liquid called perilymph. The oval window membrane moves this liquid in the cochlea and moves thousands of tiny hair cells that convert the motion into electrical signals. These are sent along the auditory nerve to the brain for processing. So, from the time a door bangs in the distance to the time you hear it and get a fright, sound has changed from air pressure to mechanical movement to electrical impulses. Next time you jump at a loud noise, think about that!

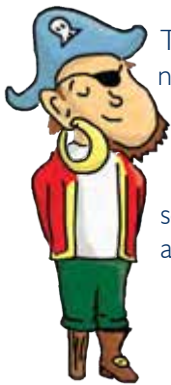


FIND YOUR BALANCE

Balance is vital to us. Without the ability to balance, we would not be able to move. The inner ear also contains the vestibular system, a three-dimensional system of liquid filled tubes called a labyrinth. As we move around, the liquid in the tubes moves too, responding to motion and gravity. Tiny hairs, similar to those that pick up the movement of fluid in the cochlea, pick up this information and send it to the brain. The brain interprets the signals – using signals from our eyes as well, if it's not pitch dark – to understand how the body and head is positioned, and change them if necessary.



INTERESTING EAR FACTS

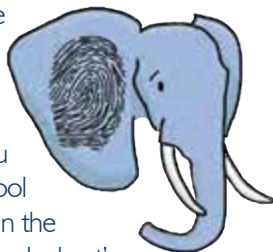


Think that having one ear pierced is a new fashion statement? Think again! Sailors and explorers pierced one ear, believing that it would make them see better. Sailors wore a golden earring so that whoever found their body after a shipwreck could pay for their burial.

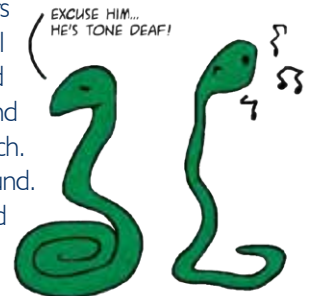


Ever wondered why statues of Buddha have such long ears? In ancient times, the Chinese believed that long ears meant that you'd have a long life. The thickness of your ears indicate wealth. Because of this, kings and emperors were portrayed with long ears – and Buddha too!

Elephants evolved to have huge ears to help them cool down. That's why African elephants have bigger ears than Indian elephants: you need more help keeping cool in the savannah than you do in the jungle! The blood vessels in an elephant's ears are unique and, like a fingerprint, can be used to identify them.



Snakes don't have outer ears or eardrums, but they can still hear. The vibrations from sound move through the ground and into a snake's jaw and stomach. This allows them to sense the sound. They can also hear some sound waves with an inner ear, but they can't hear music. Snake charmers use the movement of the flute to make the snakes react.



YOUR EARS ARE PRECIOUS!

Ears – they may be big or small, flat and neat, or stick out like wings. It doesn't matter: they serve incredibly important functions in your life, so respect them and look after them! Don't push things into the ear canal – even if there's cerumen (the fancy name for earwax) inside. Flush it out with warm water or ask your parents for advice. If you are listening to music, keep that volume down!

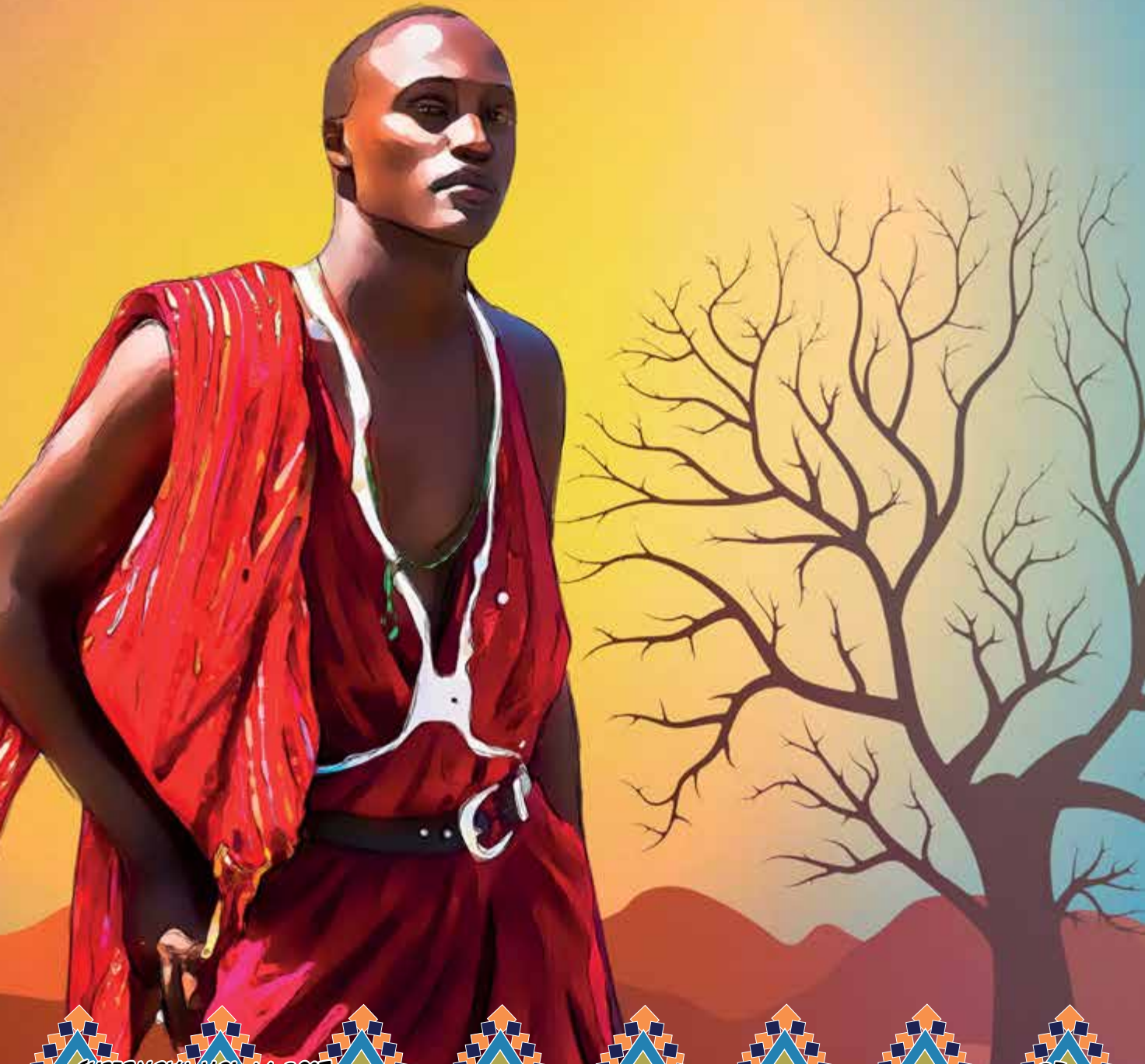


THE

MAASAI

From the outside, a Maasai village looks quiet and rather rustic against its natural grassland setting. But within the walls of the village, you'll find a proud people rich in history, culture and tradition.

WORDS BY ANDREA VERMAAK LAYOUT BY MICHELLE PIENAAR





WHO ARE THE MAASAI?

The Maasai are a small, but unique ethnic group of semi-nomadic pastoralists. Even though the Maasai populations in northern Tanzania and southern Kenya are small, they're a very well-known people. They have a reputation as formidable warriors and cattle-hustlers.

They speak Maa, a Nilo-Saharan language, but can also speak Swahili and English.



WHERE DID THEY COME FROM?

They are thought to have originated from the lower Nile Valley, north of Lake Turkana. Maasai myths claim that they climbed out of a broad, deep crater surrounded by a high, steep cliff.

They began migrating with their herds into southeast Africa via South Sudan by the 1600s. Today, Maasailand is bounded by Lake Victoria to the west, and Mount Kilimanjaro to the east.



HOME SWEET HOME

To be able to move easily from place to place, the Maasai live in an *enkaang*. It's a semi-permanent settlement where several families make their homes. Within the *enkaang* you'll find about 10 to 20 *Inkajijik* (huts). Women build the *Inkajijik*. They are made of timber poles anchored into the ground. Smaller branches are then interwoven with a lattice between the poles, and plastered with a mixture of mud, grass, sticks, cowdung (for waterproofing), ash and... human urine. Each *enkaang* is only about 3x5m in area, and 1.5m high.

The *inkajijik* are surrounded by a circular fence made of thorned acacia. The men build the *leleshua* (thorn) fences. Livestock are driven into an enclosure in the centre at night to keep them safe from wild animals.

IN-KISH

Cattle (*in-kish*) are very important to the Maasai. In fact, the Maasai believe that their god, Engai, gave them all the cattle on Earth. This is why the Maasai raid cattle. They believe they are taking back what belongs to them. Cattle are also a sign of wealth. The more cattle and children a man has, the wealthier he is. A herd of 50 cattle is seen as respectable. A man is considered poor if he has a lot of one by not the other.

Cattle numbers are decreasing though because the governments have subdivided Maasailand, making their land size smaller. The Maasai now face many challenges, including poverty and less food. They've demanded grazing rights in many national parks in both Kenya and Tanzania to access crucial water sources, pasture and salt lick for their cattle.



YUM!

Traditionally, beef and milk (fresh and sour) once formed a large part of the Maasai diet. Beef is only eaten on special occasions now, as cattle numbers are decreasing. Milk mixed with cattle blood is also drunk on special occasions, like *eunoto*.

Maasai also traditionally eat fat, honey, and prickly acacia tree bark soup. They're not allowed to eat game, fowl, fish or salt. They're also not allowed to mix milk and meat.

Because cattle numbers are decreasing, many Maasai now herd sheep and goats for meat. They also grow and eat sorghum, cabbage, rice and potatoes.



JUMP UP AND DOWN!

The *adumu*, or jumping dance, is performed during *eunoto*, a warrior's (*moran's*) coming of age ceremony. The warriors form a circle. One or two enter the circle at a time and begin to jump. While they jump, their postures have to be straight. They also shouldn't let their heels touch the ground. As a warrior jumps higher and higher, the other *moran* may raise the pitch of their voices.

HAIR OR NO HAIR?

Only warriors may have long hair, which is woven into thin braids. It's dressed with animal fat and ochre.

Shaven heads represent a fresh start, so head shaving is common at many rites of passage ceremonies, such as *eunoto*. Women also shave their hair before their wedding day.

When an infant is three 'moons' old, the head is shaved except for a tuft of hair from the nape of the neck to the forehead. This hair symbolises a 'state of grace'. The child is then also named.

LOOKING GOOD

Animal-skin, calf hides and sheep skins were gradually replaced with commercial cotton cloth in the 1960s. Two *shúkà*, or sheets, are traditionally wrapped around the body, one over each shoulder. A third *shúkà* is worn over the top two. *Shúkà* are usually red, a favourite colour, or blue, striped or checkered. Sometimes multi-coloured designs are also worn.

Clothes depend on age and location. For example, newly initiated young warriors wear black for several months, while they live in isolated villages (*manyatta*) built by their mothers.

Simple sandals made from cowhides were once the preferred footwear, but many Maasai now sole their shoes with strips of tyre or plastic.

Wooden bracelets are popular with both men and women. Women also wear bead jewellery. As with Zulu beadwork, the colours of the beads have different meanings. Beads were once made from local raw material, like ivory, metals, charcoal, clay, shells, seeds, and wood. Most beads are now opaque glass beads. Jewellery and body painting shows a woman's position in society.



Images: USAID Africa Bureau, Jovic, Butere



MAASAI TODAY: A DISAPPEARING CULTURE?

The Tanzanian and Kenyan governments have urged the Maasai to give up their semi-nomadic way of life. Western culture has already influenced the Maasai lifestyle in many ways. Many children now go to school. This is good, but it means their parents are left to herd the livestock. Young boys now only herd on weekends.

Their barter system is disappearing. Many young Maasai now sell livestock, livestock products, beads, grains, and even cell phones in major towns and cities.

Their entrepreneurship has not made them wealthier, but actually poor and far less self-sufficient than they once were.

Despite Western influence and a decline in cattle, many Maasai continue their age-old customs. Let's hope that their unique culture is not lost forever, but passed on to many more generations to come.



“IT IS IMPOSSIBLE TO FIND A MAN WHO HAS EVERYTHING, BUT IT IS POSSIBLE TO FIND ONE WHO ENJOYS THE THINGS HE HAS.”

◆Maasai proverb◆

Images: Khym54, David Berkowitz, Ninaras, Anita Ritenour.

Litre of

Words by Jason Hes | layout by Aneldi van Zyl

Imagine you have last minute homework to do, or you need to add finishing touches to a project you have worked on for weeks. Although you have worked so hard to present a brilliant project or maintain your school marks, your family cannot afford to pay for electricity so you have been doing most of your work in pitch darkness. You worry you may not be able to read the exercises in your school books well, and your attention to detail is lacking as you can't properly see what you are working on.

The problem

Unfortunately, this is a sad reality for many young South African kids today, who are prevented from achieving the best they can because they do not have a simple thing like electricity. What can we do

to help those that are in desperate need of light? Are there any alternatives to electricity that could help to brighten up their lives? A man from Brazil may have the answer.

The solution

Alfred Moser is a Brazilian inventor and mechanic who, in 2002, came up with a safe way to create light without electricity. His invention is so simple, it's brilliant. With nothing more than a two litre plastic bottle, water and some bleach, his creation has lit up thousands of households, and continues to do so to this day.

Depending on how strong the sun is, one plastic bottle light bulb can produce anything between 40 and 60 watts. His invention has inspired the 'Litre of Light' open source movement incorporated by My Shelter Foundation, founded by Illac Diaz. They specialise in alternative construction of houses.



Fill with water



Light



Clean two litre plastic bottle

How it's made

So how is a plastic bottle light bulb made? First, after finding a clean two litre plastic bottle, fill it up with water and add two cups of bleach. The bleach, Moser explains, prevents algae from growing inside the bottle and turning

the water green. The next step is to use a drill to make a hole in the roof of the household. After pushing the bottle up into the hole from inside the home, secure it with a waterproof sealant. You will see results immediately!

How it works

So how does it work? In space, light travels in straight lines, but when it passes through other materials, it refracts. When light refracts its speed changes, causing it to bend. When light shines on plastic, it slows down quite drastically, as plastic is a dense material. So, the beauty of Moser's invention is that when light hits the roof of a household with bottles of water sealed into it, the sunlight is bent by the plastic and water, and spread around the room.



Two cups of bleach

A way forward for SA

Today in South Africa, more than two million households have to rely on candles for lighting, even during the day. While this may seem an appropriate substitute for electricity at night time, candles can be quite hazardous as they can cause fires when not blown out. Many have suffered because candles have been knocked over, or have burned in rooms that aren't well-ventilated. With the knowledge Moser has given us, we can now provide safe alternatives to electricity for those in our country less fortunate.

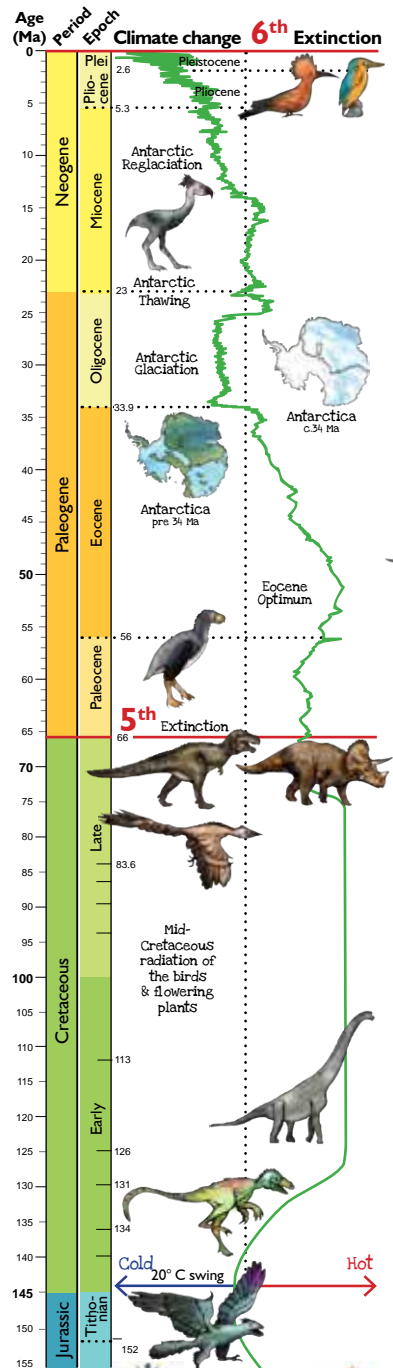


Biodiversity & Extinction

Part 3 Birds

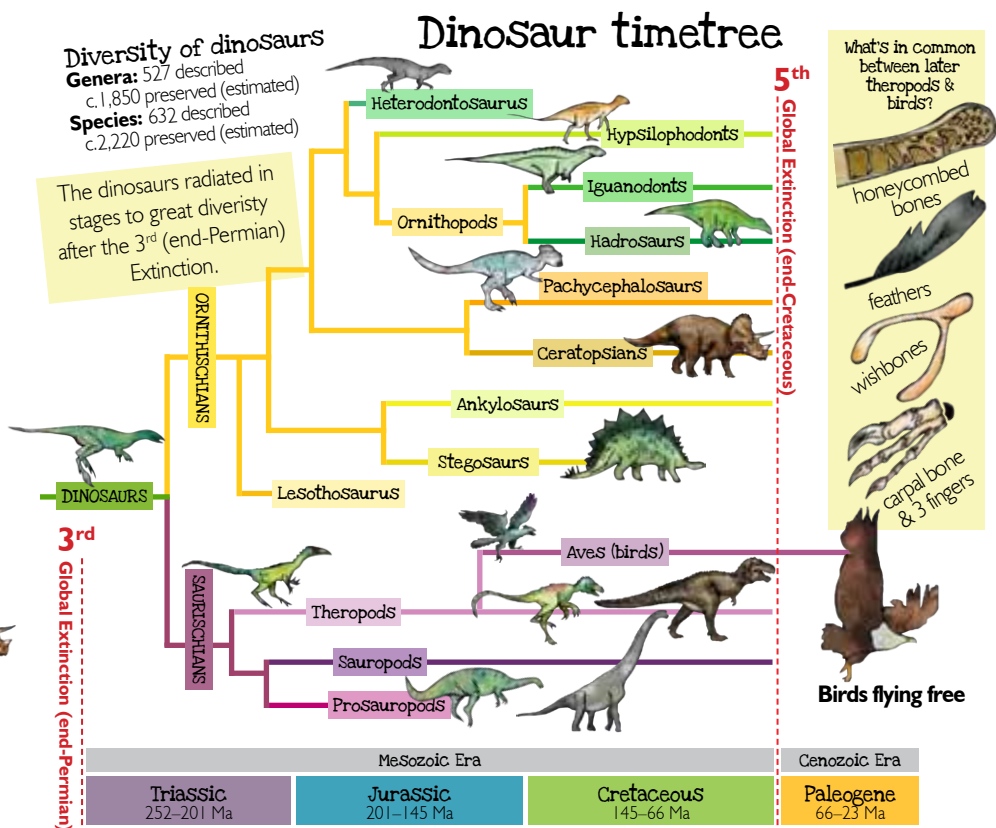
Compiled by Drs John Anderson, Greg Davies (Ditsong) & Anusuya Chinsamy-Turan (UCT);
Layout by Ditshego Madopi, Carli Botes & Waldo Swart

About 150 million years ago, birds evolved from the meat-eating dinosaurs known as theropods. Out of the immense diversity of dinosaurs, which ruled for nearly 200 million years, only one branch, the aves, survived the 5th extinction. These survivors evolved and multiplied into an incredibly rich and diverse group which spread across the world, successfully adapting to their environments and threats. That is, until modern man came along and caused a new wave of extinction.



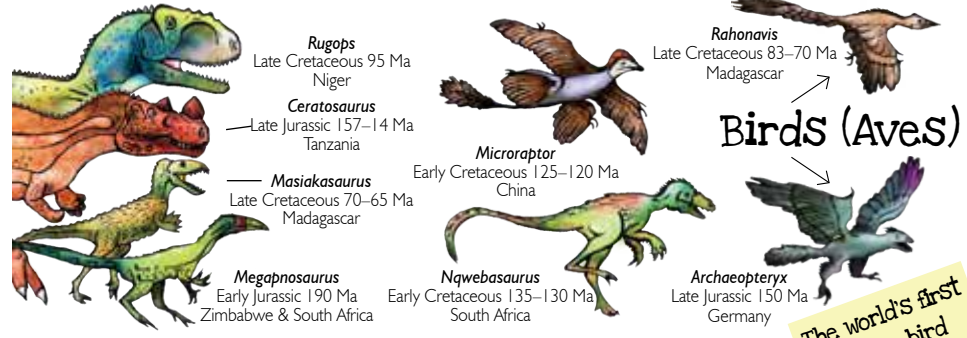
Diversity of dinosaurs
Genera: 527 described
 c.1,850 preserved (estimated)
Species: 632 described
 c.2,220 preserved (estimated)

The dinosaurs radiated in stages to great diversity after the 3rd (end-Permian) Extinction.



Theropods

Meat-eating dinosaurs from which the birds evolved



The world's first known bird



Bird timetree

Global science

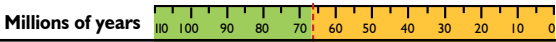
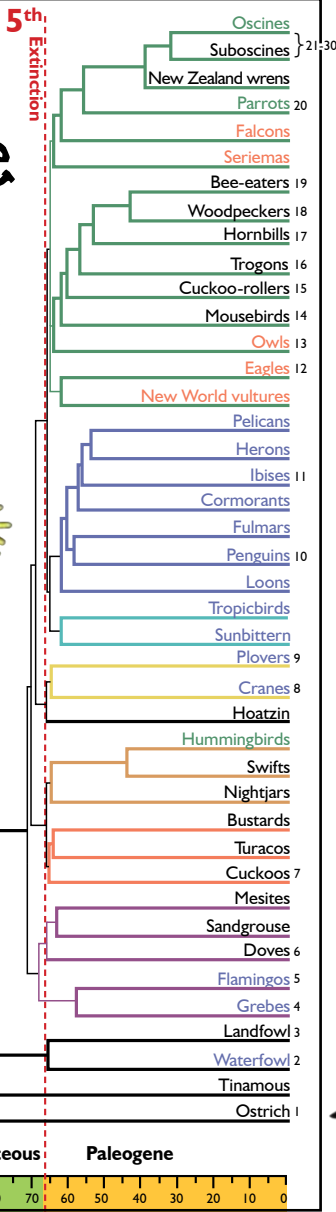
This bird timetree took over 5 years to draw. It has taken hundreds of scientists, at 80 institutions in 20 countries, and 300 years of computing time. It is based on the genomes of 48 species.

Bird evolution & climate

Just like all life on Earth, the great diversification of birds has followed the same cooling climate curve over the past 50 million years.

Birds & flowering plants

Birds are great spreaders of seeds and pollen. The 1st major branching in bird and flowering plant evolution follows the same pattern at c. 110 – 100 Ma.



Key
 Vocal learners
 Birds of prey
 Water birds

Diversity of Birds

Orders: 40
 Families: 238
 Genera: 2277
 Species: 10,567

This is a selection of 30 SA bird species in 30 families. Which of these have you seen?



Bird colour & song
 Birds fill our world with a full spectrum of colour; and a rich diversity of song.

Birding for life
 Get to know and spot birds in nature and in the city. If you know them, you'll love them, and look after them.

Bird Extinctions

- 163 species lost since 1500
- 19 species lost from 1975 – 2000
- 3 species lost since 2000

Waves 1&2 Extinction by hunter-gatherers & later colonists	South America Some 80% of the genera of the largest birds vanished.	New Zealand 50% of all birds, including all large and most flightless species were lost.	Pacific Islands All 4 moa-nalos species (endemic, flightless ducks) and around 50 large bird species are extinct.	Madagascar All species of elephant bird are extinct. Among them, <i>Aepyornis maximus</i> , which grew to 3m and had eggs like footballs.
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Extinction of large flightless birds

What is the future of the 10 000 or so species of birds that still share our world?

References: Birdlife.org (2014); Chinsamy-Turan (2008, 2014); GSA (2013); IOC World bird list (2015); Nature (Oct 2012, Dec 2014); Wang & Doolson (2006)

I WANNA BE

THIS IS WHERE WE PROFILE EXCITING, OFF-BEAT CAREER OPTIONS!



Layout by Aneldi van Zyl

PUBLISHER



★ We caught up with Chrisna Prinsloo to take a behind-the-scenes look at book publishing.

WHAT IS A PUBLISHER?

A publisher is someone who produces books, newspapers, or magazines.

Why did you choose this career?

Ever since I was a little girl, I was fascinated by books. I loved the way they felt, looked and smelled. I have always wanted to be someone who made books.

What do you do on a typical work day?

I work closely with graphic designers, editors and other publishers to create professional-looking books. We create covers, design text, and keep in touch with the printers to make sure the books come out perfect. Sometimes we even get to play around with some fun images when we do children's books.

What skills do you need on a day-to-day basis?

You need to be good with languages, and have a good idea of how text should be designed on a page. It's important to be creative, and to have good people skills.

Do you need any special qualifications in your field?

The easiest way to become a publisher is to study BIS Publishing. You will have a good background of the field which will make your first job as a publisher much easier. But you can also study languages or graphic design to become a publisher.

WHAT COMPANIES OR INDUSTRIES HIRE PUBLISHERS?

Publishers have a range of industries they can enter. You can either go the traditional route and work for a magazine, newspaper, or publishing house. Or you can work for a corporate company, such as a bank, and publish the newsletters that go out to their clients.

What do you enjoy most about your job?

I love the feeling when a book that I worked on comes back from the printers and it looks perfect. I feel a sense of achievement, and it's very rewarding when the author is also happy.

What are the challenges of your job?

It is important to be patient with people and their ideas, and accept that your idea isn't always the best one.

What do you know now that you wish you knew when you first contemplated your career?

I never realised how much of a people person you need to be when you are a publisher. If I had known that, I would have worked on my communication skills a lot more.

Any advice to budding publishers?

Read a lot, practice your communication skills, be patient and work hard. The publishing industry is very small in South Africa and only the best publishers are successful.

A young boy with dark hair is shown from the side, focused on playing a Kawai piano. The piano is dark wood with the brand name 'KAWAI' visible on the fallboard. The lighting is warm and focused on the keyboard and the boy's hands.

"MUSIC ACTS LIKE A MAGIC KEY
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The Chatroom



Xenophobia

Words by Andrea Vermaak
Layout and illustrations by Yolandi Odendaal

CLOSE YOUR EYES AND IMAGINE A GREAT FEAST. THERE IS A HUGE TABLE LADEN WITH ALL SORTS OF DELICIOUS FOOD: ROAST POTATOES, MEDITERRANEAN VEGGIES, ROAST CHICKEN, CORN ON THE COB, SPANISH RICE, BANANA SPLIT, CHEESE CAKE, JELLY AND CUSTARD...

Now imagine if potatoes, rice, cheese, bananas and many other foods were not introduced to South Africa. All those mouth-watering dishes would disappear from your feast table, and all you would be left with is bland sorghum, millet and cowpeas. Not very interesting, right?

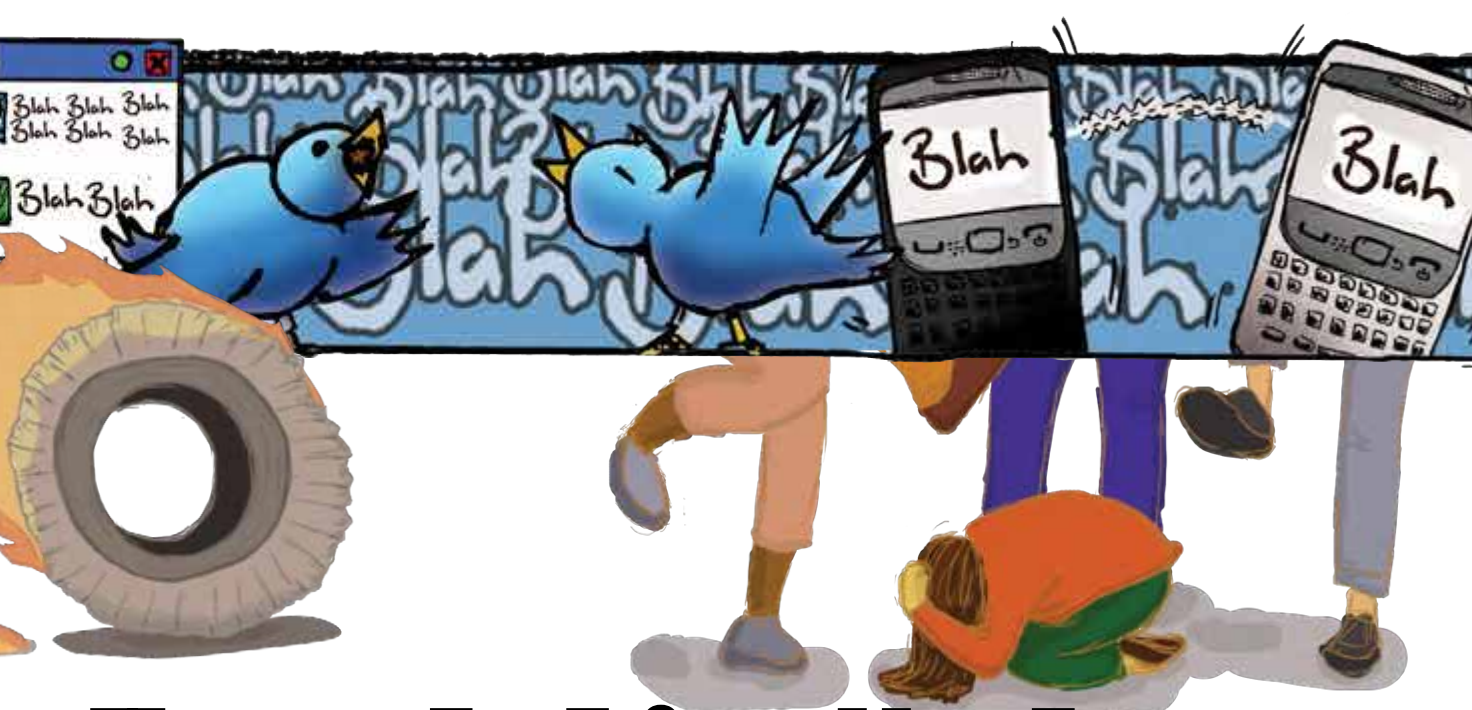
Our country is the same as the feast table – a mixture of different cultures from all over the world. Many people have come to South Africa to escape the dangers and/or poverty of their own countries. But have we welcomed them? Have we shown them compassion during their plight?

What is xenophobia?

Xenophobia is a prejudice towards people from other countries. In other words, if you're xenophobic, you don't like foreigners, even those who have legally settled in your country. It's also a form of racism.

Unfortunately, some people take their prejudice too far and become violent. They attack innocent individuals who are just trying to make a better life for themselves. Sometimes, even people who are not foreign, but who do not belong to the major ethnic group of a city, are attacked.





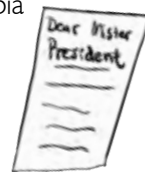
Xenophobic attacks

There are many reasons for the xenophobic attacks. The main reason is that some South Africans claim that foreigners are taking job opportunities, or even clients away from them. The truth is that many foreign nationals are legally employed. Others are self-employed entrepreneurs who are trying to make an honest living.

Do you have any family who are living and working overseas? It's the same thing. They are legally employed as foreigners in another country, but they're not being attacked. Like the refugees and asylum seekers in SA, they are also trying to make a better life for themselves. It seems that SA is one of very few countries that does not respect that.

What can we do to stop xenophobia?

- Write a letter to President Jacob Zuma. Tell him why you are against xenophobia and ask him to condemn it. Xenophobia is a very serious issue and needs authority to take charge over it.
- Report any attacks that you hear about or witness.
- Learn more about the countries and cultures of foreign nationals. Fear of the unknown is a driving factor for xenophobia. The better we understand our new neighbours, the more we will realise that they are people just like us.
- Learn more about why these people came to SA. You'll soon find out that South Africa is a better option for them, if not the only option. Compassion stops xenophobia in its tracks!
- Be kind. No matter whom you meet, whether they are from South Africa or beyond, show the greatest amount of kindness you can. You'll not only be a great representative for your country, but you may just be the sunshine to someone on a really rough day.



Live it UP!

The



The Highland Games are held in Scotland in villages across the country from May to September each year. The games consist of Scottish heavy athletics, piping, track and field events, exhibits, and entertainment related to aspects of Scottish and Celtic culture.

Words by Laura Donaldson Baruffa

Layout by Anlia Stavast

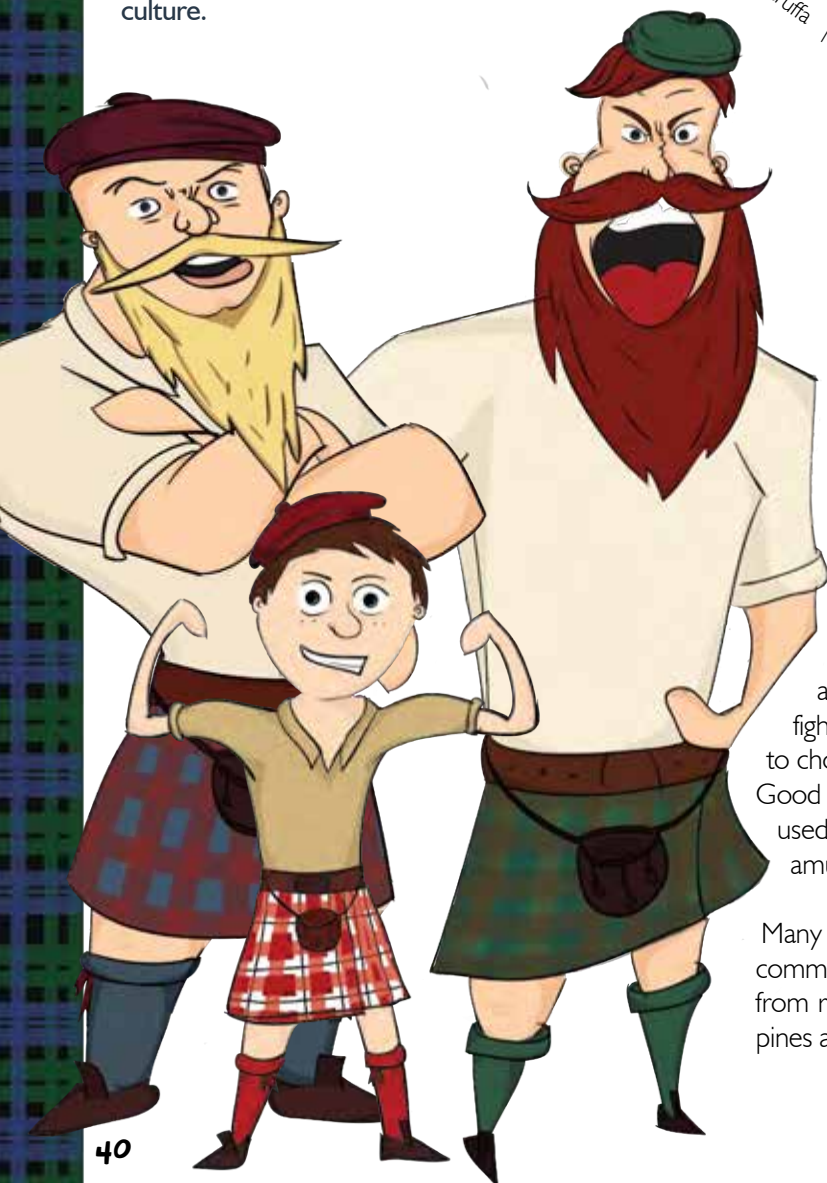
Games

Why did the Highland Games start?

There is a long, historic tradition where Scottish clans competed against each other in sporting events. The early Celts viewed such events as war games where their strongest and bravest warriors would win.

The Highland Games seem to have originated as a clan chieftain's way to choose the fittest fighters and bodyguards. Competitions were held to choose other members of staff and supporting staff. Good runners became messengers, strong men were used as defence, and the best entertainers supplied amusement during the long winter evenings.

Many events still use items which would have been common place in the ancient Highlands. Round stones from river beds were the original shot-puts, and Scots pines are still the traditional cabers tossed today.



Traditional Scottish Athletics and Events



Maide Leisg is where two men are seated on the ground. The soles of their feet press against each other. They hold a stick between their hands, which they pull against one another, until one of them is raised from the ground.

The most famous Scottish heavy athletics is the caber toss. A Scots pine trunk is shorn of its branches. The contestant who throws his tree trunk the furthest is the winner. Other forms of Scottish heavy athletics include stone-put, Scottish hammer throw, weight throw, weight over the bar, sheaf toss, and *Maide Leisg* (Scots Gaelic for 'lazy stick'). Highland dance, piping, and track and field events are also popular attractions.

Another famous Scottish game is tug-o-war (or tug of war to the rest of the world). Two teams assemble on either side of a marked line. This game tests the two teams' strength. The teams pull on the opposite ends of a rope. The goal is to move the rope a certain distance against the force of the opposing team's pull.



Where can I go to see the Highland Games?

The Cowal Highland Gathering, or the Cowal Games, is held in Dunoon, Scotland, every August. This is the largest Highland Games in the world. It attracts over 3500 competitors and around 23 000 spectators from across the world!

The Royal Family attends the Braemar Ceres Highland Games in Fife every year.

These are also the oldest games in Scotland.

Scotland isn't the only place you can watch the games. Countries all over the world host games to celebrate Celtic culture, especially that of the Scottish Highlands. Grandfather Mountain in North Carolina, and the Caledonian Club of San Francisco host the biggest Highland Games outside Scotland.

There are many things to see and enjoy at the Highland Games, from Scottish culture and entertainment, to food and sports. There is something for everyone at this ancient sporting event.



Brain Games

Layout by Maldo Swart & Michelle Pienaar

Buzzwords

The shaded U and the six letters surrounding it spell JUSTICE. It matches one of the clues on the right.

In the same way, find a 7-letter word for each of the remaining clues. Keep track of the centre letter of each answer you find.

1. fairness: justice - U
2. hair-cleaning soap
3. bring things together
4. enthusiastic
5. skin at base of nails
6. in the future
7. not straight

Now find the BUZZWORD for this puzzle by unscrambling all 7 of the center letters to spell the answer to this clue: small dessert.



Sudoku

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



Buzzwords
 2. shampoo - P 3. collect - C 4. zealous - A 5. cuttle - C
 6. someday - E 7. crooked - K Buzzword: CUPCAKE
 Games: Minicraft, Super Mario, Pac-Man, Tetris

Grid Puzzle

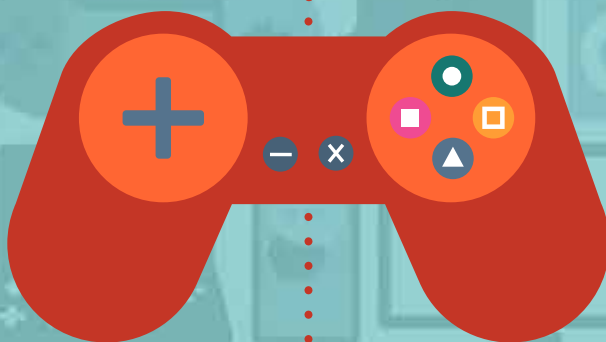
We've started filling out this puzzle, but you need to finish it and find the hidden picture. Use the numbers as clues to see which blocks to colour in and which blocks to leave blank.

There can be one or more blanks on either side of each row of blocks except if the block starts or ends at the boundary of the grid.

Go to nonograms.org/ instructions if you need more guidance to solve this puzzle.

	8	10	10	3	2	3	4	12	14	3	2	1	1	8	0
4															
8															
10															
3 4 1															
2 2															
2 2															
3 2 1															
4 4 2															
14															
14															
14															
2 3 3 2															
1 2 2 1															
0															

Hidden Buttons



These seven gamepad buttons are hidden in this issue of *Supernova*. Can you find them all?

Identify the Game



In 2014, this Swedish game was sold to Microsoft for \$2.5 billion.



This game has been made into the most successful gaming franchise in the world.



The character of this game was partially inspired by a half eaten pizza.



This 1984 game is so popular that an estimated billion people have played it.



The Run Through



Words and layout by Chrisna Prinsloo


Parys on Vaal

Looking for a quaint town to visit during the school holidays? Look no further than the *je ne sais quoi* of Parys, Free State. There is loads to do in this little town for the whole family, and it is a perfect weekend breakaway if you live in the Gauteng region. But first, let's find out how this town started out, and why it was named after the French town, Paris.

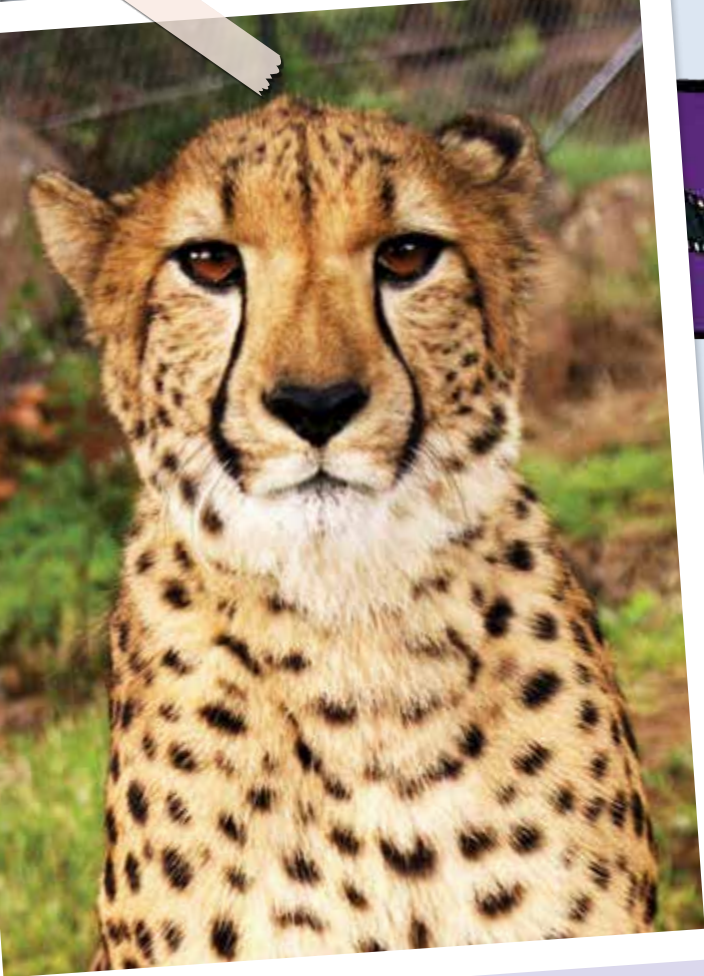
The history of Parys

In the early 1870s, towns in the northern Free State were very far apart and people of different churches had to travel great distances to join in religious services. A farm called Klipspruit was the perfect area between these far away towns to start a congregation, so the people didn't have to travel so far to reach their churches anymore. The Klipspruit farm belonged to four brothers, and they had to

be convinced to give up their land to start a small town. In 1876 they agreed, and the town was born. A German man named Schilbach, who had fought in the Siege of Paris in France, came to visit the little town. When he saw the town on the banks of the Vaal river, it reminded him so much of the Seine river, where Paris is located, that he called the town Parys.



The Vredefort Dome is the world's oldest and largest impact zone, and was declared SA's 7th World Heritage site in July 2005. An asteroid of 10km in diameter struck the Earth 2020 million years ago, and the Vredefort Dome was formed. This asteroid travelled at a speed of 30 000km/h when it collided with the Earth. That's almost 30 times the speed of the Bloodhound SSC, the fastest car in the world!



Fly-fishing

Parys is a very popular fly-fishing spot. Have a look at the fly-fishing article in volume 4.1, and practise your fly-fishing skills at the Vaal river.

Get intimate with cheetahs

Visit the Dell Cheetah Centre about 10km out of the town. Here you will listen to a short introduction about cheetahs and what makes them so special. Afterwards, you will be taken to the enclosures where you can watch them feed, and see a cheetah reach its top speed in only a few seconds. If you are lucky, you may even get to play with the cubs.

Berry picking

Take a drive to a berry farm 20km from Parys. You can pick SA's only black raspberries right off the bush during harvest season between March and November. If you happen to be there out of season, you can enjoy some delicious frozen berries.

Things to do in Parys

Apart from pretending you are in France, here are a few things you can do in Parys:

Vredefort Dome

For horse riding, hiking, mountain biking, abseiling, paintball and hot-air ballooning, to name a few, visit the Vredefort Dome just over 20 minutes from Parys. While you are there, visit the information centre to find out how the dome was created.

If you go to Parys during the first weekend in November, you can attend the Parys Dome Adventure Festival at the Vredefort Dome. This is the only festival in the world held in a World Heritage Site, and it's becoming a highlight in outdoor festivals in SA! Here, you can enjoy proudly South African music, as well as skydiving, karate, archery, and golf.

White water rafting

If you like some adrenaline pumping through your veins, white water rafting is perfect for you. With rapids scaling from easy to difficult, the Vaal river is a rafting heaven. Be prepared to fall out of your raft many times. But if you don't mind getting wet, this is a must do!

And don't forget all the antique shops scattered around the town! So whether you are looking for some adrenaline or just a relaxed weekend, Parys is the place for you. You don't have to travel all the way to Paris on Seine. You just have to go to Parys on Vaal to enjoy some time off.



The Run Through



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Introduce yourself to the majestic wild creatures of southern Africa with this great app for curious kids! Great features include accurate information by a mammal specialist, animal calls, videos and interactive games. You can also record and listen to yourself reading, or tap and listen to text in English, isiXhosa, isiZulu or Afrikaans. Visit youngexplorerapp.com to download this beautiful, exciting app today!



TheCITY – EP

Catchy and upbeat, TheCITY's debut EP is definitely worth a listen. Prepare to be mesmerised by Bonj Mpanza's silky smooth vocals. Clement Carr, Ryan McArthur and Reuben 'Ruby' Crowie keep you hooked with a great mix of keyboard, synth, bass and drums. TheCITY's 'Future Afro' sound blends African rhythm with techno elements. It will have you tapping your feet to the beat and humming the choruses in no time. The lyrics and sound hint at the artists' SA heritage, giving the music a fresh, yet familiar feel.

Although TheCITY's EP only has five tracks, be sure to watch out for their full-length album, expected out next year. This talented group of four is going places, fast!



Harry Potter: Magical places from the films

By Jody Revenson

"The world we journey through in the *Harry Potter* films is magical and extraordinary and completely believable."

If you are a *Harry Potter* fan like we are, this book will be a favourite on your shelf. With behind-the-scenes photographs and interviews with the production team, this book gives a captivating look at the imaginative sets that were designed and built for the films. Beautiful photographs and illustrations are scattered over the pages that will take you back to those fond memories you have of *Harry Potter*. It will make you want to have a *Harry Potter* movie marathon with your friends.





GETS CONSOLES

The Brenton Blue Butterfly

Lynn Le Roux
Illustrations by Willem Samuel



Brenton, a young blue butterfly, lives among family and friends in Butterfly Village, Knysna. When a big, nasty man tramples on some of their homes to drive a 'For Sale' sign into the ground, the butterflies are afraid of what will become of them. Where will all the homeless butterflies go? All their other villages have already been destroyed by people's houses and alien forests...

But Brenton has a plan! Will the Elders listen to him in time to stop the men from destroying their village completely?

Enjoy a wonderful, beautifully illustrated story, and learn all about the very special, critically endangered Brenton Blue butterfly (*Orachrysops niobe*) of Knysna.



STRANGE Blue duck

Times: Daily, 9am – 5pm
Workshops by appointment only
Website: strangeblueduck.co.za

Learn how to make your own animated films! STRANGE Blue duck offers stop frame, claymation, cut-out animation, pixilation and drawn animation workshops during school holidays, as well as at parties and schools. All equipment is supplied for groups to make their own film, which will be written to CD. It's loads of fun and will definitely get your creative juices flowing!



Seido Karate

Times: Monday to Thursday, 5pm – 9pm
Saturday, 9.30am – 12am
Sunday, by arrangement
Website: www.seido.com

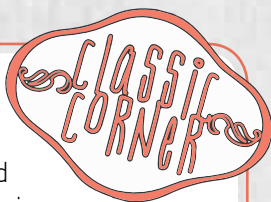
Seido Karate is a traditional Japanese style of karate. Its founder, Kaicho Tadashi Nakamura, has over 50 years of experience in martial arts, so you know you'll receive great training. You'll become stronger, fitter and more flexible. You'll also develop discipline, which will serve you well in all aspects of life. Join today!



Cooking Kids

Times: Friday, 2pm – 3.30pm
Website: merylschoolofcooking.co.za

During Cooking Kids courses at Meryl's School of Cooking, you'll learn how to make different delicious dishes, from pastries to pies and even pizza! Even better, you'll get to take home everything you haven't been able to munch, as well as the recipe, so you can impress your family with your new cooking skills. You can even invite Cooking Kids to teach your friends how to cook at your next party!



Pac-man

In 1980, an arcade game was released that would change the face of gaming forever. A little yellow *Pac-man* character moves around a maze, eating dots and cherries, and escaping ghost enemies. Although very simple, *Pac-man* has always had a special place in the hearts of game lovers. The game invented the 'maze chase game' genre, and it was the first to appeal to girls as well. Not only has *Pac-man* had a huge influence on games, it's so loved it even has its own show on DisneyXD, *Pac-man and the Ghostly Adventures*. The ghosts from *Pac-man* even make an appearance in the 2012 Disney animated film *Wreck-It Ralph*, 32 years after *Pac-man* first came out!



Keep an eye out for the Pac-man and his ghost pals – looks like they'll be sticking around for a long time!

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