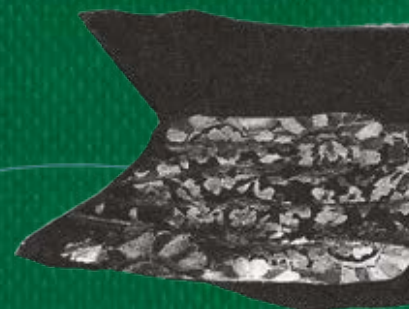


Snakes and Humans

Lucie
Šťastná

A GUIDE TO THE CO-EXISTENCE
OF HUMANS AND SNAKES
ON PLANET EARTH



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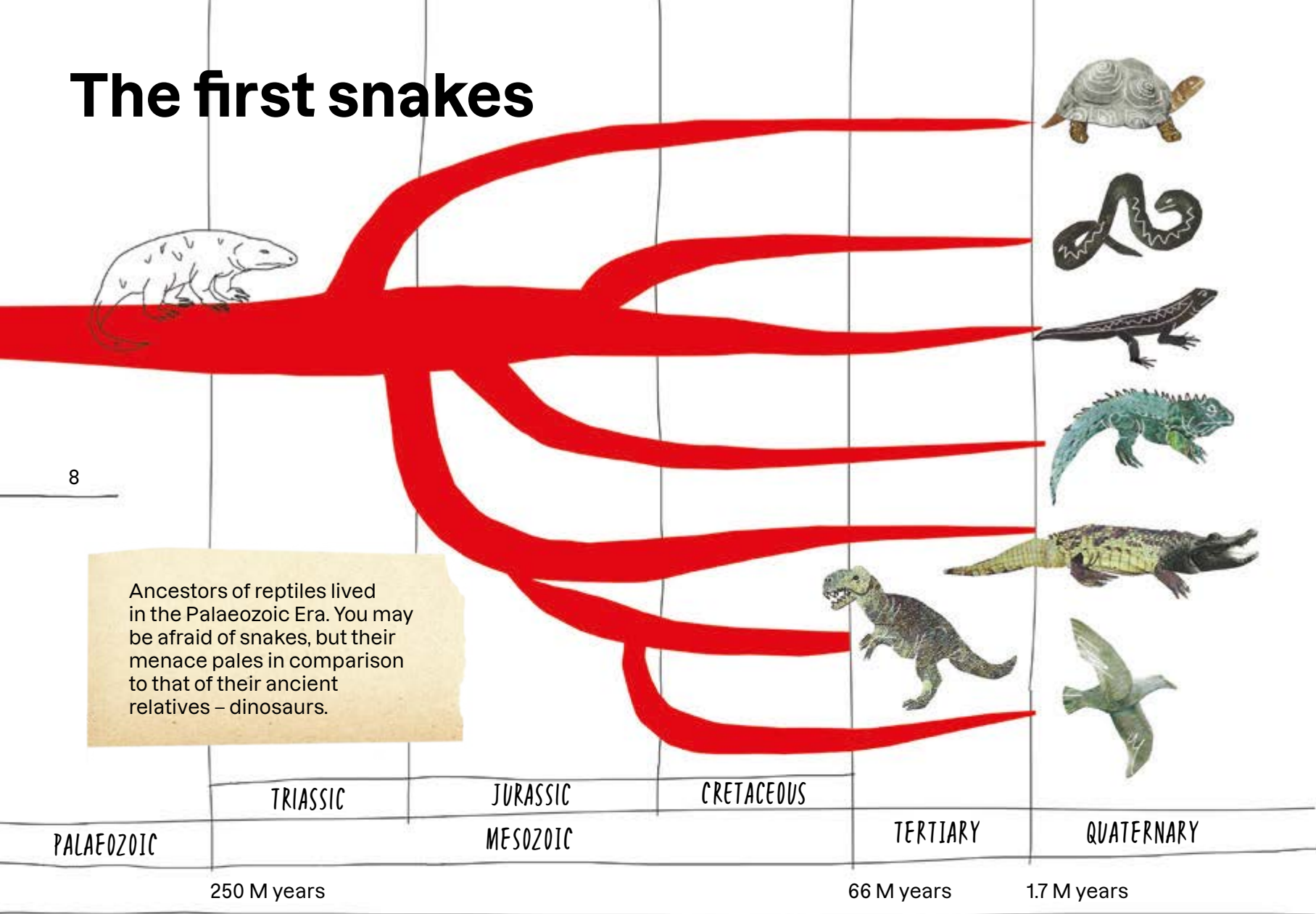
Snake neighbours

Many people think that snakes are a rare sight in the city today, but the keen-eyed will pick them out with ease.

How many different images of these reptiles do we see when we walk in the urban jungle? And what things remind us of snakes?



The first snakes



World-famous British natural scientist **Charles Darwin** lived in the 19th century and made many important discoveries. On a journey around the world he studied countless animal species. When he returned, he wrote his revolutionary theory of evolution, so laying the foundations of evolutionary zoology, with which scientists still work today.

Evolutionary biology claims that snakes arose from lizards that had taken refuge underground, where gradually they lost their limbs and hearing, and their eyelids fused and became transparent. Having returned to the surface, they adapted to environments of all kinds. To date, 3600 species of snake are known, some of which have stunted hind legs in the form of small claws.



Above the ground
Although we find winged snakes in fables and legends only, some species do live very high up. For instance, the **paradise tree snake**, also known as the flying tree snake, is unafraid to perform acrobatics in the treetops. It flattens its body before launching itself into the air and gliding several metres.



In the water
Many species choose to live near water. But there are also truly aquatic snakes, which spend most of their time under the surface and whose bodies are adapted – by narrowed sides, or a paddle-shaped tail – for movement in water. Some species, such as the **yellow-bellied sea snake**, live on the open seas, never leaving the water.



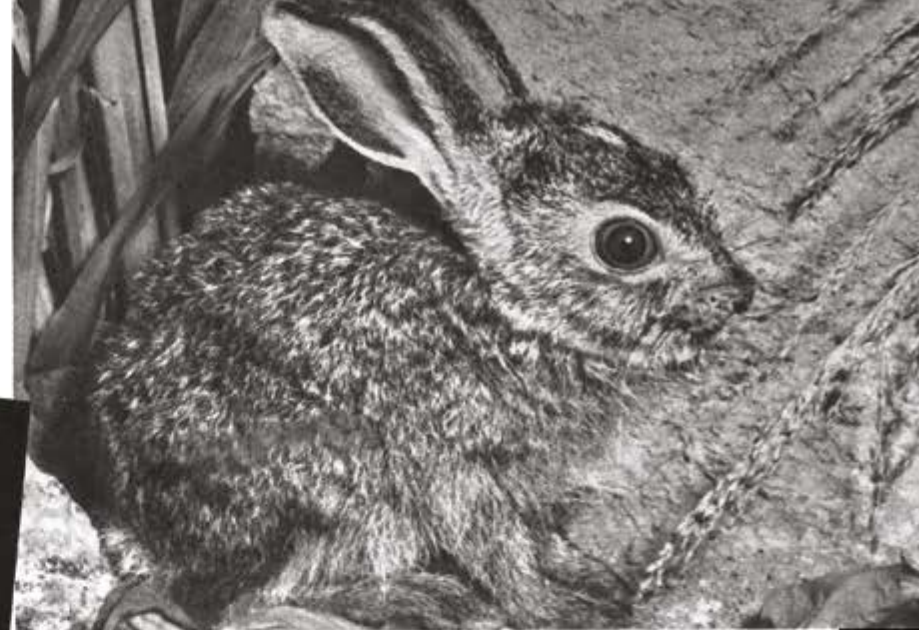
On the surface
Most species of snake live on the surface, where they find a variety of food easy to come by. When not looking for sustenance, they spend most of their time in their shelter. As they are unbothered by swampland and hot sand, they can live on most of Earth's surface. Exceptions to this are inhospitable polar regions and some islands.



Below the surface
Snakes that prefer to live underground are known as burrowing snakes. Earthworm-like **blind snakes** have smooth scales and poor vision. They feed mostly on insects, larvae or small rodents. They are completely harmless to humans.



An irrational fear of snakes is known as **ophiophobia**. **Zoophobia** is an irrational fear of animals in general. Even the visual sensation evoked by watching TV can create a sense of threat.

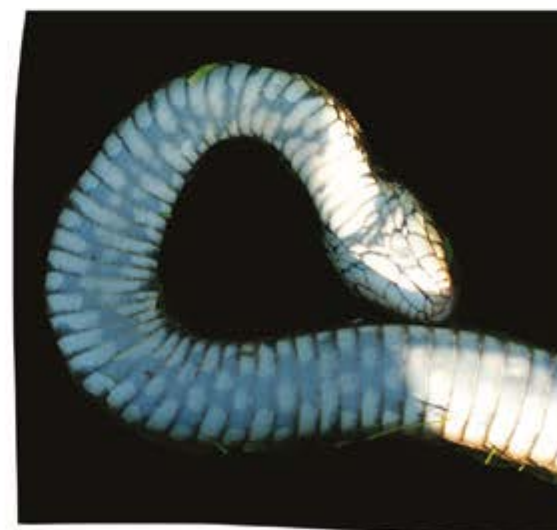


Snake brain

Developmentally, the reptilian complex is the oldest part of the human brain. It is responsible for the basic bodily functions, such as breathing and circulation, as well as the reflexes, which work more quickly than thought and help us react to danger.

For god's sake!

As a rule, snakes try to avoid conflict with humans and other large creatures, primarily by fleeing. On encountering a predator, a snake has a handy trick up its sleeve: it can play dead by going stiff. This self-defence mechanism is known as **thanatosis**, after Thanatos, the Greek god of death.



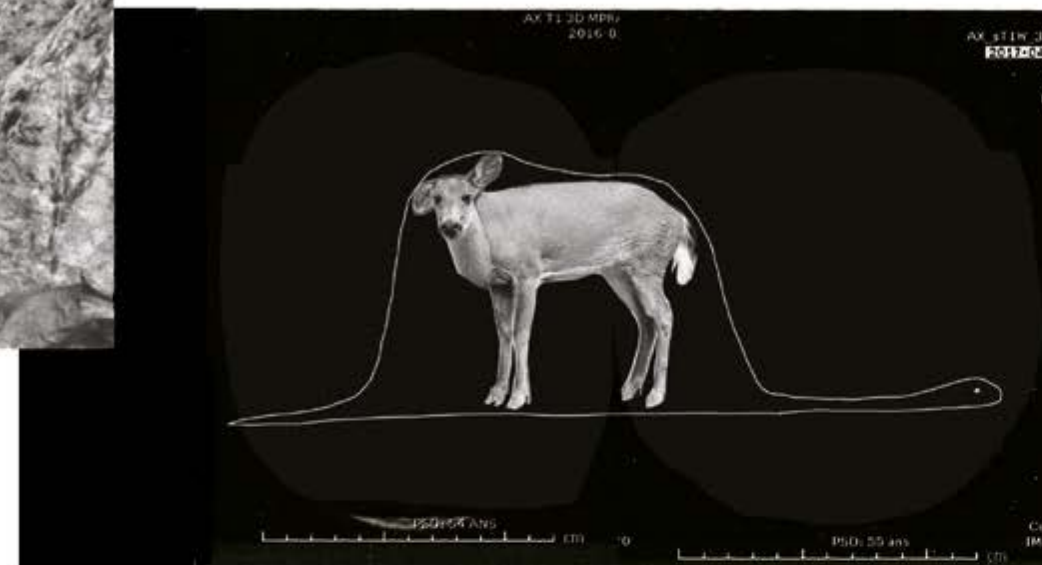
Senses and nonsenses

In a chance encounter with a snake, it is not unusual for a human to lose their head. Humans tend to exaggerate events in the telling to make them more dramatic for the audience. This has given rise to many stories about the size, appearance and doings of snakes. Some of these may indeed be based on reality, but many will be miles away from it.



Snakes feed on all sorts of things, from insects to sizeable mammals. They are able to swallow their catch whole, as their skeleton is composed of skull, ribs and spine only. A snake's spine has up to 400 vertebrae. Thanks to the flexible ligaments of its **'tiltable' lower jaw**, it is able to devour much larger prey than you might think possible.

The largest snakes dare to take on really big animals. As the Burmese python has been known to eat a young deer, frequent reports of man-eating snakes shouldn't come as a surprise. Such instances are rare, however.



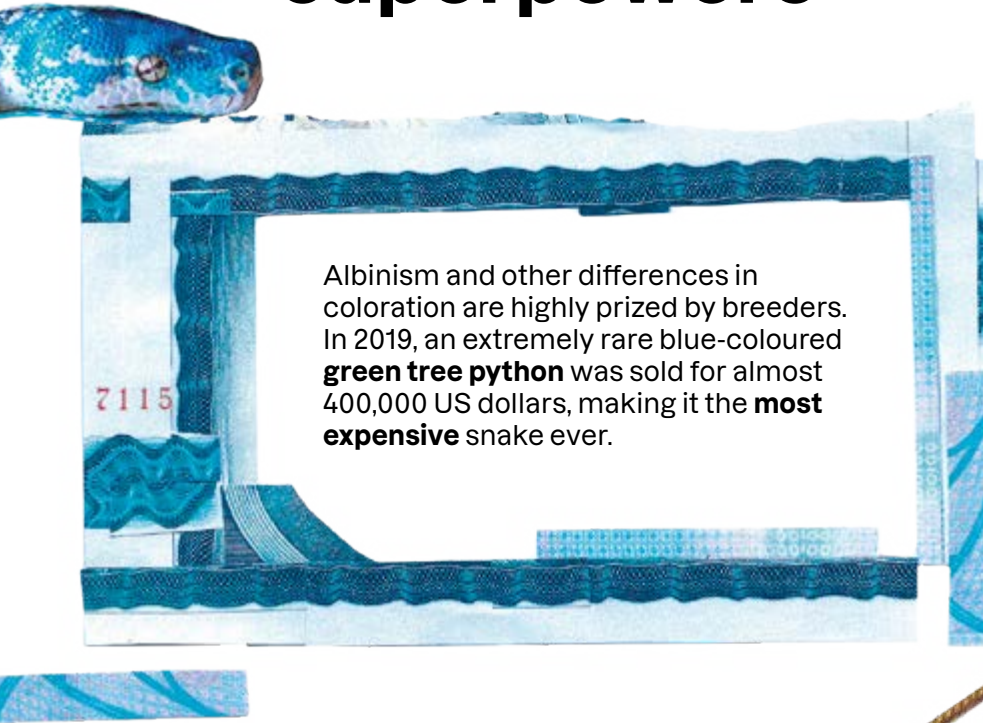
Which animals are snakes afraid of?

Snakes don't have things easy in the animal kingdom. Some of their apparently fearsome skills serve for their very survival among other predators. Cannibals from their own ranks (ophiophagous species) and other reptiles can present a danger, while amphibians might try their luck with a young snake. Some birds (the **secretarybird** is a case in point) like to shake up their diet with a snake, as do certain fish (unlikely enemies). The **honey badger** is a big gourmet exceptional in its resistance to snake venoms. The **Indian grey mongoose** is a fearless hunter of snakes.

But the snake's greatest mammal threat is **man**. Humans have been killing snakes for centuries – out of fear, for food and their decorative skin, but also by causing changes to their environment. Because of man, ever more snake species are faced with extinction.



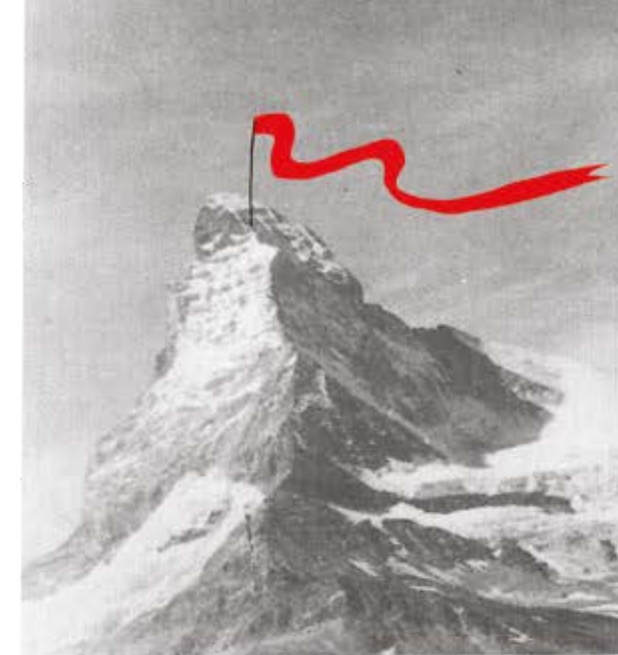
Snake superpowers



Albinism and other differences in coloration are highly prized by breeders. In 2019, an extremely rare blue-coloured **green tree python** was sold for almost 400,000 US dollars, making it the **most expensive** snake ever.



The world's **smallest** snake was discovered in 2008 on the island of Barbados by herpetologist Stephen Blair Hedges. Thin as a string of spaghetti, the **Barbados threadsnake** is about 10 cm long.



The **hadiest** snake is the **Himalayan pit viper**, which has adapted to the inhospitable conditions of foothills and glaciers at altitudes of over 4900 m above sea level. To reach the highest peak of the Himalayas, and the world, however, it would have to crawl 4000 m higher.



Cropani's tree boa is endemic to the Brazilian state of São Paulo and occurs naturally nowhere else. The world's **rarest** snake, no living specimen had been seen since 1953 before a female was captured in 2017. She was fitted with a radio tag before her release back into the wild. Scientists believe that this will give them more information about this non-venomous tree boa species.

Snakes are masters of fasting. Having satisfied their appetite, they will spend several days or weeks ingesting their prey. Large snakes are commonly able to go without food for hundreds of days. A python in the Prague zoo took no food for 9 months. The **longest snake fast** was undertaken by a **reticulated python** that did not eat for an amazing 910 days – almost two and a half years. This diet proved its undoing.



The venom contained in one bite from the Australian **inland taipan** would be able to kill 100 people or 250,000 mice. A bite from this **most venomous** of all snakes would kill a person in less than a minute. Even so, we know of no case when such a bite has proved fatal.



WANTED

The title of **longest** snake has been much disputed. Even so, all places on the winners' podium are occupied by the **reticulated python**. The unofficial champion is a specimen caught in Indonesia in 1912, which is said to have been 9.76 m long. In second place is a snake known as Colossus, a male at the Pittsburgh zoo which measured 9.15 m. Third place is taken by a python from Missouri called Medusa, which is recorded in the Guinness Book of Records as being 7.67 m long.

\$ 50,000

The New York Zoological Society offered a reward of up to 50,000 US dollars for proof of a snake measuring over 30 feet (9.14 m) in length. No one ever came forward for this, and the offer was eventually withdrawn, in 2002.

The **largest**, or should we say the **heaviest**, snake is the green anaconda, even though a specimen of average size is only about 4 m long. As for the largest specimen, it was 8.5 m long and its weight was estimated at a remarkable 227 kilograms – the average weight of an adult antelope.



Snakes are long-lived creatures. Popeye, a male **boa constrictor**, lived at Philadelphia Zoo in the USA for 40 years, 3 months and 2 weeks.



Every snake can swim, without exception. Tree snakes and terrestrial snakes alike are excellent swimmers. The **record-holder in swimming** is the **boa constrictor** that swam 320 kilometres from mainland South America to the Caribbean island of Saint Vincent. This is the distance from Prague to Bratislava.

Snakes on the tongue

How can we use snakes to enliven our conversation? What do snakes have in common with motoring? One of the functions of the science of **linguistics** is to explore the origin and development of the meaning of words. The Czech word *had* (meaning 'snake') is derived from the Proto-Slavic **gad**. The word 'serpent' is derived from the Latin **serpens**.

Serpent stars have five long, thin arms. They live in cracks in rock or coral reefs. There are approximately 2300 species of serpent stars, making them the most numerous echinoderms. (Echinoderms include starfish and sea urchins.)

Every gardener is glad of a practical helper for the distribution of water. In some languages, a **hose** for the watering of crops and showering of plants and flowers in the heat of summer, is known as a 'snake' or something similar. 'Snakes' used by the fire service can save lives in conditions of extreme heat.



The mineral **serpentinite** is very dark green with net-like or mottled patterning. In ancient Egypt and Rome it was used in the decoration of sarcophagi, figurines and jewellery. In 16th-century Europe it became a sought-after material for the making of decorative containers and gravestones. In the Czech Republic, there are deposits of serpentinite near Mariánské Lázně and Kutná Hora, and around the River Sázava.

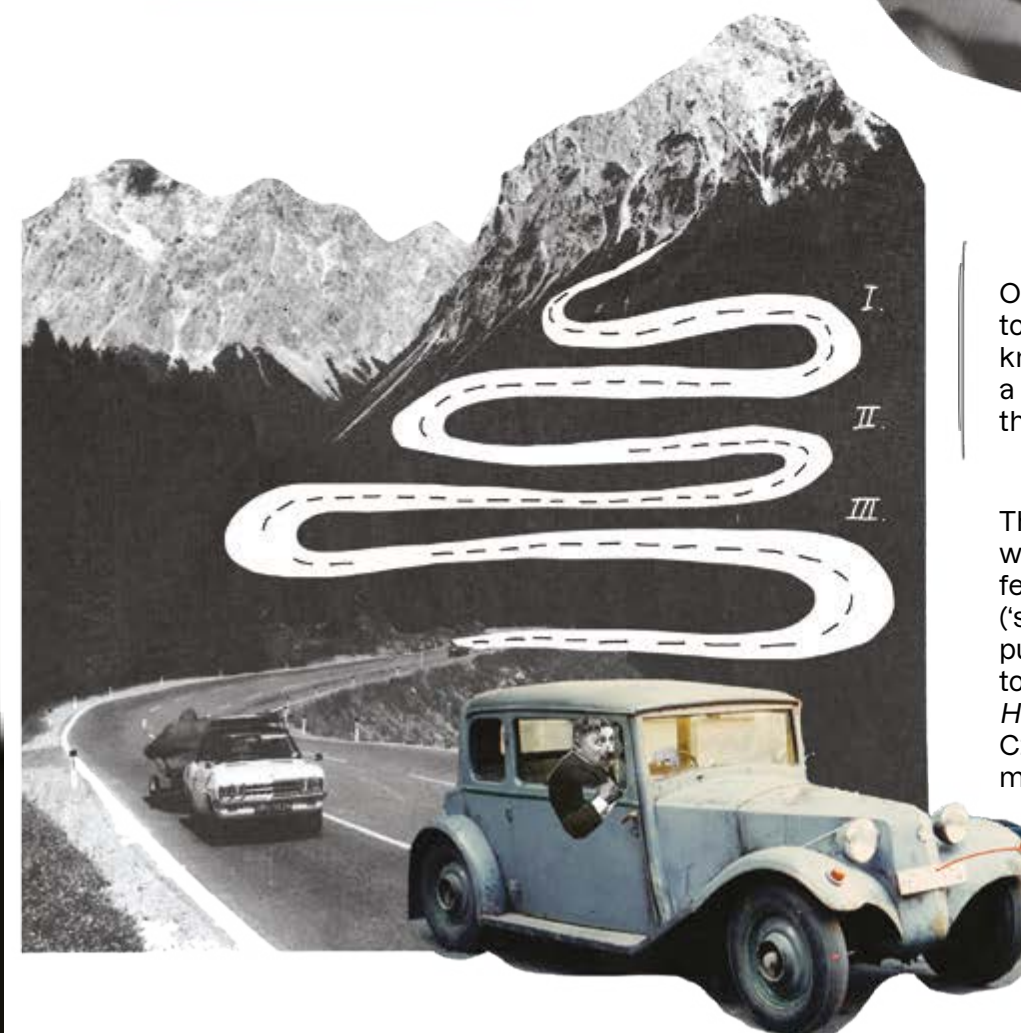
Although young **stinkhorn** mushrooms look like snake's eggs (hence their name in some languages) and are edible, mushroom-pickers avoid them – because the fruiting structure of the adult has a foul smell and is inedible. In Czech woods and gardens it is not unusual to find such 'snake's eggs'. The **common stinkhorn** is rarer than the **dune stinkhorn**.



A **serpentine streamer** is a roll of lightweight strips of paper which when thrown up in the air unrolls in a beautiful serpentine spiral. It is used as a decoration, most often at parties.



A cross between a brass and a woodwind instrument, the **serpent** originated in France at the end of the 16th century. Its greatest fame came in the Baroque period. Musical greats such as Mozart, Wagner and Handel all included parts for the serpent in their works. There was a military serpent, for marching, and a serpent for playing when seated. The serpent was gradually replaced by more modern brass instruments, such as the tuba.

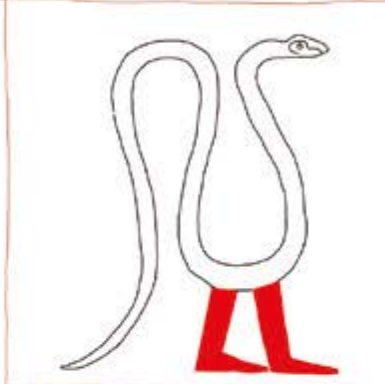
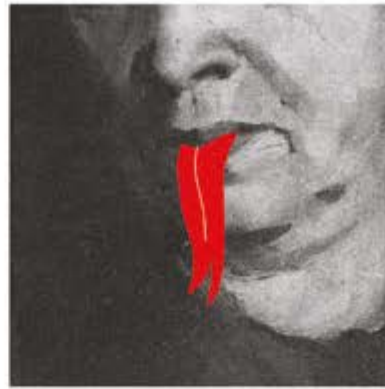


On hills, mountainous terrain and sometimes even in towns, motorists might come across a section of road known as a **serpentine** or **switchback**. As a rule, such a section comprises three sharp bends between which the direction of travel changes by 160 degrees or more.

The 1931 Czech comedy film *Business under Distress*, in which celebrated Vlasta Burian actor played the main role, featured a Tatra 57 automobile nicknamed the *Hadimrška* ('snake-flogger'). The nickname caught on among the public to such a degree that the car's manufacturer began to use it in its official promotional materials. The *Hadimrška* was the most popular car in pre-war Czechoslovakia. It also appears in the Czechoslovak movies *Closely Observed Trains* and *Arabella Returns*.

Snake in the grass

Snakes are home in Czech folklore and folk sayings, too.



1. **to have a venomous tongue** – to say negative things, to lie, to slander
2. **to cherish a serpent in one's bosom** – to help or trust an enemy
3. **to poke a snake with one's bare foot** – to risk by conscious provocation
4. **to gut (someone) like a snake** – to make threats, to express anger
5. **as useful as snake legs** – good for nothing, worthless
6. **to behave (like) snakes' tails** – to be restless, unruly



Snakes and scorpions climb on St George

St George symbolizes faith and bravery in the fight against evil. He is also – in folk tradition – a harbinger of spring. On St George's Day (24 April), 'the earth opens', and cold-blooded animals awake from their winter sleep. People once believed that no snake was venomous on this day only. It was said that whoever ate a snake caught on St George's Day would acquire the gift of speech with the animals, as happens in the Czech fairy tale *Princess Goldilocks*.



The **white-leaved linden**, the mightiest tree in the Jeseníky Protected Landscape Area, is nicknamed the **Snake Queen**. The name is related to a legend in which a cottage-dweller looks near the tree for a stone with which to repair his yard. Under one stone he finds a white snake with a golden crown. (This is a **grass snake**). He seizes the crown and hurries home with his loot. That evening, he is kept awake by a voice intoning: 'Give it back! Give it back!' The next morning, his discovery that all his livestock have died is followed by the outbreak of a storm. Terrified, the man hurriedly returns the crown to the tree – but not before his cottage has burned to the ground.



The snake features in the coats of arms of many Czech towns. The snake on the escutcheon of Mariánské Lázně, for instance, represents the town's wealth in terms of its forests, springs and curative properties.



God bless!

A myth about a **white snake steward** originated in the Czech lands in the days of the ancient Slavs. Such a snake settled near a home was said to grant it happiness and security. For this reason, people would leave out a bowl of bread and milk for it to feed from. In the foothills of the Giant Mountains there was once a superstition that the owner of a building in which a snake had died would himself die within the year. As with the snake with the crown, the snake in question was probably a **grass snake**, seen in the light of a crescent moon.



Aesculapian snake
(*Zamenis longissimus*)

Grass snake
(*Natrix natrix*)

The grass snake, the most abundant snake species in Czechia, commonly lives near water and feeds on small amphibians. Its characteristic yellow collar helps deter predators. (In the animal kingdom, yellow serves to warn.) Its underside is whitish with blocks of black, the distribution of which is individual, rather like a person's fingerprints.

Ranging in colour from olive-yellow to black, it has small freckles on its body. As young have a whitish-yellow collar, it is sometimes mistaken for a grass snake. It likes climbing trees. Its diet includes birds and their eggs. It is found in only a few places in the Czech Republic (the Ohře valley, the White Carpathians, the area around the River Dyje), making it the country's rarest snake.



18

Five snakes make a set

The number of snake species in the Czech Republic can be counted on the fingers of one hand. Four non-venomous species are from the Colubridae family; the only venomous snake is the common European viper. As elsewhere in Europe, in the Czech Republic snakes in the wild are protected: the hunting and/or killing of snakes is against the law, not least because most snake species are endangered.



Common European viper
(*Vipera berus*)

Smooth snake
(*Coronella austriaca*)

The smooth snake spends most of its time in dry, rocky places with scrub vegetation. It is typically brown or grey, with dark brown spots that may blend, so that humans sometimes mistake it for a viper. Such a confusion can be lethal. The smooth snake gets its name from its flat scales.

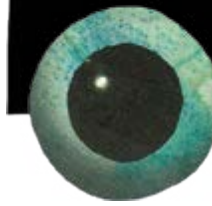


Slow worm
(*Anguis fragilis*)

In Czechia, you are more likely to encounter one of these legless (and often tailless) lizards than a snake. The slow worm is found all over Bohemia, Moravia and Silesia, as is its relative the Eastern slow worm (*Anguis colchica*). When in danger it can break off the end of its tail, which continues to move for a few moments and will grow back. Slow worms are absolutely harmless; indeed, they help fight slugs in the garden.

The common European viper is the world's most widespread terrestrial snake. Males tend to be grey-brown verging on silver and have a striking dorsal crossbar. Females tend to be reddish-brown, and their crossbar is less prominent. It is the only snake in Czechia with elliptical pupils and reddish irises. The dorsal midline does not always form the famous zigzag; the pattern is more a series of rhombuses variously connected.

In Czechia no one has been killed by a viper bite in the past twenty years. As the toxin in a viper's poison is weak and there is not much of it, a viper bite represents no great danger to an adult human. Even so, it should always be treated by an expert!



The shape of a snake's pupils gives us a clue about whether it is venomous and the time of day when it is active. An elliptical (vertical) pupil is indicative of a venomous snake with nocturnal activity. A round pupil is suggestive of a non-venomous snake with largely day-time activity. There are exceptions to this, however.

Dice snake
(*Natrix tessellata*)

The dice snake lives in lowland areas near rivers, streams and lakes. It feeds mostly on fish and amphibians. It is commonly olive brown with irregular black-and-white, dice-like spots on the belly – hence its name.



If someone does suffer a snake bite, it is best to keep them calm and follow these three simple steps:

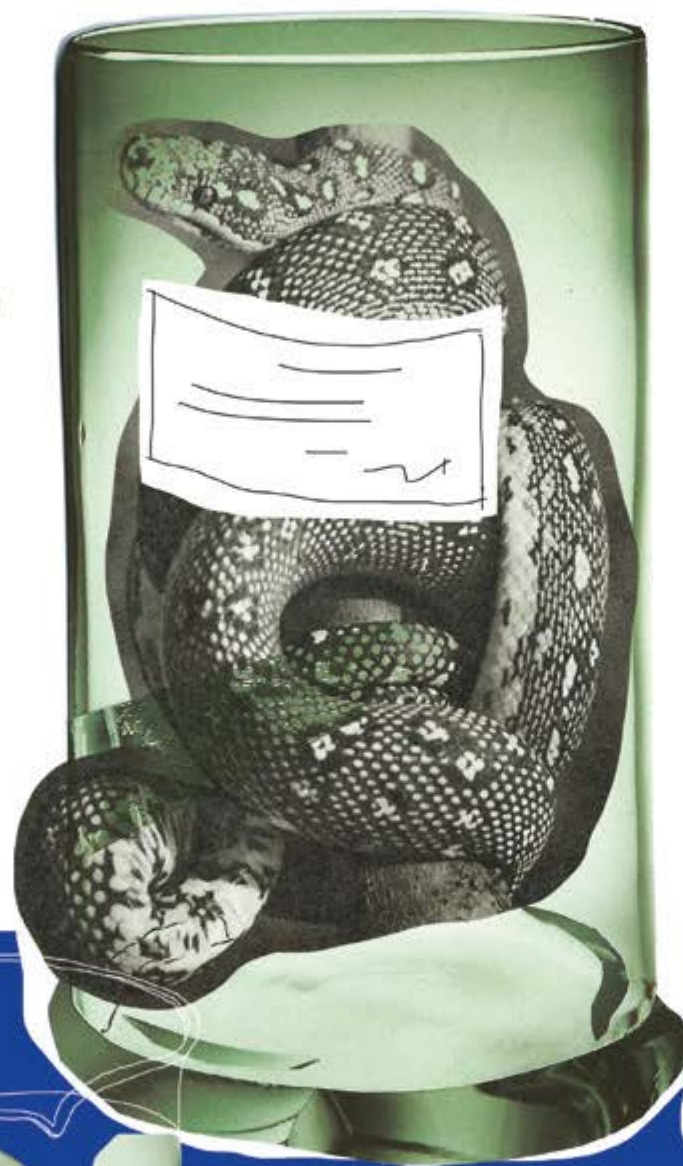
1. **Keep the injured person calm and ensure that their movements are restricted.** This will slow absorption of the poison into the bloodstream.
2. **Disinfect the wound and cover it with a cloth.** Never suck out a bite, and under no circumstances ligate the affected limb.
3. **Call 155 for expert help.** Make a note of the time when the bite occurred and the size and/or species of the snake.

19

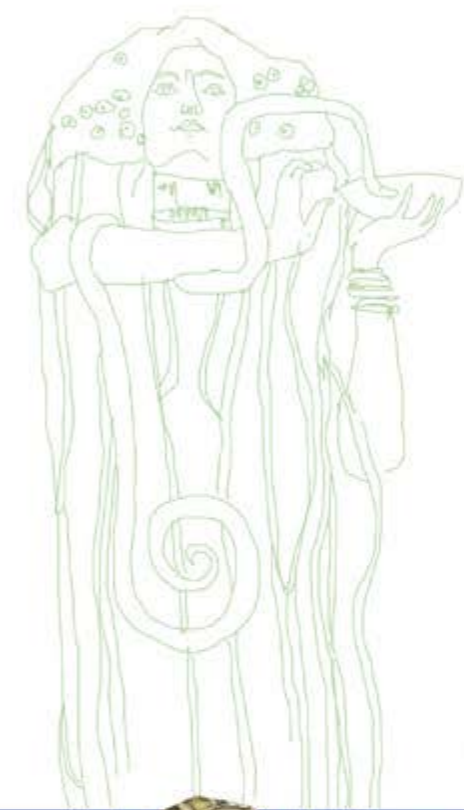
As fit as a snake?

Snake venom can take human lives, but it can save them too. The healers of ancient China could distinguish among hundreds of snake venoms.

20



Not only can substances in the venom glands of snakes serve for development of antivenoms after a bite, but the venom itself has long been used for healing. In America, for instance, the venom of vipers has been used to treat epilepsy and blood clotting.



It is said that legendary ancient Greek healer **Asclepius** was so powerful that he could raise the dead. He is considered a god of medicine. There are various theories about his famous snake-entwined staff. One claims that the creature is a **tree snake**, while another takes it to be a **Guinea worm** wound around a piece of wood during treatment. The Rod of Asclepius remains a symbol for the medical profession today; we find it in the logo of the World Health Organization.



Caduceus

The caduceus is a staff carried by the Roman god Mercury. It has two snakes entwined around it, representing opposites in perfect balance, and wings on its top, representing the impermanence of this harmony. It is often confused with the Rod of Asclepius, especially in the United States. It, too, is used as a symbol of medicine, perhaps because it reminds us of the DNA double helix.



Another symbol connected with healing is a goblet with a snake coiled around it. It was probably inspired by the snake drinking from a bowl in the hands of **Hygieia**, goddess of health and cleanliness. A promise to Hygieia, daughter of Asclepius, is a feature of the Hippocratic Oath taken by physicians. The name Hygieia has given us the word 'hygiene'.

21

A bestiary of reptiles

People have thought up mythical creatures and monsters since time immemorial – for entertainment, for superstitious reasons, and also to scare children. Although these fantastical creatures differ in their details, we cannot think of them as species. A fair number of interesting monsters remain with us thanks to folk tales.



amphithere
(winged snake)

dragon

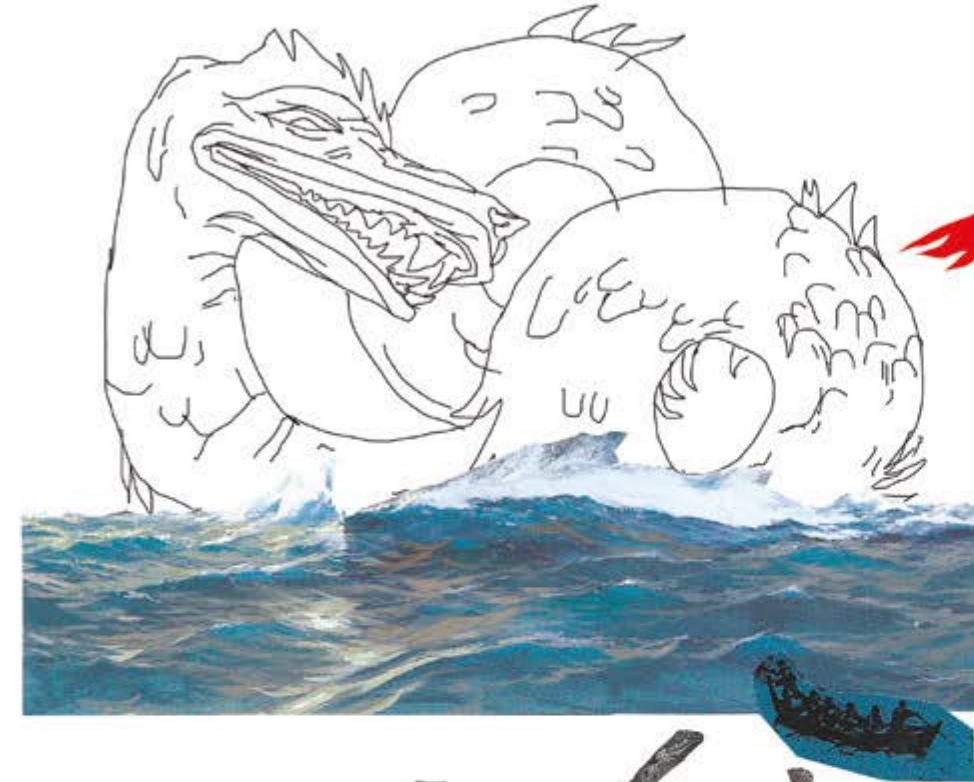
lindworm

wyvern

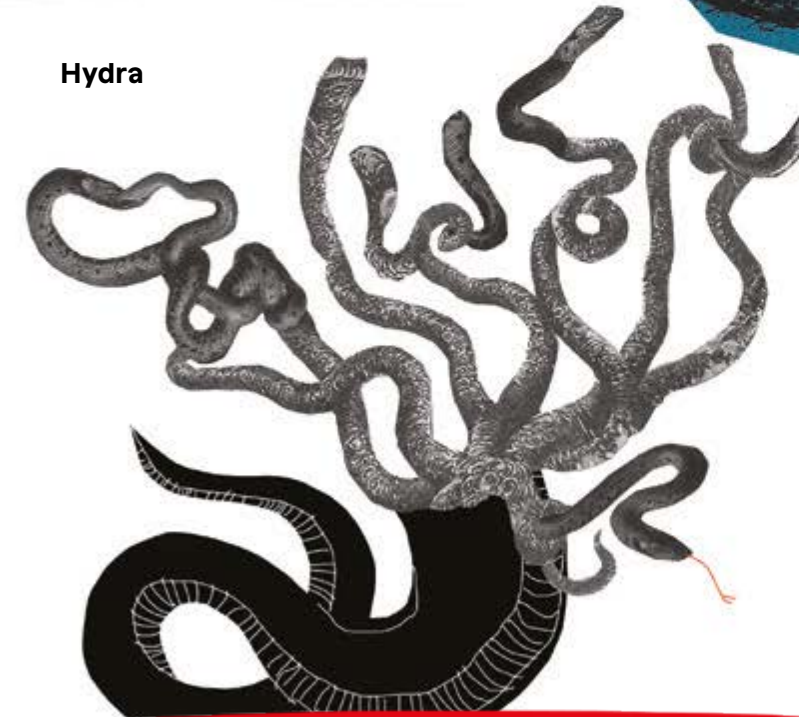
seps

basilisk

In the Bible, a monster known as the **Leviathan** represents indomitable force, a mighty enemy or chaos. The name is derived from a Hebrew term meaning 'to twist and twine', and it also means 'whale'.



Hydra



Nine-headed relation of the chimera, which grows two heads for each head that is cut off; one of its heads is immortal. It is eventually defeated by Heracles, a hero of mythology descended from the gods. In art, the hydra symbolizes an enemy with whom the fight as never over.



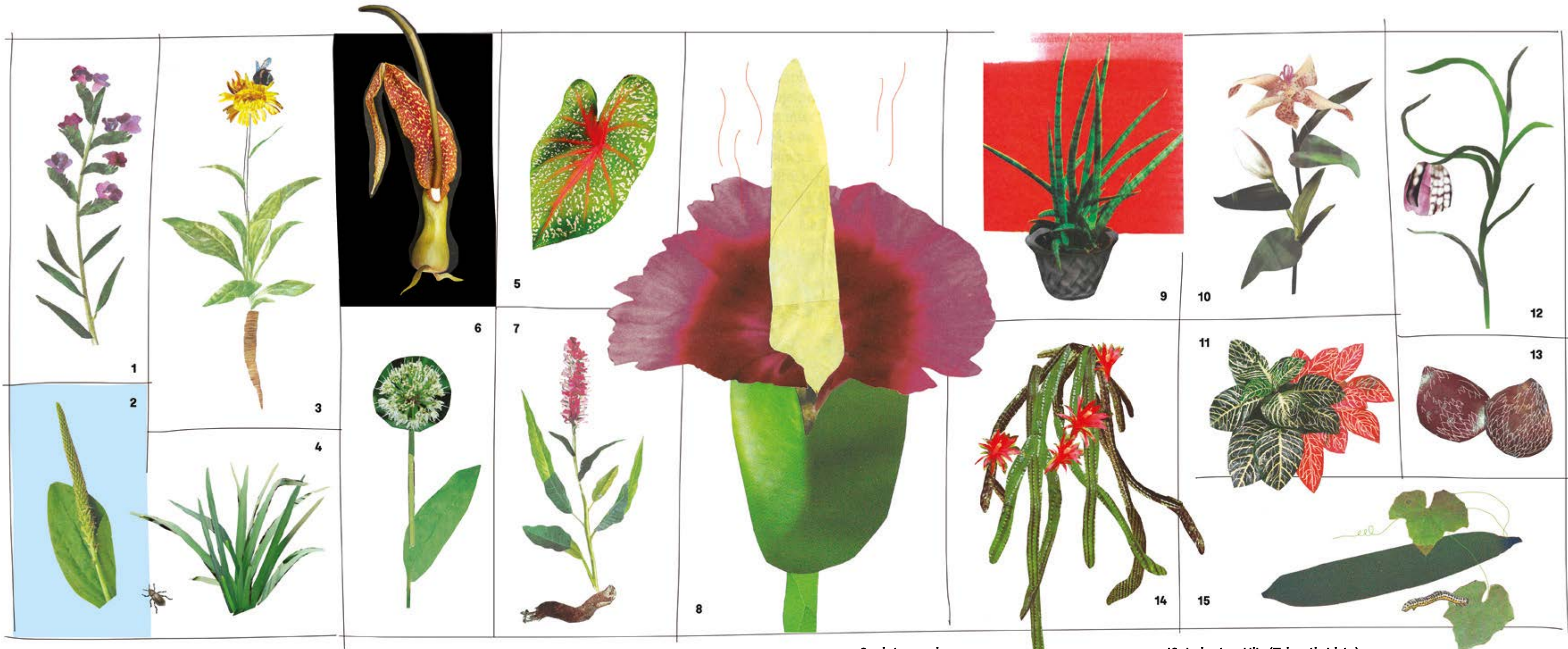
Chimera

Fire-breathing monster from Greek mythology that guards the entrance to the underworld. The word *chimera* is used in Greek to this day, meaning 'apparition', 'vision', 'illusion' or something else unreal.

Tatzelwurm
(Alpine dragon)



Agile, bloodthirsty predator that lived in the Alps, where it terrorized people and livestock. We can't say for sure what it looked like as descriptions of eyewitnesses vary widely, and no specimen was ever captured. It is now thought to be extinct.



A herbarium of 'snakes'

The human imagination is inspired by 'snakes' in the plant kingdom, too. Many plants have been given snake-like names (by scientists and folklorists alike), in most instances because of their visual similarity with the reptile.

1. **viper's bugloss (*Echium vulgare*)**
herbaceous plant used in ancient times as a treatment for snake bites
2. **adder's-tongue (*Ophioglossum vulgatum*)**
protected fern with a striking folk name
3. **serpent root (*Scorzonera hispanica*)**
root vegetable also known as black salsify
4. **lilyturf (*Ophiopogon*)**
Asian perennial also known as snake's beard
5. ***Sauromatum* (and *Caladium*)**
botanical curiosity that in some languages shares its name with the tropical caladium

6. **victory onion (*Allium victorialis*)**
known in some languages as 'snake garlic', this perennial is severely endangered and under protection
7. **bistort (*Bistorta officinalis*)**
flowering plant known in some languages as 'snake root'
8. **purple aki (*Amorphophallus*)**
ornamental plant known in some languages as 'viper' or 'Aaron's rod'
9. **mother-in-law's tongue (*Sansevieria*)**
once known as 'snake plant' or 'snake tongue'

10. **hairy toad lily (*Tricyrtis hirta*)**
medicinal perennial known in some languages as the 'snake lily'
11. **nerve plant (*Fittonia*)**
ornamental plant popularly known as 'snakeskin'
12. **snake's head (*Fritillaria meleagris*)**
endangered plant also known as the 'chess flower'
13. **salak (*Salacca zalacca*)**
exotic fruit known as 'snake fruit'
14. **rattail cactus (*Aporocactus flagelliformis*)**
known in some languages as the 'snake cactus'; a popular house plant
15. **cucumber (*Cucumis sativus*)**
culinary vegetable popularly known in some languages as 'snake fruit'

In the beginning was the snake

The snake plays a vital role in one of the most celebrated books in human history. The Lord God expelled Adam and Eve from paradise because of a serpent's proposition. This creature convinced Eve to pick an apple from the tree of knowledge of good and evil, a forbidden act. According to the **Bible**, humankind will pay for this original sin for all eternity. The serpent didn't escape punishment either: God condemned it to crawl on its belly forevermore.

Depictions of the **Virgin Mary** often show her crushing a snake underfoot. This symbolizes her chastity and triumph over sin, to which Eve succumbed.



The cruel torturers of **Christina of Bolsena** threw her into a pit full of snakes. Although she survived this, her ordeal was not at an end. She died at last after being assailed by arrows.



An attribute of **John the Evangelist** is a snake in a chalice. When Roman priests tried to poison him with this, he banished its venom by making the sign of the cross.



According to legend, **Patrick**, patron saint of Ireland, banished snakes from the whole island by chasing them into the sea after they attacked him while he was fasting. No snakes live in Ireland to this day.

The Christian tradition tells us of seven cardinal (i.e. deadly) sins – pride, avarice, greed, wrath, lust, sloth and **envy**. The latter is often depicted allegorically as a snake.



Snake art

In the course of human history countless artists have been inspired by snakes. Artists have given snakes a great many forms. In the Romantic period, Eugène Delacroix captured their natural beauty in the spirit of naturalism. The work of surrealist René Magritte has them creeping across the canvas as curling candles. Some artists actually work with real snakes.



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2



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4



5



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7



29

1. Caravaggio: *Medusa*, 1597
2. Toyen: mask for the stage play *King Gordogane*, 1976
3. Pablo Picasso: *Nude with Snake*, 1902
4. Henri Rousseau: *The Snake Charmer*, 1907
5. Eugène Delacroix: *Tiger and Snake*, 1862
6. Paul Gauguin: *Self-portrait with Halo and Snake*, 1889
7. René Magritte: *Return to Nature*, 1938
8. Antoine-Louis Barye: *Lion and Serpent*, 1832

8



Marina Abramović: *Dragon Head*, 1990

Bold performance for which the artist sits motionless while an enormous python, attracted by her body heat, coils itself around her upper body and head. The audience has nothing to worry about: the artist's chair is surrounded by blocks of ice, which repel the snake.

Circus-time!

People like to pass the time by visiting attractions and attending spectacles. In the past, the arrival of a circus in town was a big event. And circuses meant snakes!

A popular number at the circus and the cabaret was a breath-taking dance by a **snake charmer** with a serpent looped around them. Very graceful but very dangerous.

Contortionists

Some women saved snakes the effort by performing tortuous tricks with their bodies.

Snakes were also the inspiration behind various **adornments on and adjustments to the human body**, which people went to see at freak shows. Apart from tattoos (once an exotic rarity), these included more drastic modifications – such as a forked tongue. Ugh!



Popular reptiles ❤️🐍

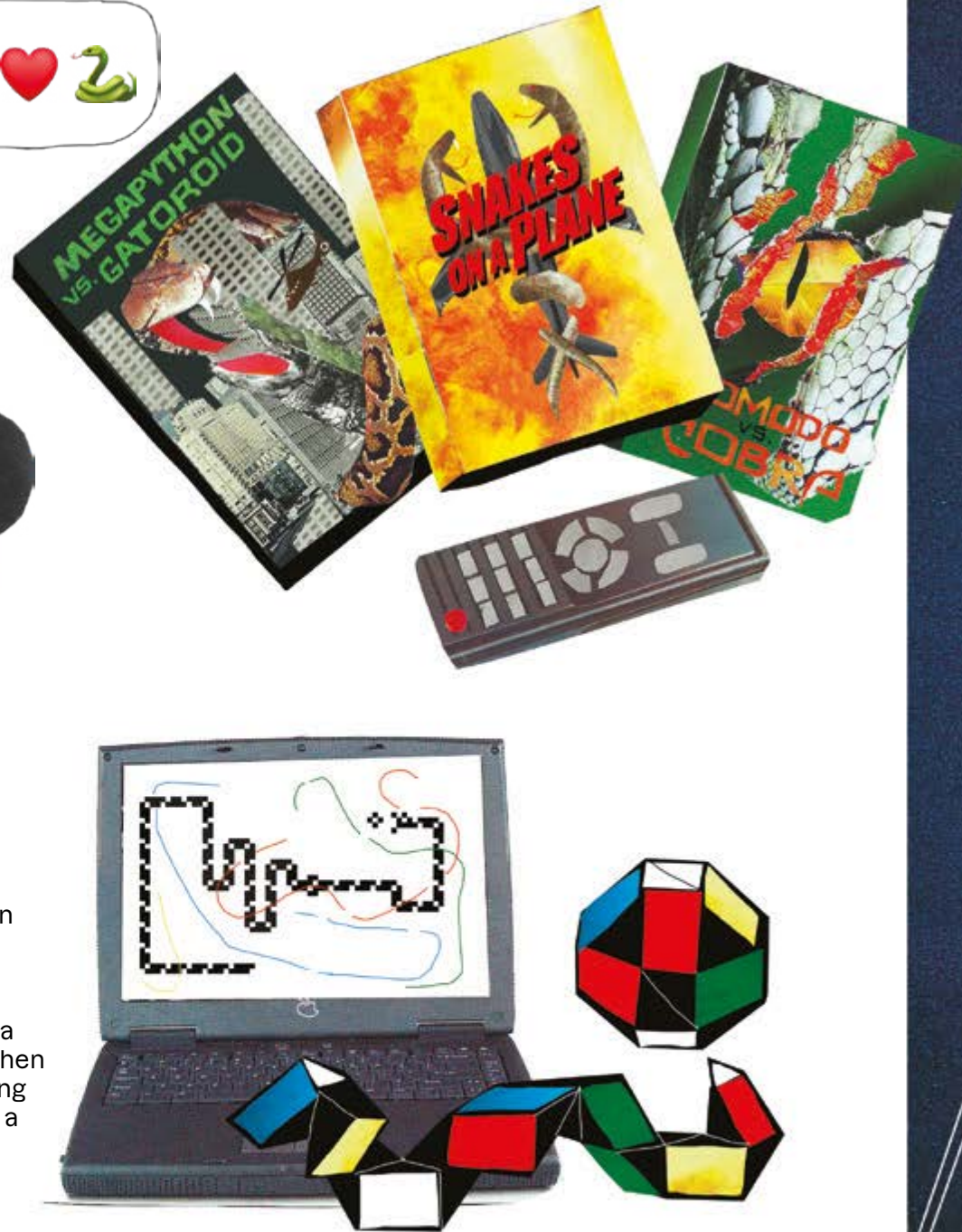
A ride on this fun descendant of the skateboard feels like surfing or snowboarding. The **snakeboard** first saw the light of day in South Africa in 1989.



Snake pastimes

The cult arcade game **Snake**, in which the player determines the course of an ever-growing snake across a shrinking playing area, is very well known. **Achtung, die Kurve! (Curve Fever)** is a lesser-known variation on this game for two or more players. It originated in the Czech Republic.

Hungarian inventor Ernő Rubik is world-famous for a mechanical brainteaser called the Rubik's Cube. When inventing the **Rubik's Snake**, he was perhaps thinking of animal lovers – it can be arranged in the shape of a cat or dog too.



In fiction, the **snake** tends to be a secondary character with a negative role. In some cases, this treatment is undeserved: the **Incredibly Deadly Viper** in Lemony Snicket's *Series of Unfortunate Events*, for instance, is 'one of the least dangerous and most friendly creatures in the animal kingdom', despite its name.

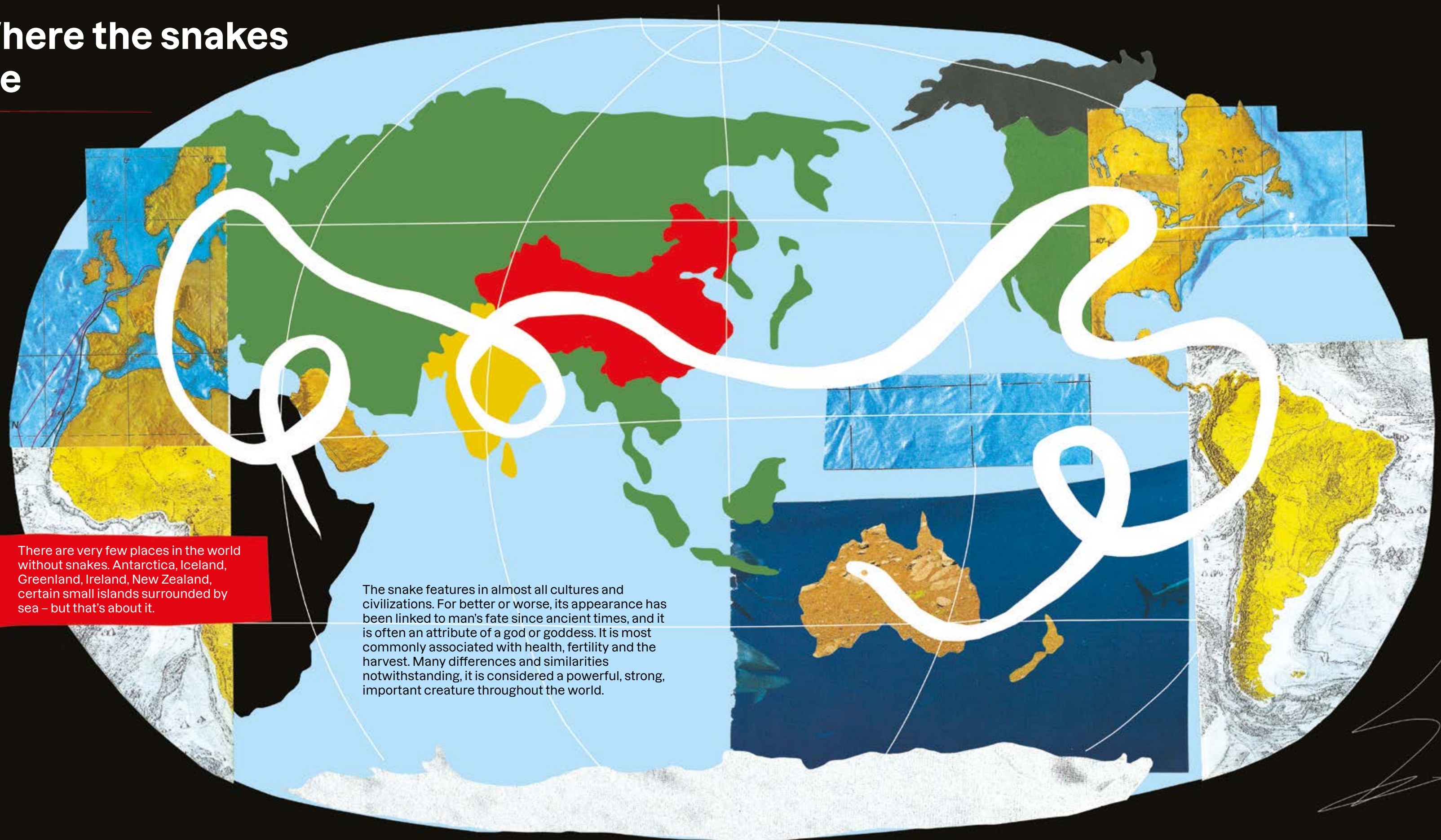


B-movie reptiles

Basilisk: The Serpent King, *Vipers*, *Anaconda III*, *Venomous*, *Snakes on a Train* – all imaginative titles of not-so-great disaster movies made in the US. In them, snake-like monsters terrorize actors and audiences alike. Even so, they provide popular material for the tougher kind of movie-goer.



Where the snakes are

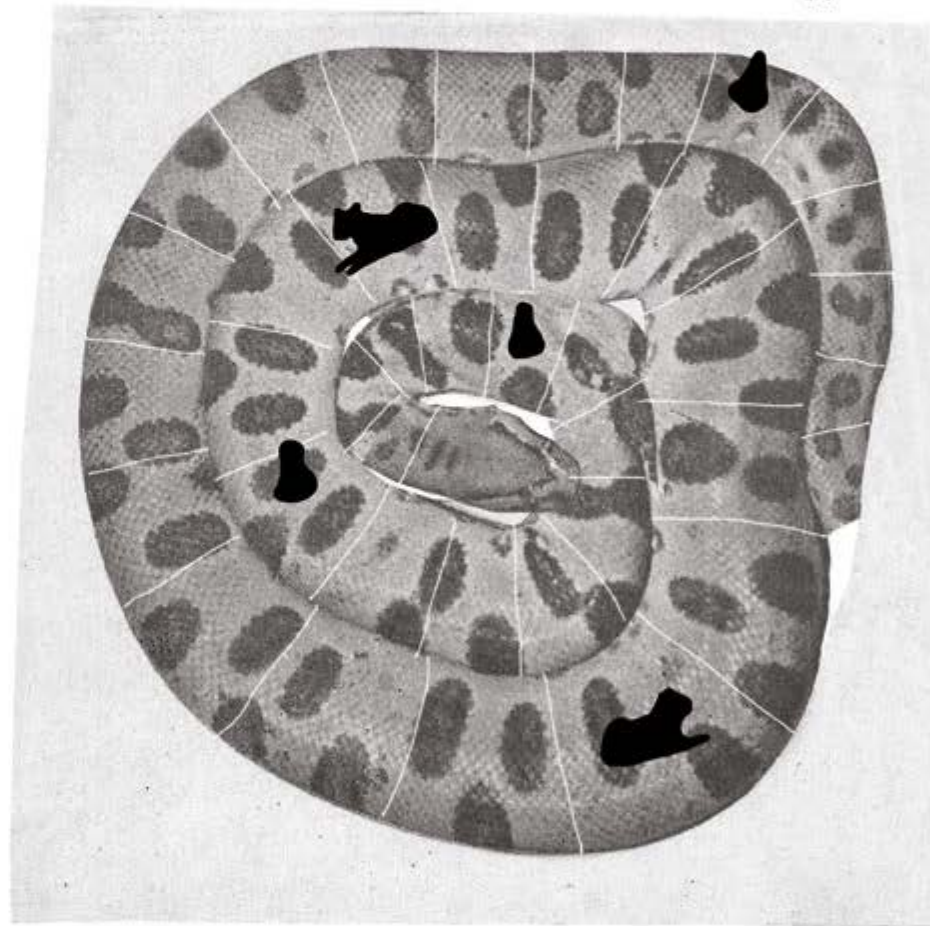


There are very few places in the world without snakes. Antarctica, Iceland, Greenland, Ireland, New Zealand, certain small islands surrounded by sea – but that's about it.

The snake features in almost all cultures and civilizations. For better or worse, its appearance has been linked to man's fate since ancient times, and it is often an attribute of a god or goddess. It is most commonly associated with health, fertility and the harvest. Many differences and similarities notwithstanding, it is considered a powerful, strong, important creature throughout the world.

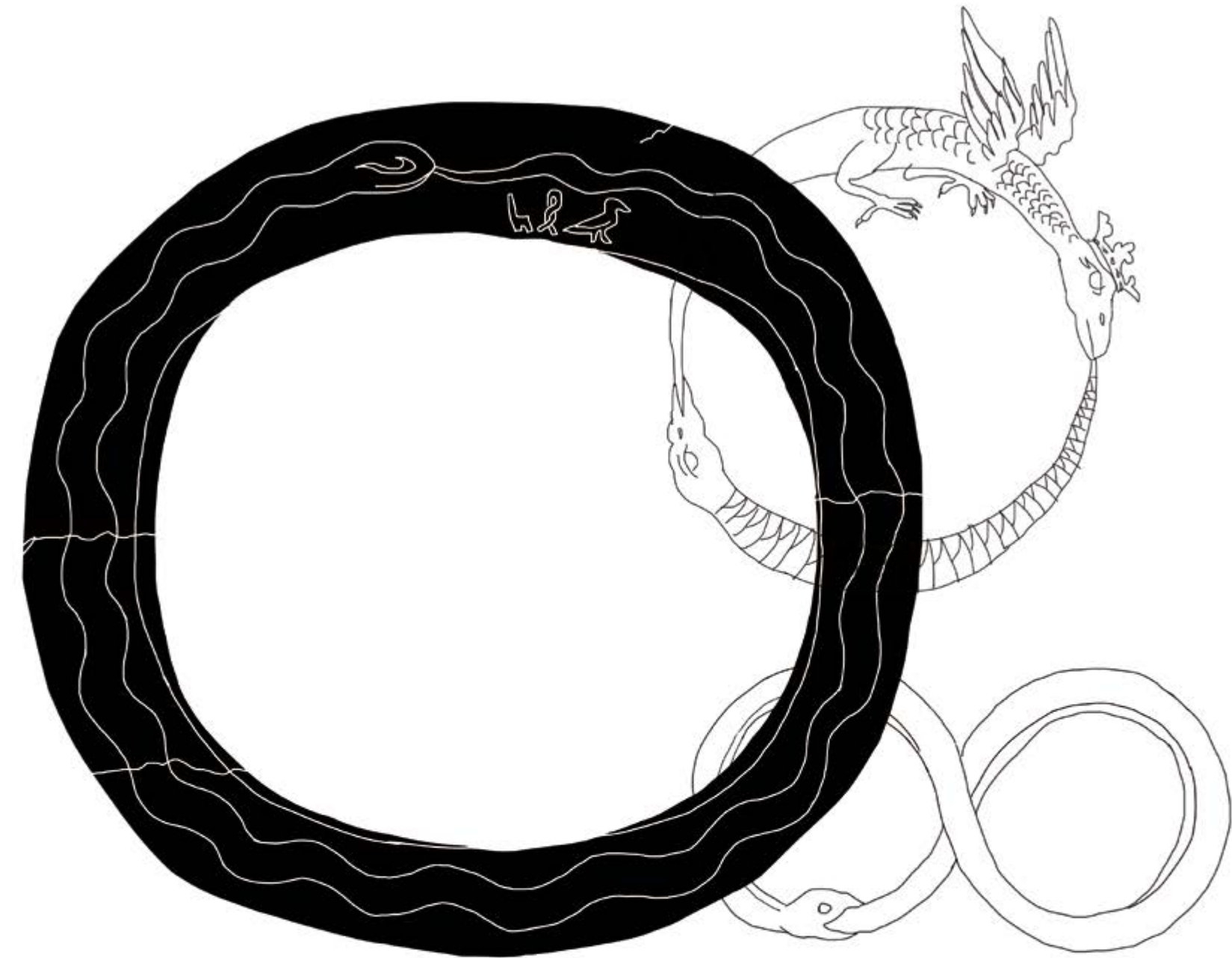
In the spiral of time

The motif of a snake-like line is found all over the world in many various forms. The **spiral** appears as a groove on the wall of prehistoric caves in Europe and America, as an ornament on pots made by the earliest civilizations, as a winding furrow in the earth of Africa, and as a tattoo on the skin of the Māori of New Zealand. It symbolizes the flow of energy, recurring events and the solar disk.



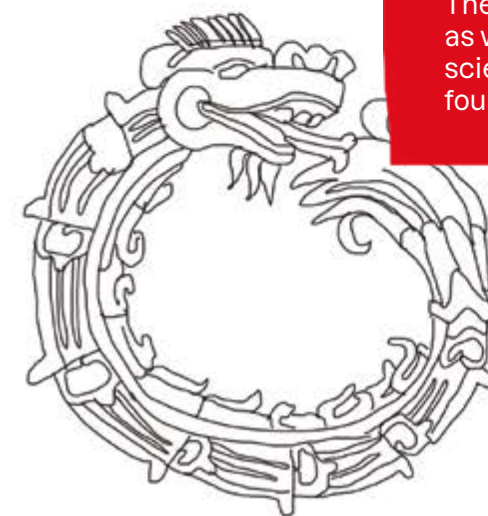
Mehen

The play area of the oldest board game is shaped like a snake; indeed, the name means 'coiled one'. Played 5000 years ago, its original rules are today shrouded in mystery.



Ouroboros

The ancient symbol of a snake eating its own tail is almost as widespread as the spiral. As well as Egypt, where scientists documented its earliest occurrence, it has been found, in various forms, on all inhabited continents.



The ouroboros represents infinite time, cyclicity, the connection of beginning and end, life and death, self-destruction and self-renewal. The 'lazy eight' symbol for infinity in mathematics was introduced by Englishman John Wallis in the 17th century.

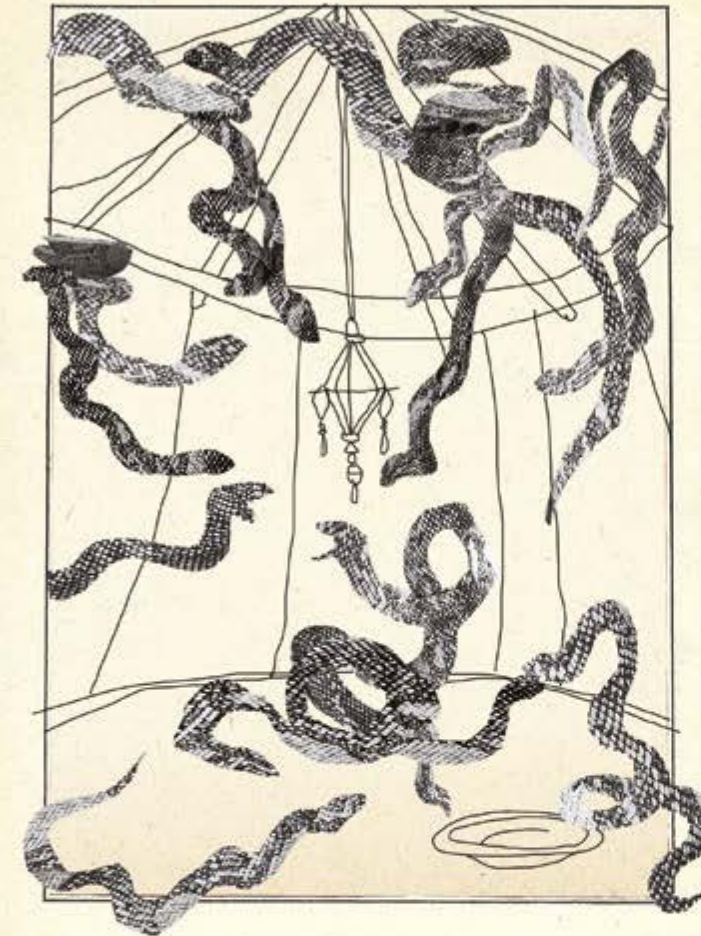


Mammy Water

All life comes from water. The figure of **Mami Wata** (Mammy Water) appears in most aboriginal African theological teachings. This water spirit – similar in kind to a mermaid or snake – is still considered a personification of good and life, although, like the element of water itself, she can also be destructive and merciless.

In her hand she holds a mirror – a symbol of the connection of wish and reality. The snake coiled around her body is an attribute of divination and healing.

To win the favour of the goddess, people bring her sacrifices in the form of fine food, fragrant objects, pearls and beads.



Live snakes, too, were revered, and people built **shrines** to them. In Africa, the belief that snakes were reincarnations of deceased relatives was once widespread; the killing of a snake, whether or not deliberate, was punishable by death. These days, places where snakes are revered are rare enough to be tourist attractions; the Temple of Pythons in **Ouidah**, Benin is a case in point.

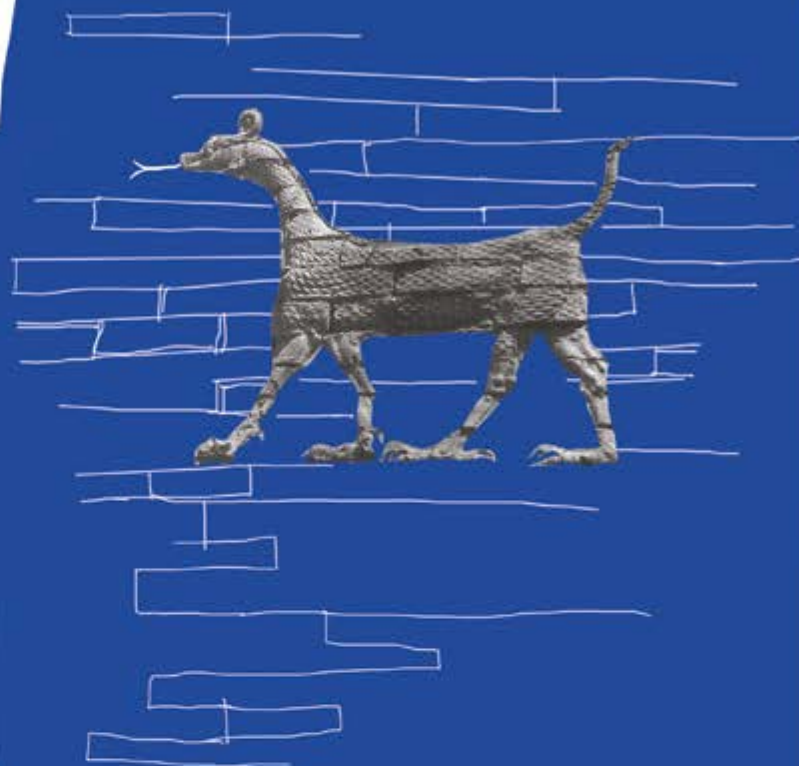
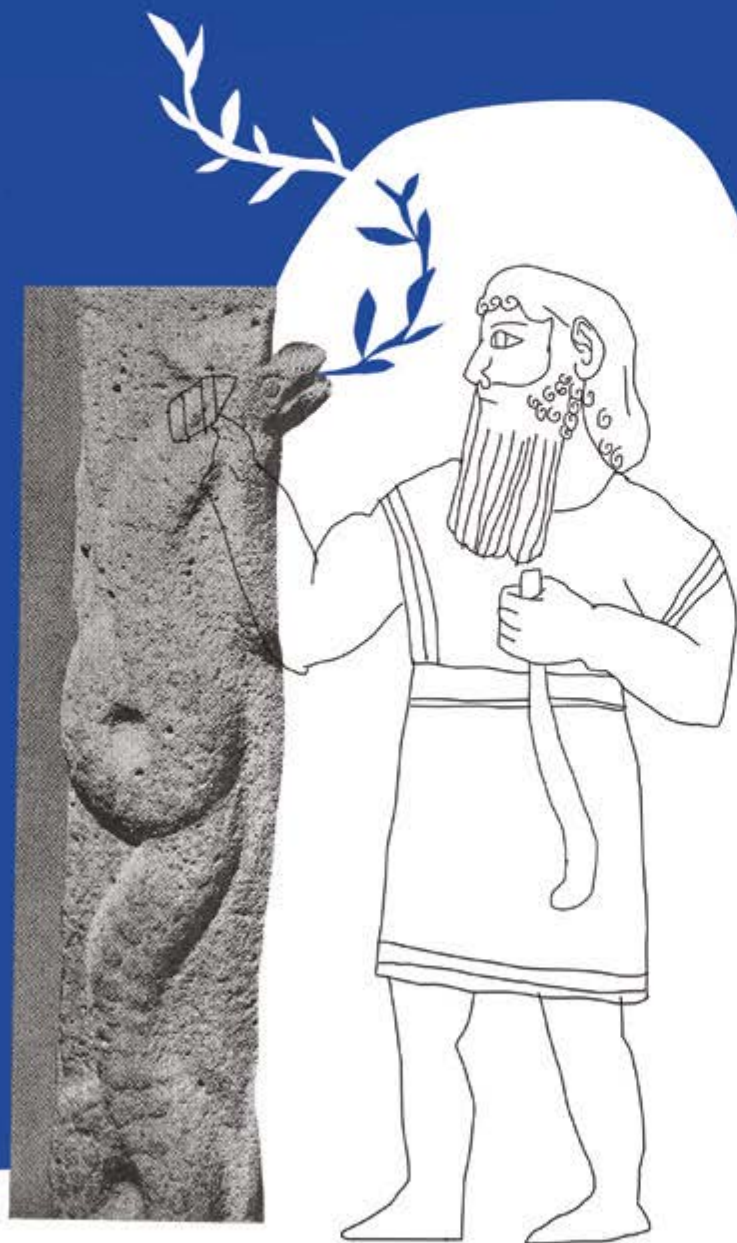
Long live the *zmijovka*!

This iconic hat had its heyday in the states of the Eastern Bloc in the years after the Second World War. In the Czech lands, it was the favourite head attire of butchers. In Slovakia it was known as the *budajka*, after Ján Budaj, one of the leaders of the Velvet Revolution in Czechoslovakia. It has the revolutionary Amílcar Cabral to thank for its ongoing popularity in western Africa.



A snake features in the oldest surviving work of literature – as a mischief-maker. The Sumerian ***Epic of Gilgamesh*** tells of its hero's long and perilous quest for immortality. Gilgamesh finally succeeds in acquiring a plant with miraculous powers of rejuvenation, but this is stolen and eaten by a snake.

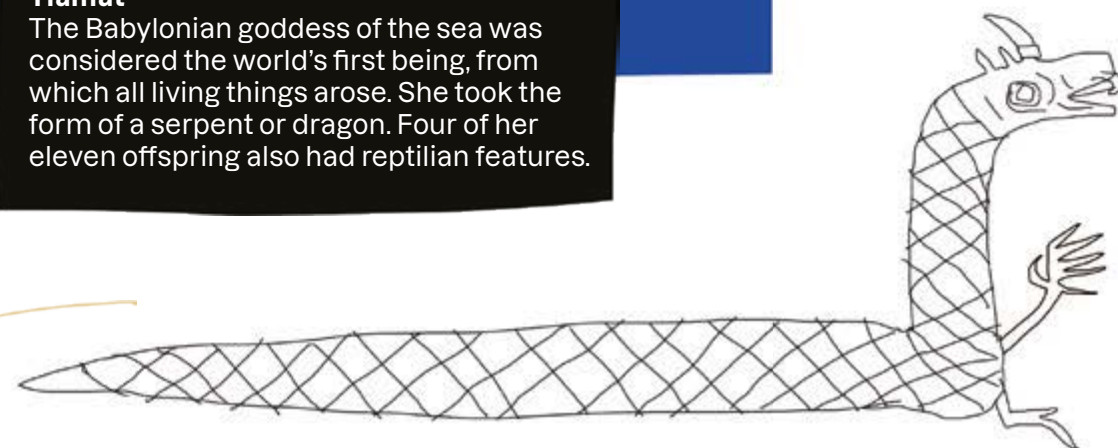
40



The famous Ishtar Gate in the ancient city of Babylon was guarded by a mythological creature called the **sirrush** (also known as the **mušḫuššu**), the sacred animal of the god Marduk. It had the head and tail of a serpent and body parts of a lion, an eagle and a predatory roc bird. There was also such a thing as a **serpopard**, a cross between a serpent and a leopard.

Tiamat

The Babylonian goddess of the sea was considered the world's first being, from which all living things arose. She took the form of a serpent or dragon. Four of her eleven offspring also had reptilian features.



Snake harvest



Lizard woman

A mysterious 7000-year-old figurine is apparently the oldest artefact to demonstrate a combination of human and serpent. Archaeologists have found many small sculptures thousands of years old that depict or resemble snakes.



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The snake also makes an appearance in the religion of the Minoans of Crete. At the palace at Knossos two figurines of a goddess with snakes have been found; one has them around her body, the other is holding them in her hands. The Cretan **snake goddess** was said to protect the household and the harvest, much like the later Greek goddess Demeter and the Roman goddess Ceres.

In the land of the Sun

Ancient Egyptian civilization developed over three millennia and more. So the ancient Egyptians acquired a lot of experience in snake worship.



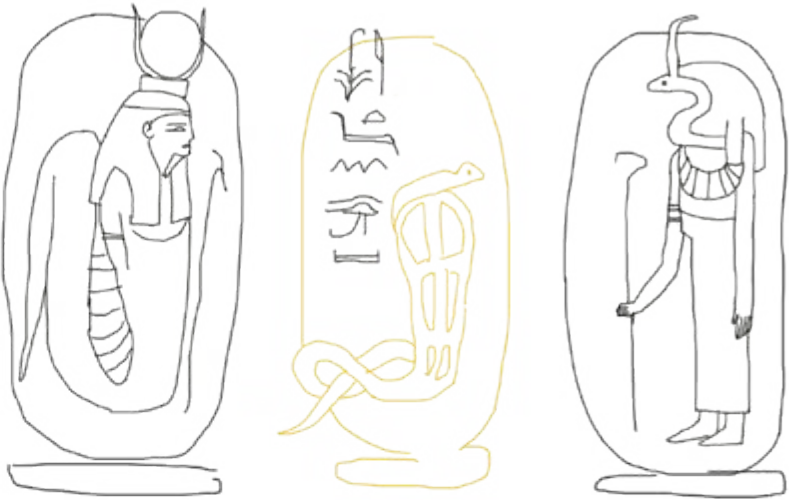
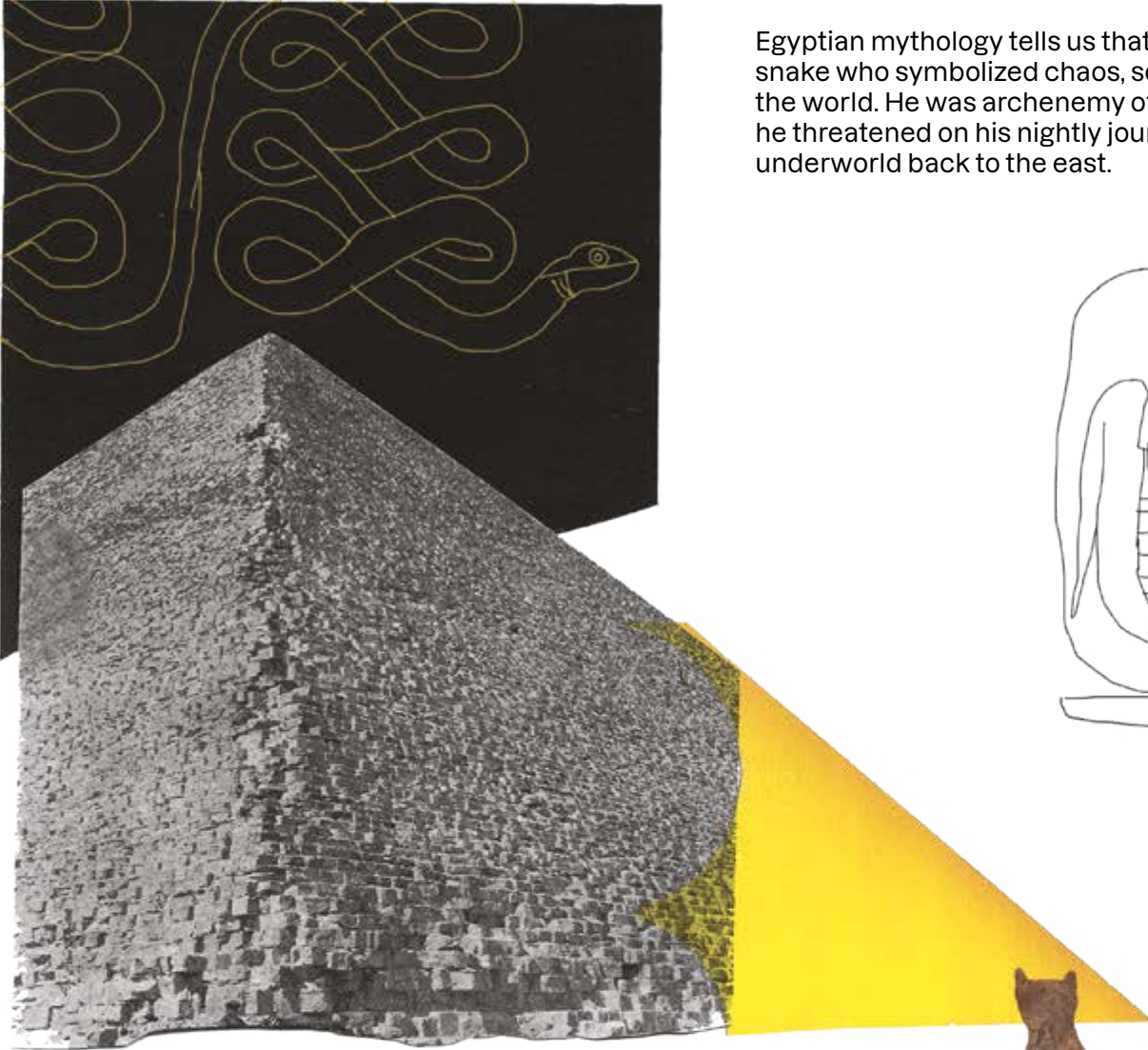
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A **cobra** has the characteristic ability to produce a **warning hood** with the long ribs in its neck. When under threat, some species squeeze the venom gland to send out a stream of venom over a distance of up to 4 metres.

The cobra adornment on headdresses of the rulers of ancient Egypt is called the **uraeus**. It symbolizes the divine powers bestowed upon the pharaoh, and it serves to protect him.

Egyptian mythology tells us that **Apep** was an enormous snake who symbolized chaos, so threatening order in the world. He was archenemy of the sun god Ra, whom he threatened on his nightly journey through the underworld back to the east.

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Many Egyptian gods took animal form. The very important goddess **Wadjet** – protector of Lower Egypt, kings and women in childbirth – had the head of a cobra. **Atum**, progenitor of the world, also had the appearance of a snake, as did **Meretseger**, protector of the Valley of the Kings burial grounds.

Big sleep with a cobra
According to legend, the celebrated queen Cleopatra chose a snake as her helpmeet for her journey to the realm of the dead. After Egypt fell to the Romans, she allowed an Egyptian cobra to bite and poison her.



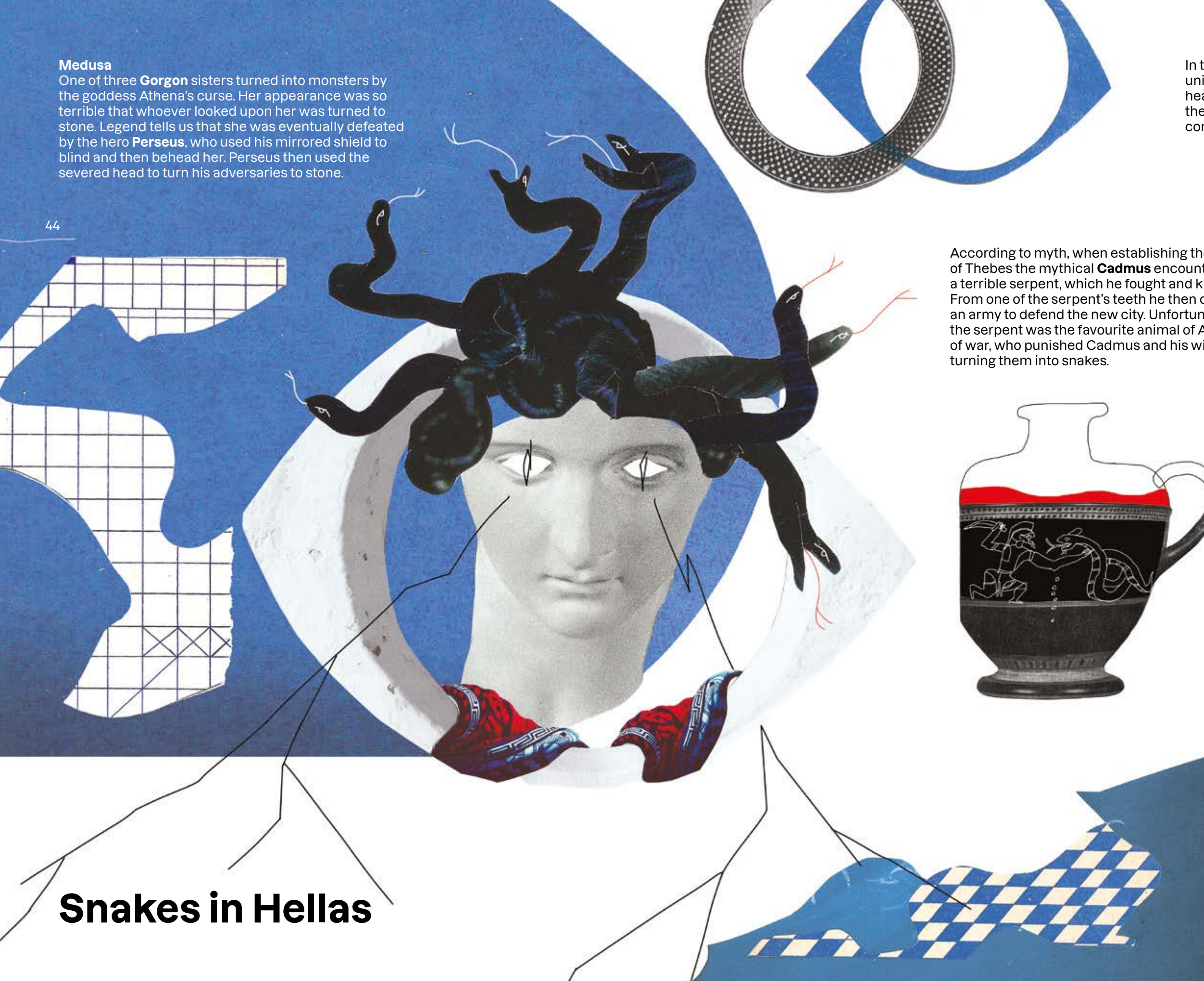
Treatment of the dead was of great importance to Egyptian culture. Tombs inside pyramids contained not only the mummies of rulers, but also **mummified remains of snakes**, cats and crocodiles.



Medusa

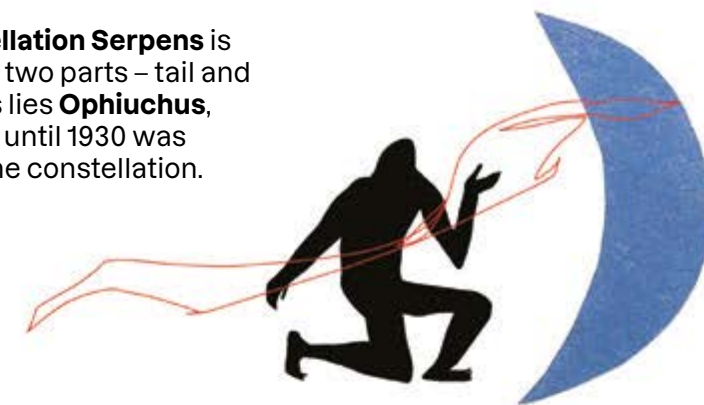
One of three **Gorgon** sisters turned into monsters by the goddess Athena's curse. Her appearance was so terrible that whoever looked upon her was turned to stone. Legend tells us that she was eventually defeated by the hero **Perseus**, who used his mirrored shield to blind and then behead her. Perseus then used the severed head to turn his adversaries to stone.

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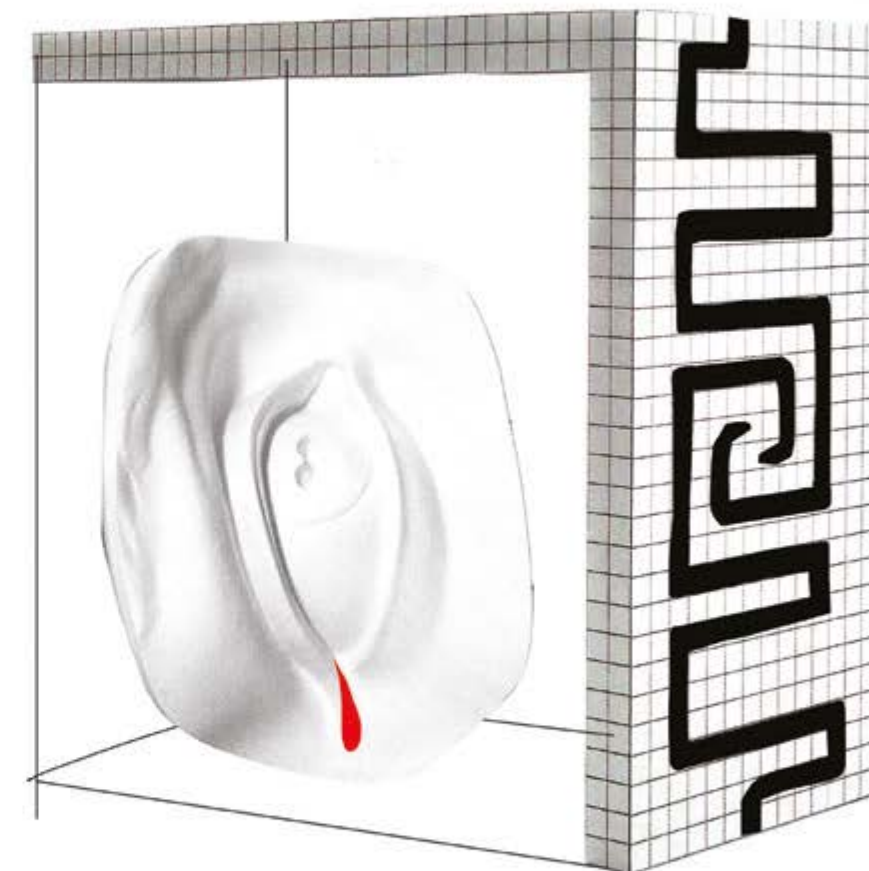


Snakes in Hellas

In the night sky, the **constellation Serpens** is unique in that it is split into two parts – tail and head. Between these parts lies **Ophiuchus**, the 'serpent bearer', which until 1930 was considered part of the same constellation.



According to myth, when establishing the city of Thebes the mythical **Cadmus** encountered a terrible serpent, which he fought and killed. From one of the serpent's teeth he then created an army to defend the new city. Unfortunately, the serpent was the favourite animal of Ares, god of war, who punished Cadmus and his wife by turning them into snakes.



The seer **Laocoön** warned the people of Troy not to accept the gift of a giant wooden horse from their Greek besiegers. After the Trojans ignored the warning, Laocoön threw his spear at the horse in despair. The gods, who were on the side of the Greeks, sent two serpents (named Porkys and Chariboia) to kill him and his sons. Led by this to believe that the gods were on their side, the defenders pulled the horse into the city. The horse was filled with soldiers, who defeated the defenders.

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Scaly northerners

Reptiles are cold-blooded, meaning that their body temperature depends on the temperature of their surroundings. The Arctic Circle is the northernmost region in which snakes occur naturally.

To wait out adverse conditions of temperature, snakes may resort to an incomplete version of hibernation known as **brumation**, which, like hibernation, slows physiological processes (e.g. food intake and excretion) in order to save energy. Snakes remain semi-awake in this state and can wake from it fully.

Jörmungandr is a son of Loki, Norse god of trickery and deception. Told by an oracle that this son was a threat to the world, the god Odin tossed him into the sea. In the sea, he grew to become a serpent so big that he could surround the earth and grasp his own tail.



The serpent or dragon **Níðhöggr** gnawing at the roots of the life-giving tree Yggdrasil represents forces of chaos and impending Ragnarök, which includes a great battle bringing the end of the world.

Snakes feature in typical Celtic **ornaments** and knots that have made their way into European cultures. As well as being of decorative value, these have symbolic meaning.



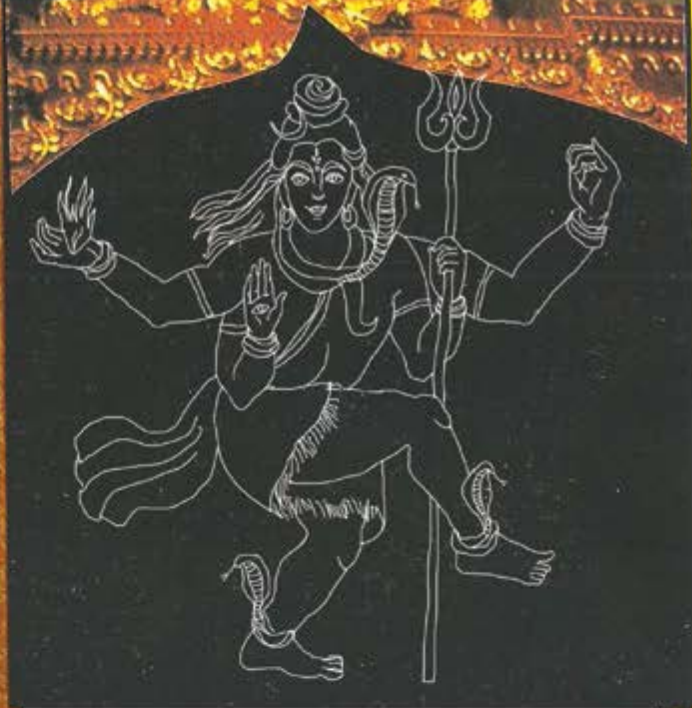
A **horned serpent** grasped in the hand of Cernunnos, god of wild animals, has many meanings in Celtic mythology. It symbolizes the axis around which the cycle of life revolves. It is also considered the guardian of underground treasures and the underworld, which it inhabits.



Snakes and ladders

Indian deities

Frequent attributes of Hindu gods, snakes keep company with two of the most famous. While **Shiva, lord of serpents**, is seen dancing with snakes around his body, **Vishnu** likes to sleep on the mythical thousand-headed snake **Adishesha**.



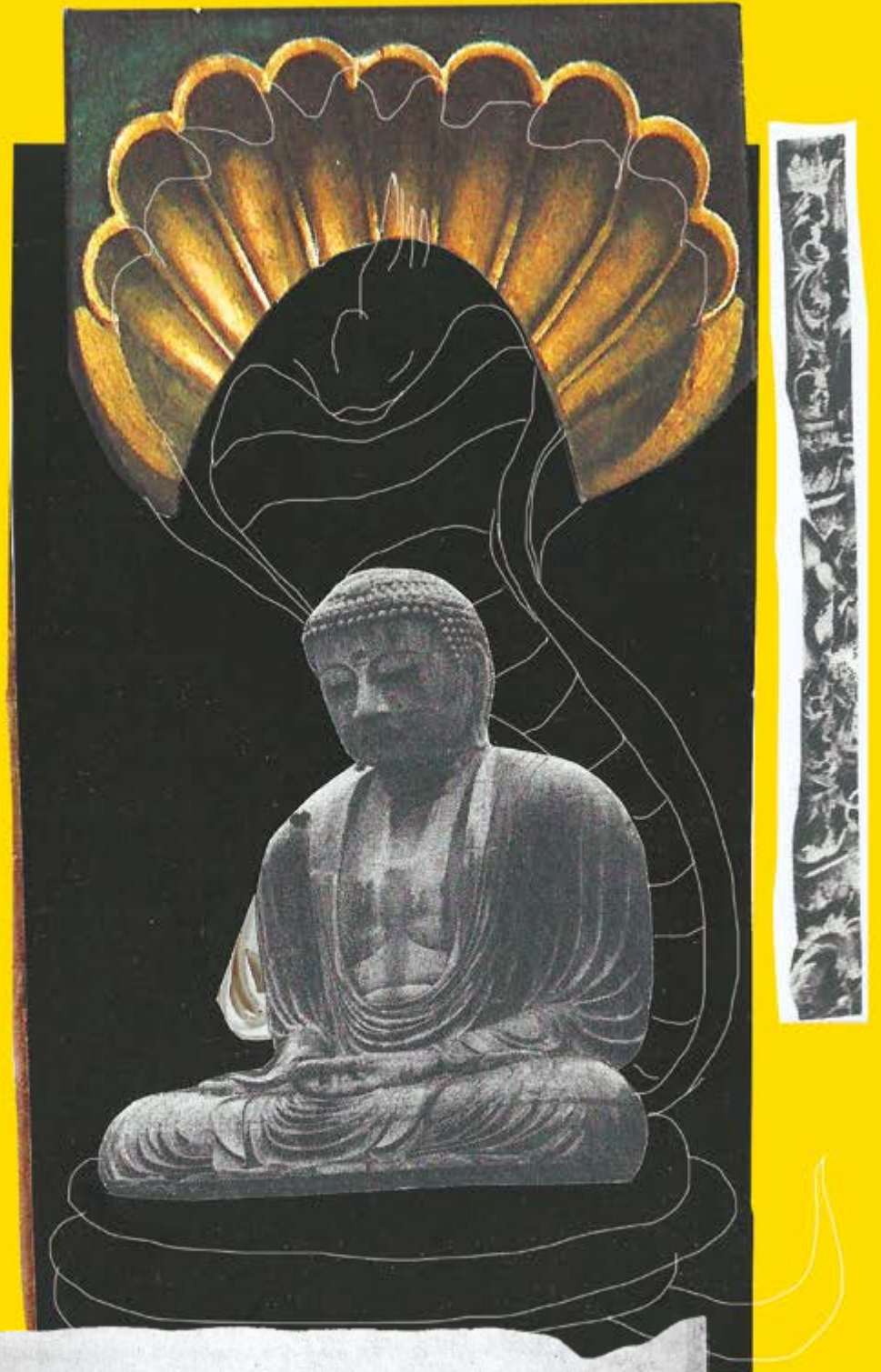
The board game **Snakes and Ladders** is based on teachings of the Hindu religion; it symbolizes human life. Good deeds (represented by squares with ladders) move the player forward, while squares with snakes refer to misdeeds, and so set the player back. The game's topmost square represents attainment of spiritual liberation – **nirvana**.

Cheers!

Naga Panchami is the day of worship of snake gods known as Nag. At this time, it is the custom to bathe snakes (typically a **cobra**, with the assistance of a snake-charmer) in milk as protection against evil.



Indian **snake-charmers** practise the ancient performance art of flute-playing to make a cobra dance! The snake reacts not to the sound (as we know, it has no sense of hearing) but to the swinging motion of the flute.



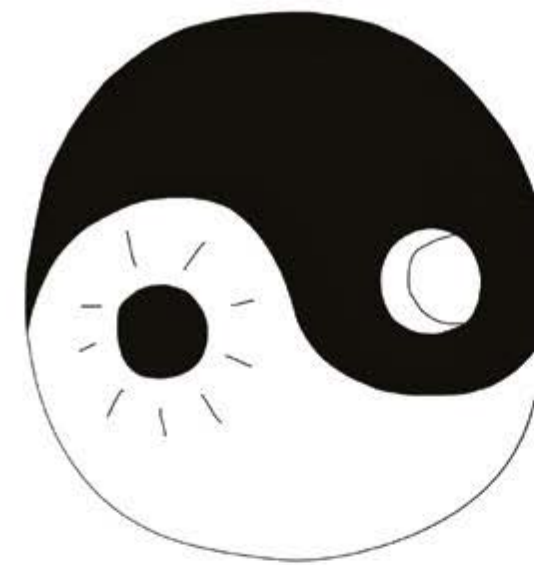
The great Mucalinda

The Buddha had been meditating for four weeks under a fig tree when the sky clouded over for seven days, and torrential rain set in. Mucalinda, king of the serpents, crawled out of the ground to protect the Buddha with his hood. When the rain stopped, the snake assumed human form, bowed before the Buddha and returned to his place.

Land of dragons

Reptiles have a privileged role in the mythology of the distant 'Middle Kingdom'. A **dragon with the body of a snake** and four limbs is considered the ruler of all creatures. It is in him that the rule of the imperial dynasties originated. He has given rise to countless legends and phenomena: he is the bringer of rain and reviver of the dead, and he can change his size and form.

The **Chinese zodiac**, like its western equivalent, has twelve signs, although these alternate year on year in twelve cycles. As well as the **Dragon**, they include the **Snake**. Unlike the zodiac informed by the Christian tradition, no negative emotions are associated with them. According to Chinese astrology, a person is influenced by the sign of the year of their birth. People born under the sign of the Snake are intelligent, ambitious and highly intuitive.



Radiant Zhulong

One of the dragon deities of Chinese mythology makes day by opening its eyes and night by closing them, and its breath determines the direction of the wind. It has the body of a snake and the face of a man.

Snake is one of the five traditional forms of the Shaolin style of the martial art **kung fu**. The others are Tiger, Leopard, Dragon and Crane. The movements of the Snake appear to be slow, yet they surprise the opponent with a swift lunge.



The male **Naga** and the female **Nagini** are part-human, part-serpentine demigods with their origin in the Hindu religion. They appear in myths in different variations throughout southeast Asia.

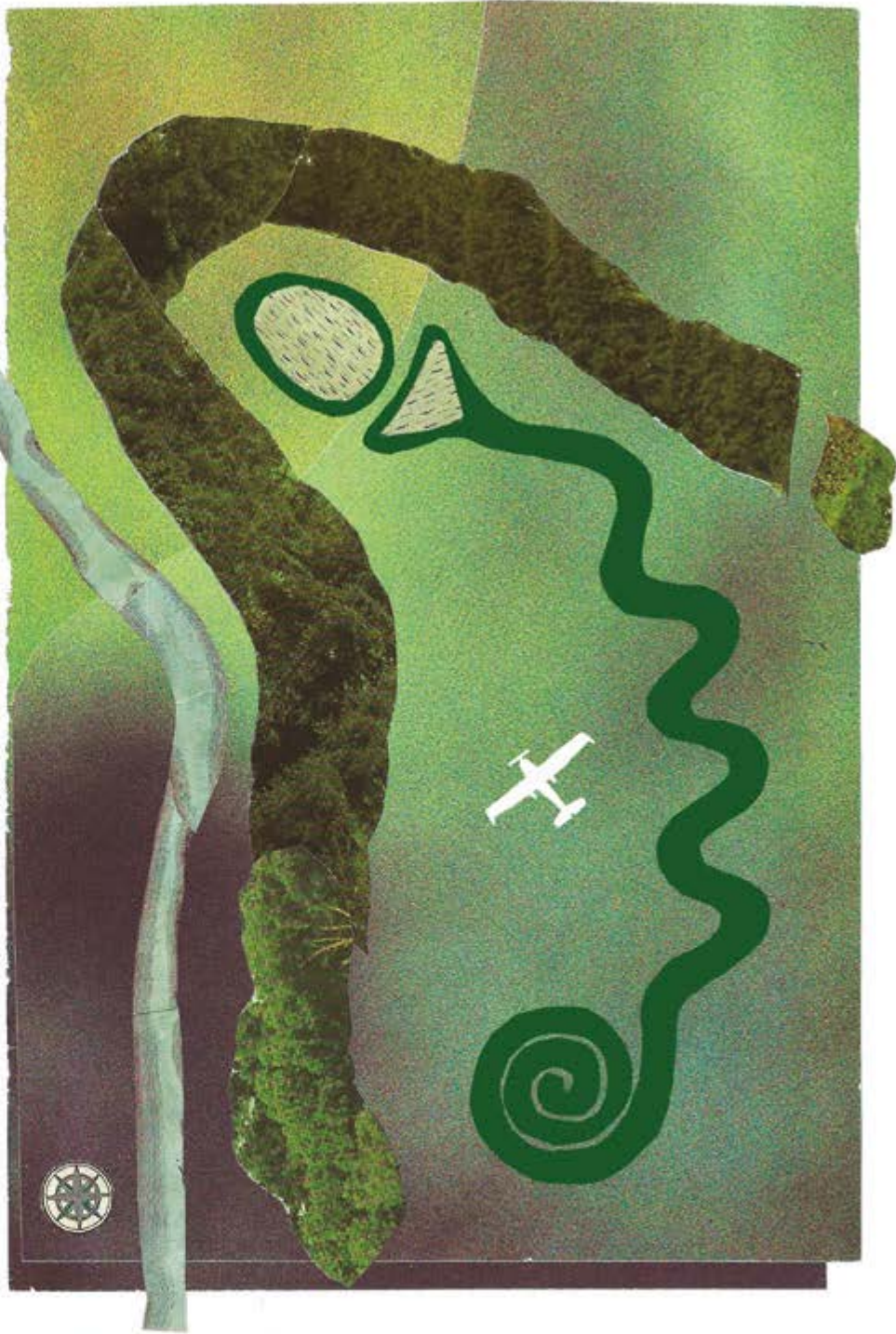


The great New World

Europeans' discovery of America in the late 15th century introduced them to new species of snakes as well as other things with which snakes are associated.

Necklace or choker?
Coral and coral snakes are similar in appearance as well as in name – but confusing the two could have lethal consequences. While **coral** is perfectly harmless, the **coral snake**, species of which differ only in the colours of the banding pattern, may be highly venomous.

To tell a non-venomous coral snake from a venomous one, Americans have come up with the following saying: 'Red touching black, safe for Jack. Red touching yellow, kill a fellow.'



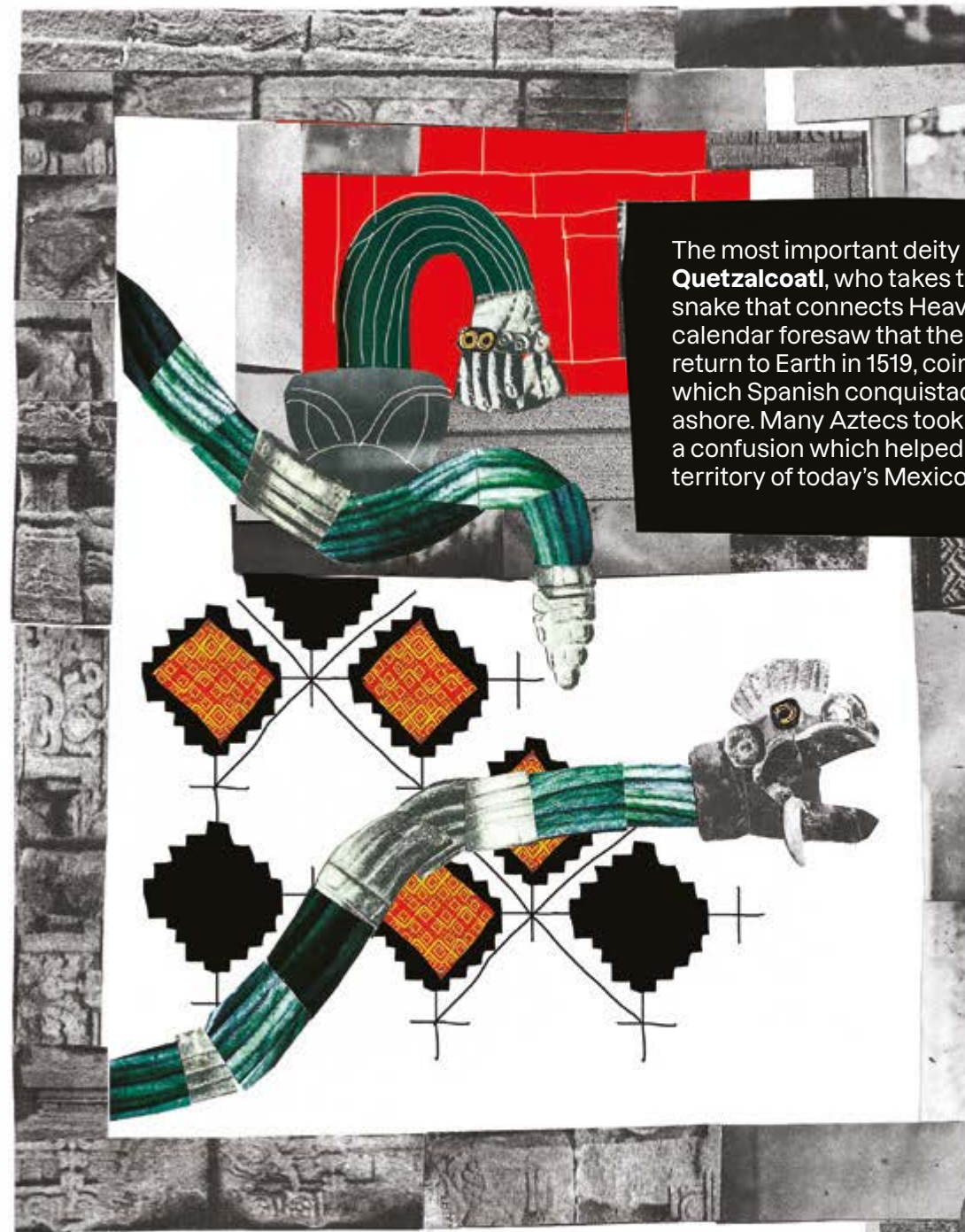
Serpent Mound
The world's largest representation of a snake is in the US state of Ohio. This mysterious, 411-metre-long earthwork is in the shape of a coiled snake. It is believed to be the creation of aboriginal Americans. Its purpose and age remain unknown.



Our planet has an ever-increasing number of roads winding through its landscapes. At 48,000 kilometres, the **Pan-American Highway** is the world's longest network of roads. It passes through 15 states, from the top of North America to the bottom of South America. Those who travel through its localities can meet all kinds of snakes.

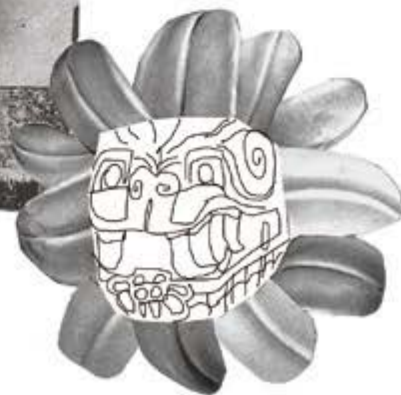
Feathered snake

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The most important deity in the Aztec pantheon is **Quetzalcoatl**, who takes the form of a feathered snake that connects Heaven and Earth. The Aztec calendar foresaw that the serpent god would return to Earth in 1519, coincidentally the year in which Spanish conquistador Hernán Cortés came ashore. Many Aztecs took Cortés for Quetzalcoatl, a confusion which helped him conquer the territory of today's Mexico without much difficulty.

Kukulkan, Quetzalcoatl's counterpart in Maya culture, is a god of learning and war. The pyramid at Chichen Itza, one of the New Seven Wonders of the World, is dedicated to him.



Snakes are also depicted around the perimeter of the circular **Maya calendar**, the most advanced calendar of the indigenous peoples of Central America. It is based on cyclicity rather than a linear concept of time.



The Aztec goddess of the earth **Coatlicue**, too, took the form of a serpent. She has two serpent faces, one facing the other – a benevolent face that gives life and a cruel one that takes it. Her skirt is made of rattlesnakes and human skulls, hands and hearts.



The **coat of arms of Mexico** refers to a myth of the establishment of Tenochtitlan (now the capital Mexico City). Aztec priests prophesied that a nation led by legendary chief Tenoch would settle in a place where an eagle with a snake in its claws was seen sitting on a prickly pear. The eagle symbolized Huitzilopochtli, god of the sun; the snake symbolized Quetzalcoatl. After the Aztec Empire was conquered, the snake came to be understood as a symbol of evil and sin.

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Lake Guatavita is in South America's Cordillera mountain range. It is one of five sacred lakes dedicated to serpent deities. Treasures found on its bottom include figurines of snakes, thrown there as offerings.



Wonders of South America



24° 29' 10" S
46° 40' 30" W



Ilha da Queimada Grande, known as **Snake Island**, is about 40 km from the coast of Brazil. It is estimated that five **golden lancehead** snakes (one of the world's most venomous species) inhabit each square metre of its territory. As a whole, the island has a snake population of between 2000 and 4000 individuals, which feed mainly on birds. It was once said that the island was an ideal hiding place for buried treasure. Today, however, this snake paradise may be entered only by naval officers who operate its lighthouse and the occasional scientific expedition.

Rattle and hiss

The end of a **rattlesnake's** tail contains a special rattle, made of keratinized segments of skin. Each time the snake sheds its skin a segment is added, but it may break off in combat. A shaking rattle is audible up to a distance of 100 metres.



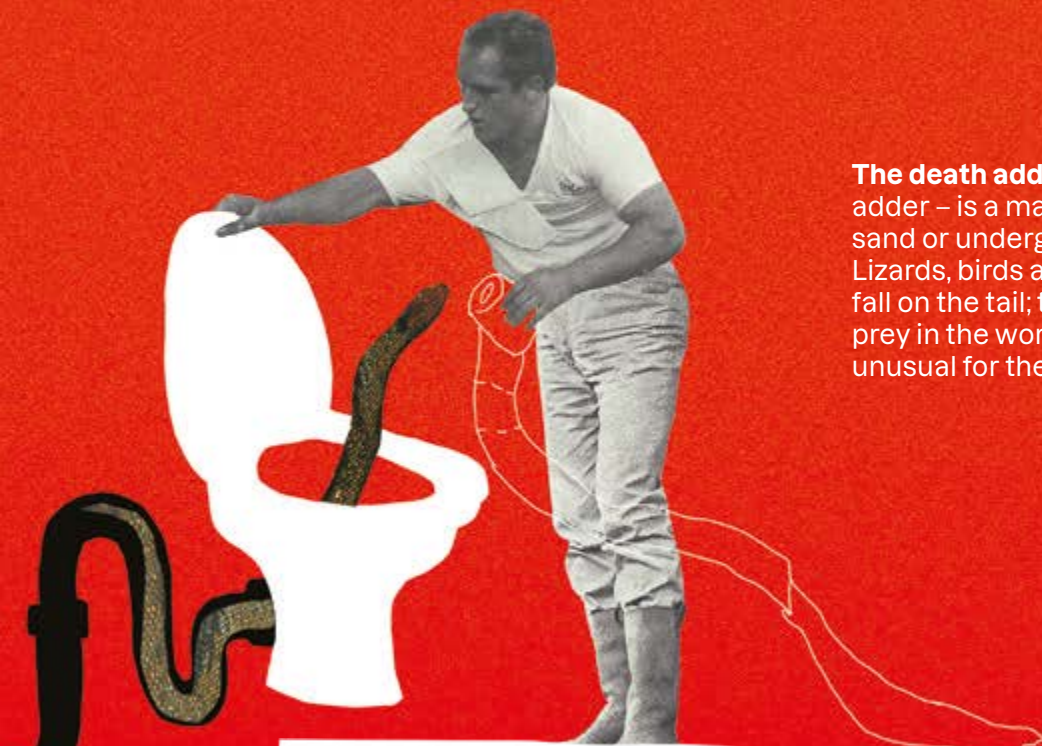
The remains of the largest snake in the history of life on Earth were found on the territory of present-day Colombia. This gigantic **Titanoboa** (it may have been 15 metres long and weighed a ton) lived in the Palaeocene Epoch, about 60 million years ago. The **anaconda**, colossus of the Amazon rainforest, is its evolutionary descendant.

No-legs in the Antipodes

Between Heaven and Earth

A giant mythical snake living in a lake, a river, a well or under a waterfall, moving from one to another in the guise of a rainbow – this has been a significant figure in Australian culture since ancient times. By its connection with water and rain, it is a symbol of abundance and growth.

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Believe it or not

What some believe to be an urban legend is becoming ever more common in reality: snakes take refuge from increasing heat and drought in dark, cool drainpipes. For this reason, Australians must be extra vigilant when investigating such spaces.

The death adder – a short, podgy snake not unlike a true adder – is a master of camouflage. To hunt, it buries itself in sand or undergrowth, moving only the thorny tip of its tail. Lizards, birds and small mammals take it for an insect and fall on the tail; the death adder then turns its assailant into prey in the world's fastest snake attack. Even so, it is not unusual for the expiring prey to bite off the snake's tail.



No entry for snakes!

There are no snakes on the New Zealand mainland; indeed, it is against the law there to import or breed them. These strict measures were introduced to protect the local fauna, which includes endangered species found nowhere else. The **kiwi bird**, New Zealand's national symbol, is flightless and makes its nest on the ground, making it very easy prey for snakes.



Coconut gift

According to the aborigines of Melanesia, **Agunua**, a mythical god of the sea with a human head, four eyes, a bat's wings and a serpent's body, is creator of all living things – making him the male counterpart of Mother Earth. It is the custom in the Solomon Islands to dedicate one coconut from each tree to him.

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Snake-lovers

Some people are so keen on snakes that they devote their lives to them. **Herpetology**, the study of reptiles and amphibians, has a long tradition in Czechia. Some herpetologists supplement their scientific work with activities for the popularization of these creatures – by writing books about them and appearing on TV.



Grace Olive Wiley

A quirky lady called Grace Wiley had a great fear of snakes until her thirties, when she met one for herself. After that, she became a passionate advocate for snakes, taking care of them first at Brookfield Zoo and then at a zoo of her own, where hundreds of them roamed free. Many of Grace's snakes starred in the movies.



Karl Patterson Schmidt

One of the most important herpetologists of the 20th century, he named over 200 reptile and amphibian species. After being bitten by a young **boomslang** snake, he refused medical help so that he could make detailed notes on the progression of the poisoning – right to the end.

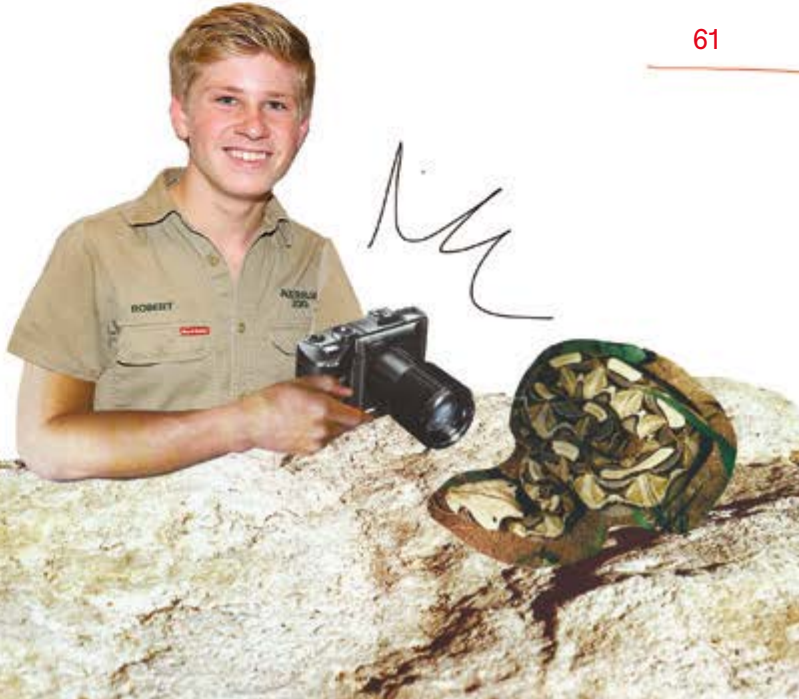
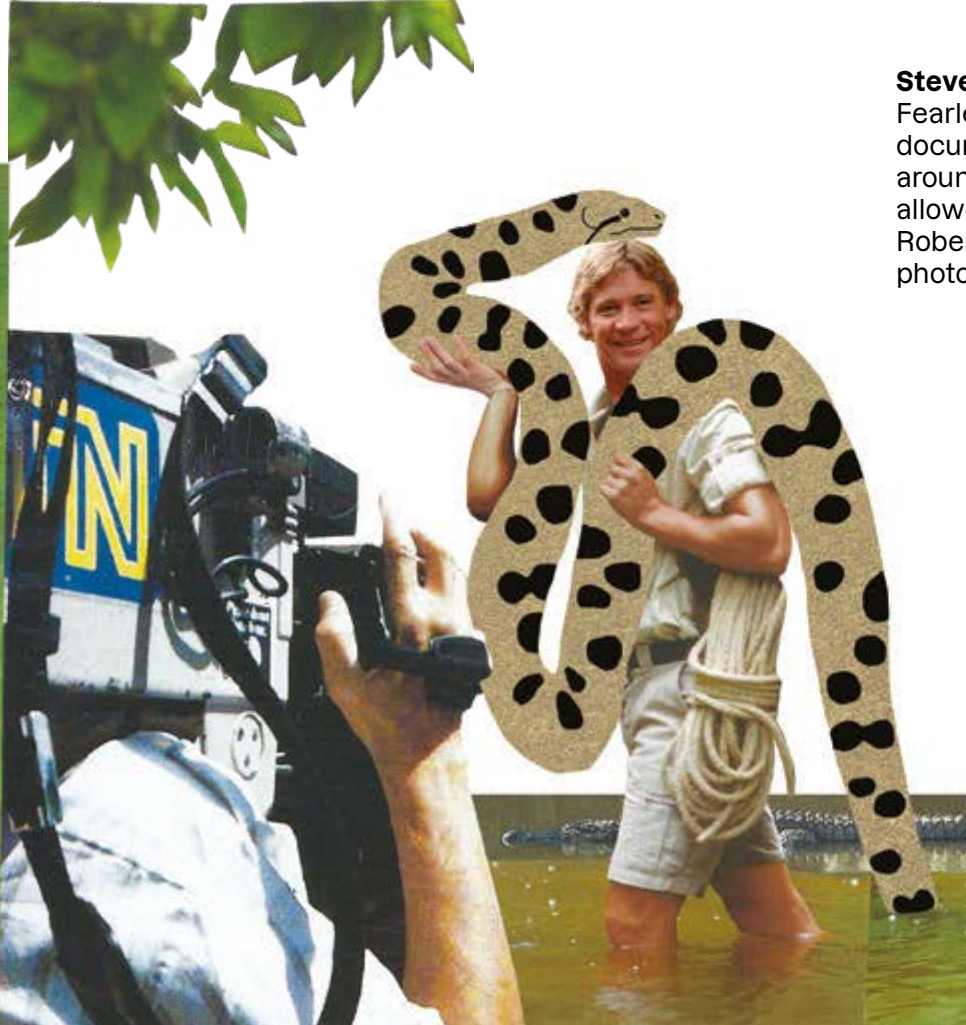


Joan Beauchamp Procter

She kept snakes and lizards as pets from an early age; at sixteen, she took a young crocodile to her maths class at school. Although an expert herpetologist, she is best remembered for her design of the Reptile House at London Zoo.

Steve and Robert Irwin

Fearless Australian Steve Irwin was well known for his many documentary films. As his family owned a zoo, he grew up around wild animals. Aged six, he was given his own python and allowed to feed the crocodiles. Steve's daughter Bindi and son Robert have followed in his footsteps. Robert is a well-respected photographer of animals.



There's a mouse in the cupboard!

Snakes aren't the most popular **pets**: they can't be trained, and they don't do tricks. Even so, they reward the patient observer with many a fascinating spectacle. As exclusively carnivorous creatures, they don't make suitable pets for the tender-hearted, but they may be just the thing for those who suffer with allergies.

Terrarium- and aquarium-keeping are popular hobbies. Hobbyists should seek out certified breeders, and they should not underestimate terrarium size and equipment needed for species of their choice. The most commonly kept snakes are the **corn snake**, **kingsnake**, **royal python** and **boa constrictor**. In suitable conditions, snake care is practically maintenance-free.



In the Czech Republic, all venomous snakes are considered **animals requiring special care**. People who keep them must have reached the age of majority and have a licence from a vet. Applicants for a licence must state the species and maximum number of individuals and provide a description of their equipment and security arrangements. A venomous snake on the run is sure to reach the front pages of the newspapers, a service which does little for the reputation of snakes in general.



Snakes are born in one of three ways. About 70% of them are **oviparous**. Sea snakes, **anacondas** and **boa constrictors** are **viviparous**. The third possibility – **ovoviviparity** – is a combination of the two: the female carries and hatches the eggs inside her body. The **rattlesnake** uses this third way.



Snake creches

Most snakes do not care for their eggs. Exceptions to this are **pythons** and **cobras**, which protect their eggs and regulate their temperature with the body. Instead of the body, snake-keepers must use an incubator, which provides eggs with ideal temperature and humidity. Young snakes emerge from their leather-like container by using a sharp projection on the mouth. After hatching, this **egg tooth** soon disappears.



Like human hair, a snake's skin contains **keratin**. As this is not very elastic, as the snake grows the skin becomes no larger. Instead, a completely new skin forms underneath, for use after the snake rids itself of the old one. This process is known as **shedding**, or **ecdysis**.

Before a snake sheds its skin, its transparent eye-caps turn milky. By rubbing its head against surrounding objects, it tears away the old skin, so turning this inside out, as happens when we remove a sock. The shed skin is known as **exuviae**. Spiders, crabs and mantises shed parts of themselves too.





Snake fun

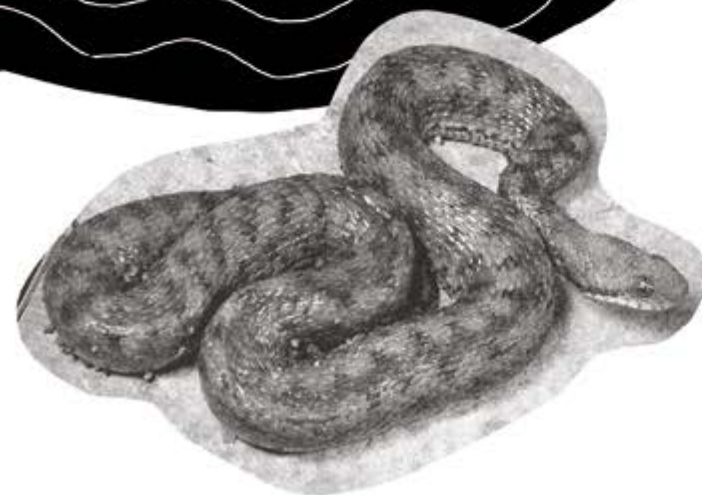
You now know much more about snakes than you did at the beginning. But one question remains unanswered. And that question is, 'Do snakes break wind?' Yes, they do! It happens very rarely. It's more of a 'cloacal cracking', really. Some species – the **Arizona coral snake**, for instance – emit such a sound when in danger, as a warning signal.



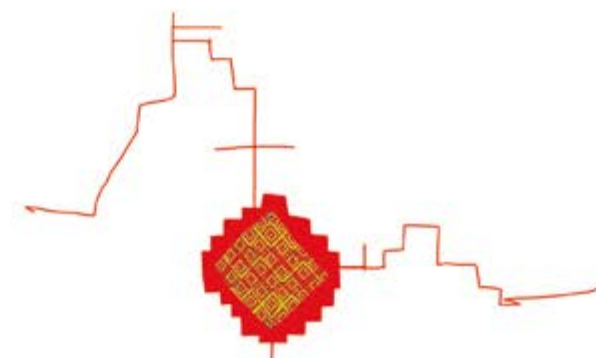
It is barely an exaggeration to call herpetologist **Austin Stevens** 'Lord of the Snakes'. He writes books, takes photographs and makes educational TV series – all about snakes. He is in the Guinness Book of Records for having spent 107 days with 36 venomous snakes in a small glass room – despite being bitten by an **Egyptian cobra** on the 96th day of his stay. Stevens's record remains unbeaten.

This great snake enthusiast rounds off our whistle-stop tour of the history of snakes and humans. By thinking about how we see snakes, how our ancestors saw them, and what they are actually like, we are working together to ensure that the complex relationship of snakes and humans will last for thousandssss more years.

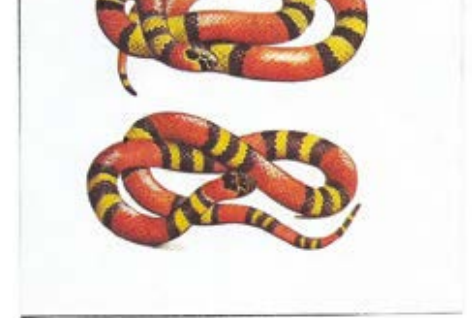




XXX







Uhádnete, kde všude dnes můžete najít hady?
Mají nějaké superschopnosti? Koho se hadi bojí?
Slyšeli jste o hadopardovi? A hadimršku znáte?

Výpravná obrazová kniha mapuje proměnlivý
vztah člověka a těchto neobyčejných tvorů.
Provede vás napříč klikatou historií i skrze
kontinenty všude, kde se něco šustne
a ukáže vám, že hadů netřeba se bát!

