



NATIONAL
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KIDS

SPECIAL
HALLOWEEN
ISSUE



ANIMALS
WITH
PUMPKINS,
DEADLY
CUTIES,
AND MORE!

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PETS
IN COSTUME



YOUR
FAVORITE
HALLOWEEN
CANDY



MUMMIES!

DON'T BE SPOOKED

... but Weird But True! books are
ALL AROUND YOU. Mua-ha-ha!



NASA named a nebula—a cloud of gas and dust in outer space—**WITCH HEAD** because it looked like **A WITCH SCREAMING.**

On Halloween night, according to one legend, you might SEE A WITCH if you put your clothes on inside out and walk backward.
FOR HALLOWEEN, A FORMER MAYOR IN WEST VIRGINIA, U.S.A., DECORATES HIS HOME WITH 3,000 CARVED PUMPKINS.

Experts aren't sure WHY WITCHES are shown wearing POINTY HATS; in the Middle Ages, witches were often drawn WITHOUT HATS.

A company made "**werewolf fur**" cotton candy.

Choose from nearly 40 frightfully fun books about the weird side of everything—from Halloween, the U.S.A., and Greek mythology to animals, dinosaurs, food, and more!

72

One fast-food restaurant sold a "Scary Black Cherry" slushie at Halloween time that made people's tongues turn black.

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JUST FOR PARENTS

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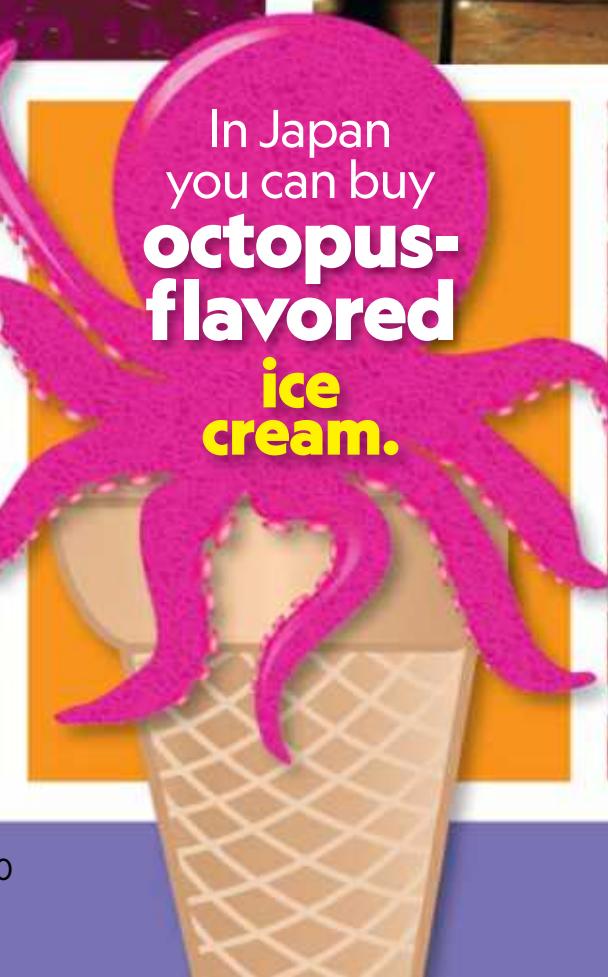
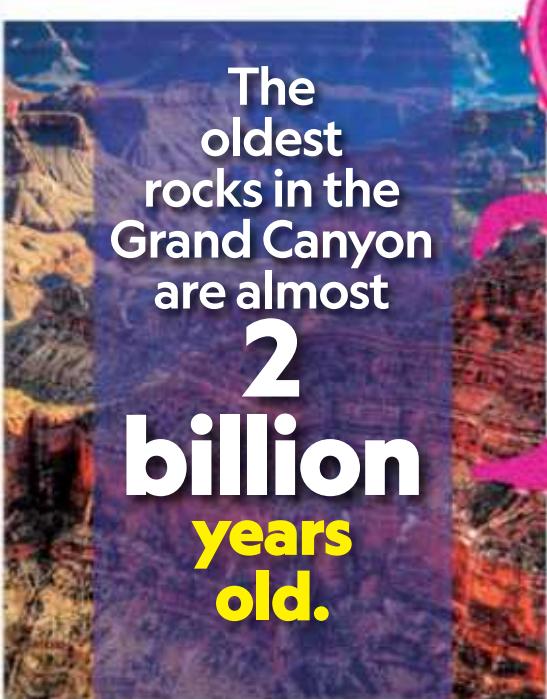
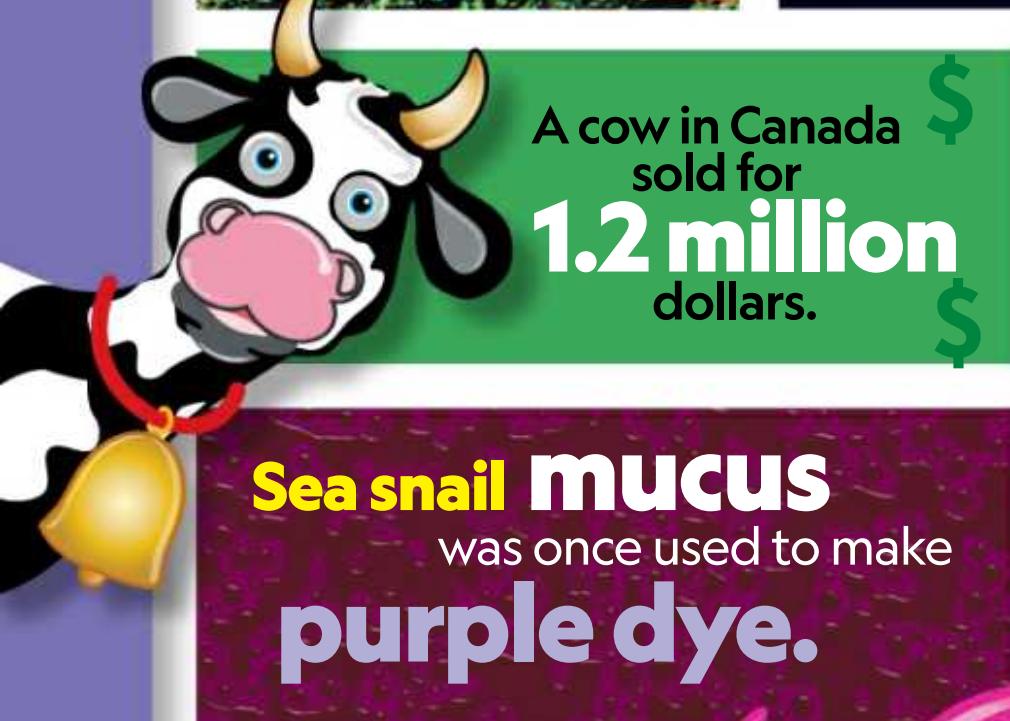


Check out these outrageous facts.

BY MARILYN TERRELL



CHECK OUT
THE BOOK!



GUINNESS WORLD RECORDS

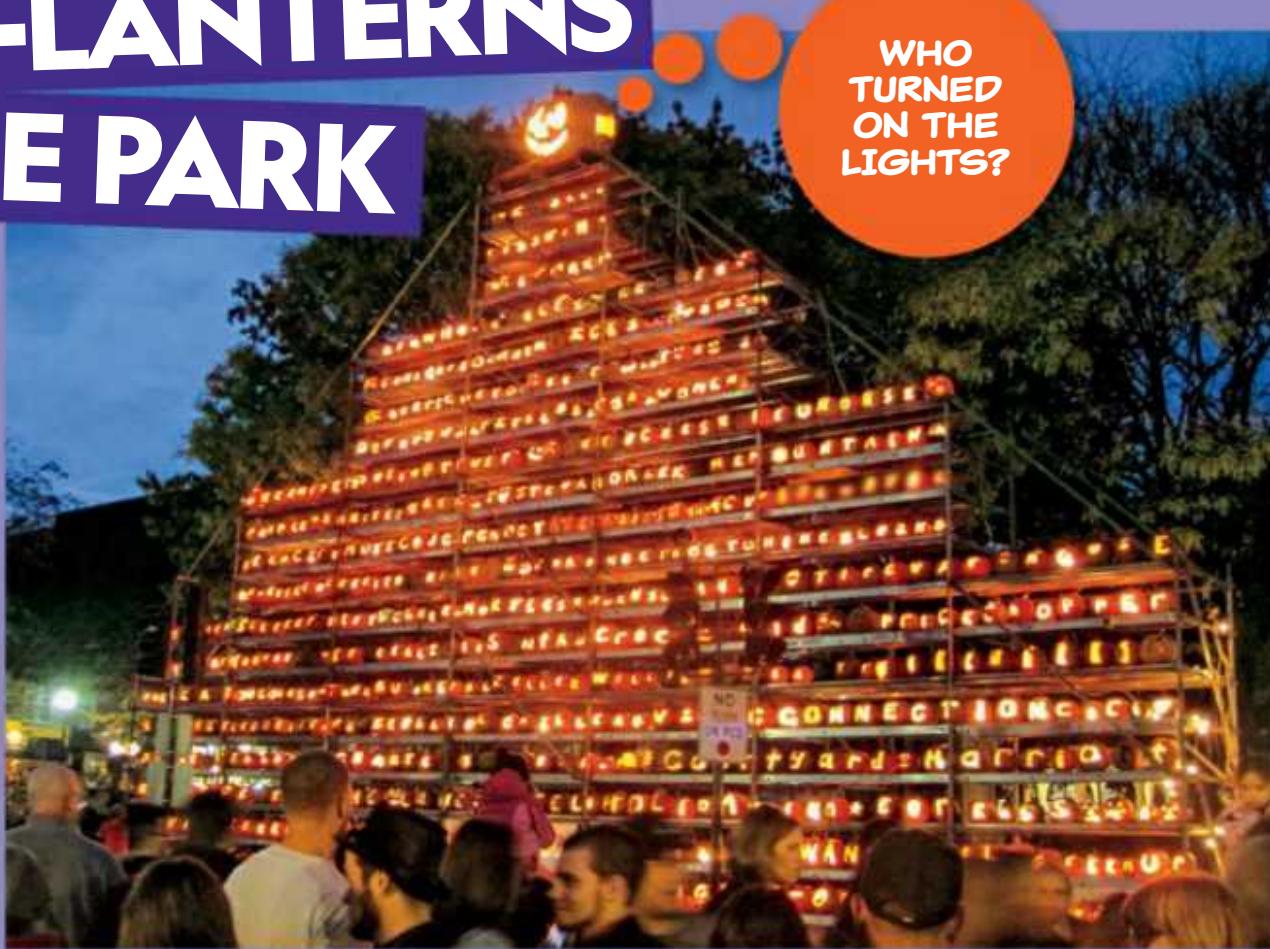
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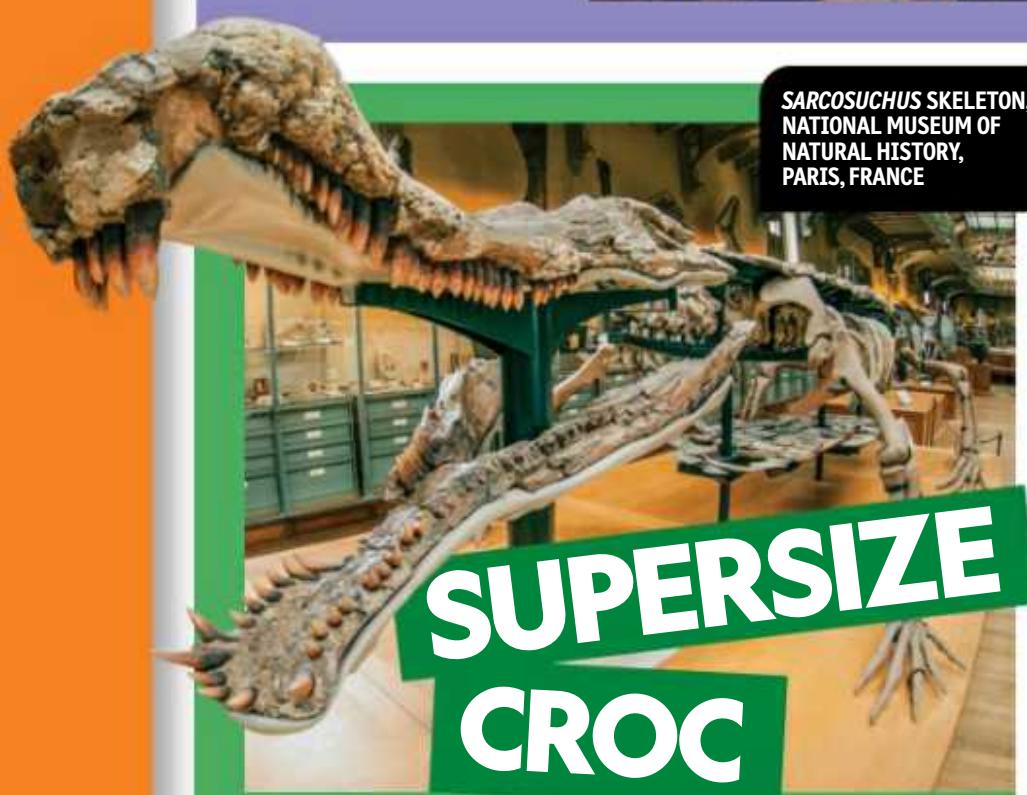
Get more cool stuff
in the new book
**GUINNESS WORLD
RECORDS 2021!**

JACK-O'-LANTERNS INVADE PARK

You won't need a flashlight walking around these guys. With candles burning inside each gourd, 30,581 pumpkins became the largest display of lit jack-o'-lanterns. Volunteers gathered in Keene, New Hampshire, to carve letters to spell out the names of local businesses into the pumpkins, which were later composted. That's a lot of pumpkin guts!



WHO
TURNED
ON THE
LIGHTS?



SARCOSUCHUS SKELETON,
NATIONAL MUSEUM OF
NATURAL HISTORY,
PARIS, FRANCE

SUPERSIZE CROC

If you think regular-size crocodiles are scary, you're definitely not going to like this one. *Sarcosuchus* (pronounced sar-COH-su-cus) was a 40-foot-long crocodyliform, or crocodile-like reptile, that roamed the Earth some 112 million years ago. As long as three small vehicles lined up front to back and weighing up to 18,000 pounds, it's the largest crocodyliform ever. No wonder its nickname is "Super Croc."

EXTRA-LARGE SPACE ARM



The Canadarm2 always lends a helping, um, hand to astronauts. Built by the Canadian Space Agency, the 57-foot-long robotic arm holds the record for the longest robotic arm in space. Attached to the International Space Station (ISS), Canadarm2 can reach out and grab approaching cargo ships carrying supplies for astronauts aboard the ISS. What's next, the longest robotic leg in space?

ALL ABOUT MONEY

BY KRISTIN BAIRD RATTINI



Denmark's 50-ore coin has a **heart** on it.



To spend **\$1 billion** a dollar at a time, you'd have to pay a **buck a second** for nearly 32 years.



A **\$5 bill** from Australia uses special inks to make a bird "flap" its wings and change color when tilted.



Jordan's half-dinar coin has 7 sides.



In Thailand, oval bars of silver once used as **money** were called "tiger tongues."



A 1913 U.S. Liberty Head nickel—one of only 5 in existence—sold at auction for more than \$3.1 million.

Potatoes were once used as currency on the South Atlantic island of Tristan da Cunha.



MONEY TIP!

WRITE DOWN THE ITEMS YOU'D LIKE TO BUY, SUCH AS TOYS AND GAMES. KEEPING A WISH LIST WILL MOTIVATE YOU TO SAVE YOUR MONEY.



IVAN VDOVIN / ALAMY (50-ORE COIN); TAFFIXTURE / SHUTTERSTOCK (AUSTRALIAN \$5 BILL); BULLETT74 / SHUTTERSTOCK (STACKS OF BILLS); IVAN VDOVIN / ALAMY (HALF-DINAR COIN); FRITZ GORO / THE LIFE PICTURE COLLECTION / GETTY IMAGES (TIGER TONGUE); PHOTOSOCK-ISRAEL / ALAMY (TIGER); SPLASH NEWS / NEWSCOM (LIBERTY HEAD NICKEL); NATIKA / SHUTTERSTOCK (POTATOES); KELLEY MILLER / NG STAFF (PIGGY BANK)

Bet You Didn't Know!

6 spooky facts for Halloween

BY ERIN WHITMER

2 Cat urine can glow under black light.

3 A man sculpted a statue of himself using his own hair, teeth, and nails.

5 Mike the chicken set a world record by living for 18 months without a head, from 1945 to 1947.

1 **Phasmaphobia** is the fear of ghosts.

4 The “corpse flower” grows up to 12 feet tall and smells like rotting meat.

6 In ancient Egypt, mummies’ brains were removed through the nose.

THIS or THAT?

BY JR MORTIMER
AND NANCY CASTALDO

CHOOSE THIS:

Have
a sleepover
in a vampire's
castle.

or

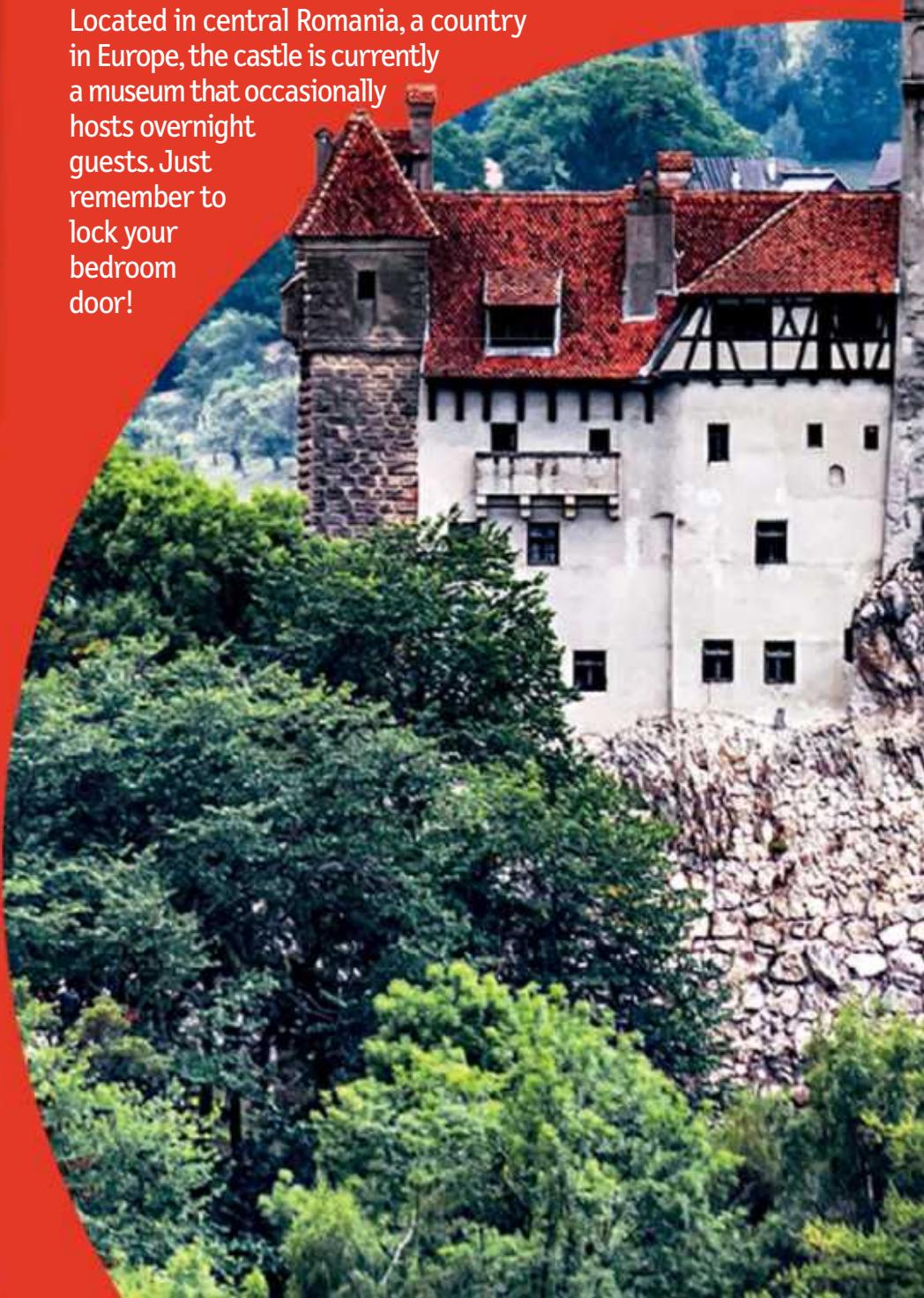
CHOOSE THAT:

Play
hide-and-seek
with
mummies.

If you
chose
THIS

You'd never forget a night at **BRAN CASTLE**. This 13th-century fortress is thought to be the inspiration for the **VAMPIRE'S HOME** in Bram Stoker's spooky novel, *Dracula*, even though **THE AUTHOR NEVER ACTUALLY VISITED IT**.

Located in central Romania, a country in Europe, the castle is currently a museum that occasionally hosts overnight guests. Just remember to lock your bedroom door!





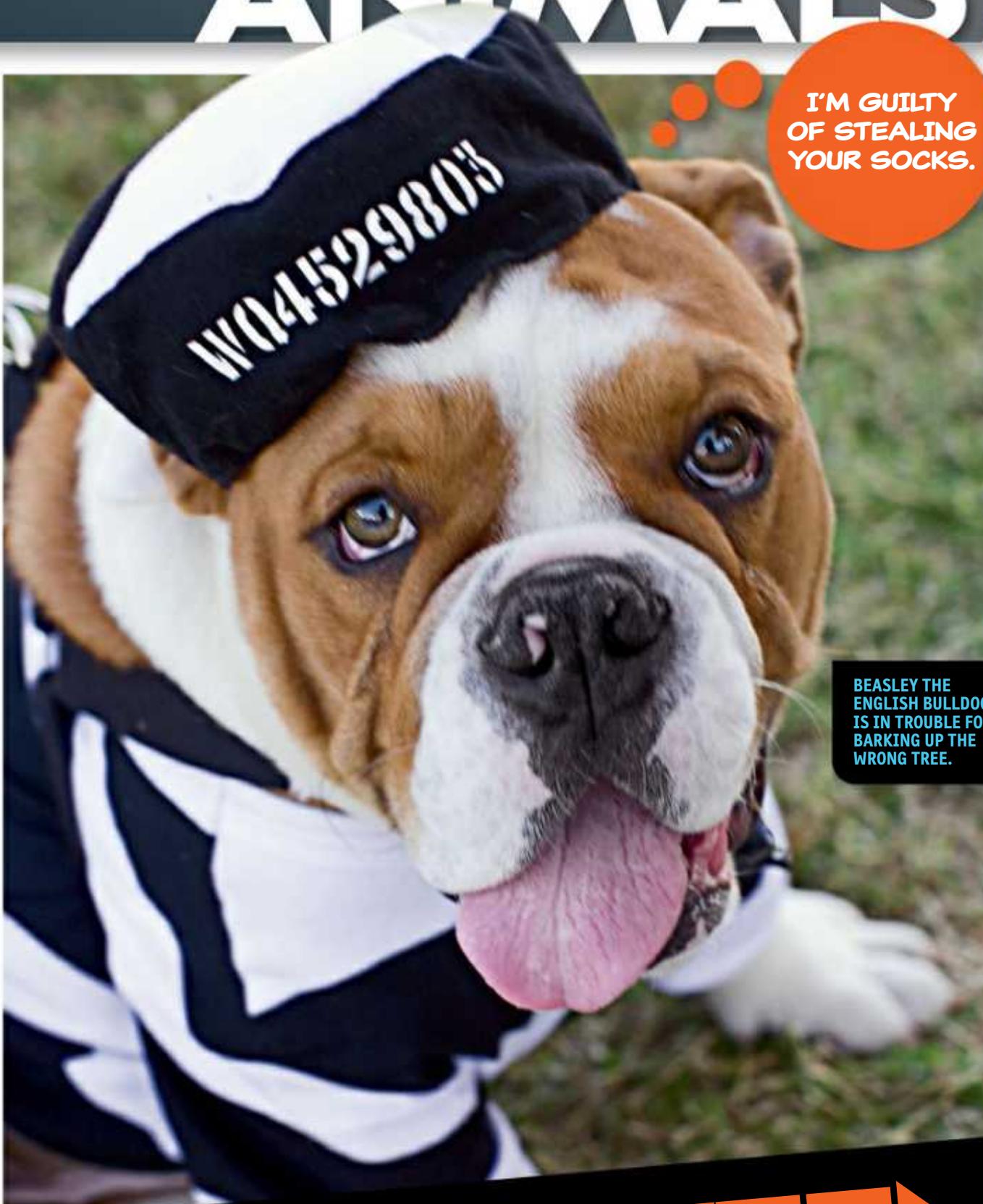
If you CHOOSE THAT

The mummies are hiding and you're doing the seeking if you pay a visit to the **TIMBAC CAVES** in the Philippines, home of the **FIRE MUMMIES**. (They're called this because part of the process to create these mummies included setting the bodies over a fire to dry them out.) The mummies were stashed in these caves about 800 years ago by the Ibaloi tribe. But good luck trying to **FIND THEM**: The exact locations of most of the caves are kept secret to prevent vandalism, and the caves have been named as one of the most endangered sites in the world.

CHECK OUT THE BOOK!

AMAZING ANIMALS

A BIRD?
WHERE?



You won't get a sugar rush from these Halloween treats—just an overload of adorable. Millions of pet owners will dress up their furry friends this October, and Nat Geo Kids found a few of the silliest costumes.

HALLOWEEN PET PARADE

These pets like wearing costumes, but your pet may not. Never force your pet to do something it does not want to do.

MIKA THE SUPERCAT IS HERE TO RESCUE CUTE KITTENS FROM OVEREXCITED PUPPIES.

I'M A
VERY CUTE
VILLAIN.



MIMZI THE MUTT IS READY TO TAKE OVER THE WORLD AS THE PENGUIN, ONE OF BATMAN'S ENEMIES.

BEST-DRESSED PETS

Check out the most-popular costumes worn by party animals last Halloween.

1. pumpkin
2. hot dog
3. superhero
4. bumblebee
5. cat
6. witch
7. lion
8. dog
9. devil
10. shark

MOUSE THE CAT SEEMS AT HOME—HOME ON THE RANGE, THAT IS.

GET ALONG,
LITTLE DOGGIE.

If you dress up your pet, check that the outfit is comfortable and allows the animal to breathe and walk safely.



MAYBE
I'LL CATCH
A MOUSE
WITH THIS
DISGUISE.

TOFFEE THE CAT
CHEESES FOR
THE CAMERA
WHILE POSING IN HER MOUSE
EARS.

ALL
ABOARD!

HAZEL THE BOSTON
TERRIER MAY BE
WONDERING IF SHE
CAN FLY IN HER
TINKERBELL
COSTUME.

PLEASE
CLAP
FOR ME.

GET IT?
FISHER THE
GREYHOUND
IS A GREY-
HOUND BUS!

I ALWAYS
FEEL LIKE
THIS
ON THE
INSIDE.

BENJI THE
KITTY IS
READY TO
ROAR LIKE
A LION.



The top kids' costumes of 2019 included princess, Spider-Man, Avengers character, Batman, and witch.

Botanists categorize pumpkins as fruit.

A man carved a jack-o'-lantern in 16.5 seconds.

A bay in Florida is named

GHOST COVE.

A full moon will shine on Halloween this year.

I WONDER
IF THE OTHER
COWS WILL
SPOT ME.

BUTTERCUP'S
COW COSTUME
IS THE CAT'S
MEOW, ER,
MOO.

SAFETY FUR-ST

It might be okay for you to get a little spooked on Halloween, but it's not fun for your pets! Use these tips to keep your furry friends safe and happy this season.

Keep your trick-or-treat bags and bowls of candy off the floor and out of reach of your pets. Chocolate can make them very sick, and the wrappers might cause them to choke.

If you want to give your pet a costume, introduce the getup slowly with lots of treats and pats, and remove the costume if your pet seems uncomfortable or upset.

Does the sound of the doorbell make your pet hyper? Put a sign on your door asking trick-or-treaters to knock instead.

Keep jack-o'-lanterns out of the reach of your pets: Moldy pumpkins could make them sick, and lit candles could burn pets or start fires if your pet tips them over.

ALL DRESSED
UP FOR THE
BALL, TINI THE
CHIHUAHUA
PULLS CINDER-
ELLA'S COACH.

WHAT
WILL I TURN
INTO AT
MIDNIGHT?

Last year a few dozen people gathered outside Area 51, a military facility in Nevada, to rescue aliens ... as a joke. (They didn't find any.)

Legend says the spirit of a black cat haunts the U.S. Capitol.



Candy corn was once nicknamed "chicken feed."





A raccoon
might use up to
20 den sites at
one time.

Tricks for Treats

6 sneaky ways
zookeepers keep
animals playing

BY KITSON JAZYNKA

Red pandas painting pictures? Penguins popping bubbles?
Yes, please!

Thanks to fun activities thought up by creative zookeepers, captive animals around the world get to experience the wild life while having fun. Called enrichment, the pastimes encourage natural behaviors that help keep the critters physically fit and entertained.

"Our most important job is to keep our animals happy," says England's Bristol Zoo keeper Precious Bayliss. "Enrichment activities are the best way to do that." To see how, check out these six stories about animals having fun at the zoo.

ROCKY THE RACCOON
LOOKS FOR MEALWORMS
IN A JACK-O'-LANTERN.

1

PUMPKIN PARTY

BRISTOL ZOO
BRISTOL, ENGLAND

Every October Rocky the raccoon got to celebrate Halloween at the Bristol Zoo. But he didn't dress up in costume—he played with pumpkins. In the wild, raccoons dig for food such as bugs and bird eggs. To encourage Rocky and his brother, Meeko, to mimic this natural behavior, keeper Precious Bayliss hid their favorite treats in pumpkins. First she drilled holes into the gourds, then filled them with mealworms. That way the raccoons had to use their opposable thumbs—or fingers capable of grasping objects—to dig out the insects. "Rocky was clever and a bit sneaky," she says. "When he picked out mealworms from his pumpkin, he'd steal Meeko's." Bayliss also put the pumpkins at different heights to encourage the raccoons to climb, like they'd scale trees in the wild. "We wanted to make sure they weren't sitting around all day," she says.

So what did Rocky snack on after scarfing down the mealworms? The pumpkin itself! Raccoons love the squash's seeds and tasty flesh. Talk about a real Halloween treat.

TWO MEERKATS POKE HOLES IN A PAPER EGG TO GET TO THE MEALWORMS INSIDE.

2

EGG HUNT

ZSL LONDON ZOO
LONDON, ENGLAND

It's breakfast time at the ZSL London Zoo. The meerkats don't take their eggs scrambled, fried, or sunny-side up though. Instead, the eggs are made from recycled newspaper and filled with mouth-watering mealworms. Keepers hide the eggs so the meerkats have to hunt for them by scent, like they would in the grasslands of southern Africa. "Some eggs are only partially buried and pretty easy to find," keeper Thomas Lawrance says. "But we hide others under rocks to challenge them and encourage digging."

The zoo's mob of meerkats—which includes Frank, Archie, Penelope, and Timone—either roll the eggs around until they tear, or they poke small holes in the eggs and pull out the worms. "Part of the enrichment is figuring out how to get their food," Lawrance says. The mob must also protect their food from others that want to eat it, just like they would in the wild. Neighborhood crows and robins that live near the zoo drop in almost every day for lunch. "Luckily the meerkats are super speedy when it comes to eating," Lawrance says. "Their guests don't get much!"

Meerkats distract predators by digging up clouds of dust.

A MEERKAT STANDS NEAR ITS NEXT SNACK—MEALWORMS HIDDEN INSIDE PAPER EGGS.



Asian
small-clawed
otters are the
smallest species
of otters.

3

RAFTING FUN

CIKANANGA
WILDLIFE CENTER
SUKABUMI, INDONESIA

At Cikananga Wildlife Center, animal caregivers work to provide enrichment that keeps things fresh for their otters.

That's why Asian small-clawed otters Molly, Olivia, Brian, and Sophie have a floating raft in each of their enclosures. (Molly and Olivia share one enclosure; Brian and Sophie share the other.) The rafts are made from wood, just like the logs otters climb on in the Southeast Asian wilderness.

The four otters spend most of their time climbing atop their rafts and wrestling each other off. It's fun, but the activity also helps them build strength and improve their balance. For extra enrichment, the keepers sometimes give the otters cans of stones to pound, much like they'd use rocks to break open shells of crabs in the wild. The keepers also hide food in the rafts' cracks for the otters to sniff out.

"The rafts give them fun *and* food," says conservationist Willemijn Eggen. "Of course they love it!"



4

PAINTING PANDA

ROSAMOND GIFFORD ZOO
SYRACUSE, NEW YORK

When Basil the red panda paints, he gets color on more than just the canvas. "It's almost always in his fur somewhere," zoo director Ted Fox says.

Other species of animals have been known to paint, but the activity is a natural fit for Basil. "Red pandas have a false thumb, or an enlarged wrist bone, which helps them grip bamboo in the wild," Fox says. "So we just swap the bamboo for a paintbrush." Red pandas, which live in the mountains of Nepal, Myanmar, and central China, are also playful and curious, which makes them more eager than most animals to try new activities. The activity also helps Basil's keepers care for him. For example, when his front paws are busy painting, zoo vets are better able to examine his belly and feet.

Basil, who now lives in Virginia at the Smithsonian Conservation Biology Institute, where he still paints, uses his art to get what he wants—more food. "Sometimes Basil would stop painting and wouldn't start again until we gave him a snack," Fox says. "He loved dried cranberries!"

Most
red pandas
have tails about
as long as
their bodies.

BASIL THE RED
PANDA USES HIS
FALSE THUMB
TO GRIP A
PAINTBRUSH.



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5

POPPING BUBBLES

EDINBURGH ZOO
EDINBURGH, SCOTLAND

When keepers at the Edinburgh Zoo turn on the bubble-blowing machine in the penguin enclosure, dozens of penguins immediately waddle over to investigate. "It's almost like a traffic jam of penguins," keeper Kirsty Leighton says. "Seeing the shiny bubbles triggers their natural hunting response." That's because the bubbles resemble small shimmering fish the penguins would hunt in the wild in their subantarctic range.

Realizing that the bubbles aren't food doesn't seem to upset the birds. "They can't get enough of watching the bubbles float and then trying to pop them with their beaks," Leighton says. Sometimes the penguins in the

group get so excited they make a noise called an "ecstatic bray," which is similar to the sound a donkey makes. The penguins at the Edinburgh Zoo get other enrichment too. The birds can lounge on floating platforms similar to how penguins in the wild rest on ice. They can also whoosh down a waterslide for fun and exercise.

Still, chasing bubbles is the most popular activity with the penguins. Once, a rock-hopper named Maui wanted all the fun for himself. He nipped other penguins to keep them away. "When the penguins get naughty," Leighton says, "we have to put the bubble machine away."

GENTOO (AT FRONT)
AND ROCKHOPPER
PENGUINS GATHER
TO CHECK OUT THE
BUBBLES IN THEIR
ENCLOSURE.

Gentoo are the
fastest water-diving
birds, plunging
down at 22 miles
an hour.

WATCH MORE PENGUINS AT PLAY!
natgeokids.com/october

STAYING SHARP

CALDWELL ZOO
TYLER, TEXAS

Mac the blue-and-gold macaw uses her beak the same way humans use their hands—to move things around and feed herself. That's why, to make it easier for her to grip things, her beak always needs to be sharp.

In the tropical regions of South America where they live, macaws chew on tree limbs to trim their beaks. But 28-year-old Mac gnaws on something more fun: a colorful toy. Dozens of colored wooden blocks are strung onto a thick piece of rope. The rope is then hung from a tree at just the right angle for chewing and shredding. "The wood is good for sharpening her beak," bird supervisor Nikki Hartman says. "The rope provides soft material to tear and shred just for fun." Zoo employees also keep Mac busy by hiding her food in leaf piles. In the fall, she gets pine cones and pumpkins to shred with her beak.

Known as supersmart birds, macaws need lots of enrichment activities. "We don't want a bored bird," Hartman says. "Macaws in captivity can be very destructive!"



HOW MANY PUMPKINS ARE TOO MANY PUMPKINS?

MAC THE MACAW SHARPS HER BEAK BY BITING A PIECE OF WOOD ON HER COLORFUL TOY.

Blue-and-gold macaws can live up to 80 years.

WHERE THEY LIVE



RED PANDA



PENGUINS



OTTERS



A BOLIVIAN BLACK-CAPPED SQUIRREL MONKEY AT ENGLAND'S ZSL LONDON ZOO DIGS FOR RAISINS IN A PUMPKIN.

SARAH A. MILLER / TYLER MORNING TELEGRAPH (MAC, MAP INSET); PETER GEIGER / EYEEM / GETTY IMAGES (RED PANDA INSET); RZSS / SIÂN ADDISON (PENGUIN INSET); JUERGEN & CHRISTINE SOHNS / MINDEN PICTURES (OTTER INSET); ANDREW MATTHEWS / PA IMAGES VIA GETTY IMAGES (RACCOON INSET); © ZSL LONDON ZOO (MEERKAT INSET); RICHARD AUSTIN / SHUTTERSTOCK (GORILLA); ANDREW COWIE / SHUTTERSTOCK (TIGER); ANDY RAIN / EPA / SHUTTERSTOCK (GIRAFFE); FACUNDO ARRIZABALAGA / EPA-EFE / SHUTTERSTOCK (MONKEYS); AMIEE STUBBS / NASHVILLE ZOO / NEWSCOM (PORCUPINE); SUE OGROCKI / AP / SHUTTERSTOCK (ELEPHANT)

Pumpkin Playtime

Zoo animals get Halloween treats too—pumpkins!

A GIRAFFE AT THE ZSL LONDON ZOO IN ENGLAND USES ITS TONGUE TO SCOOP SOME JUICY LEAVES OUT OF A PUMPKIN.

I'M ALWAYS WILLING TO STICK MY NECK OUT FOR SNACKS!



I DIDN'T KNOW PUMPKINS HAD LONG TAILS TOO!

IT'S HARD TO TELL WHICH IS CUTER—ME OR THIS MINI-PUMPKIN.



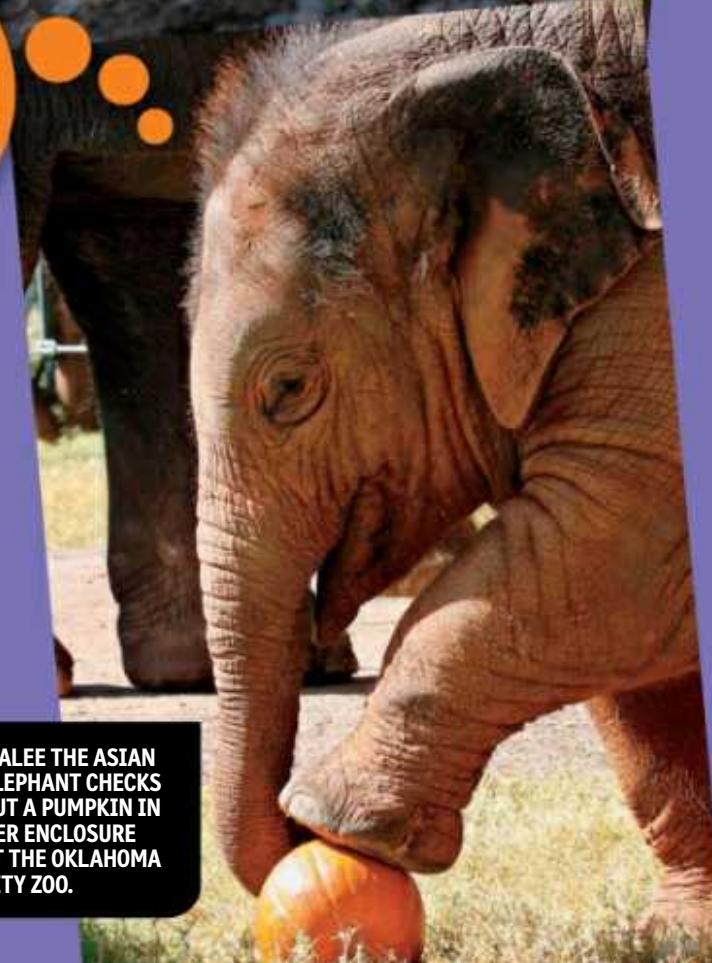
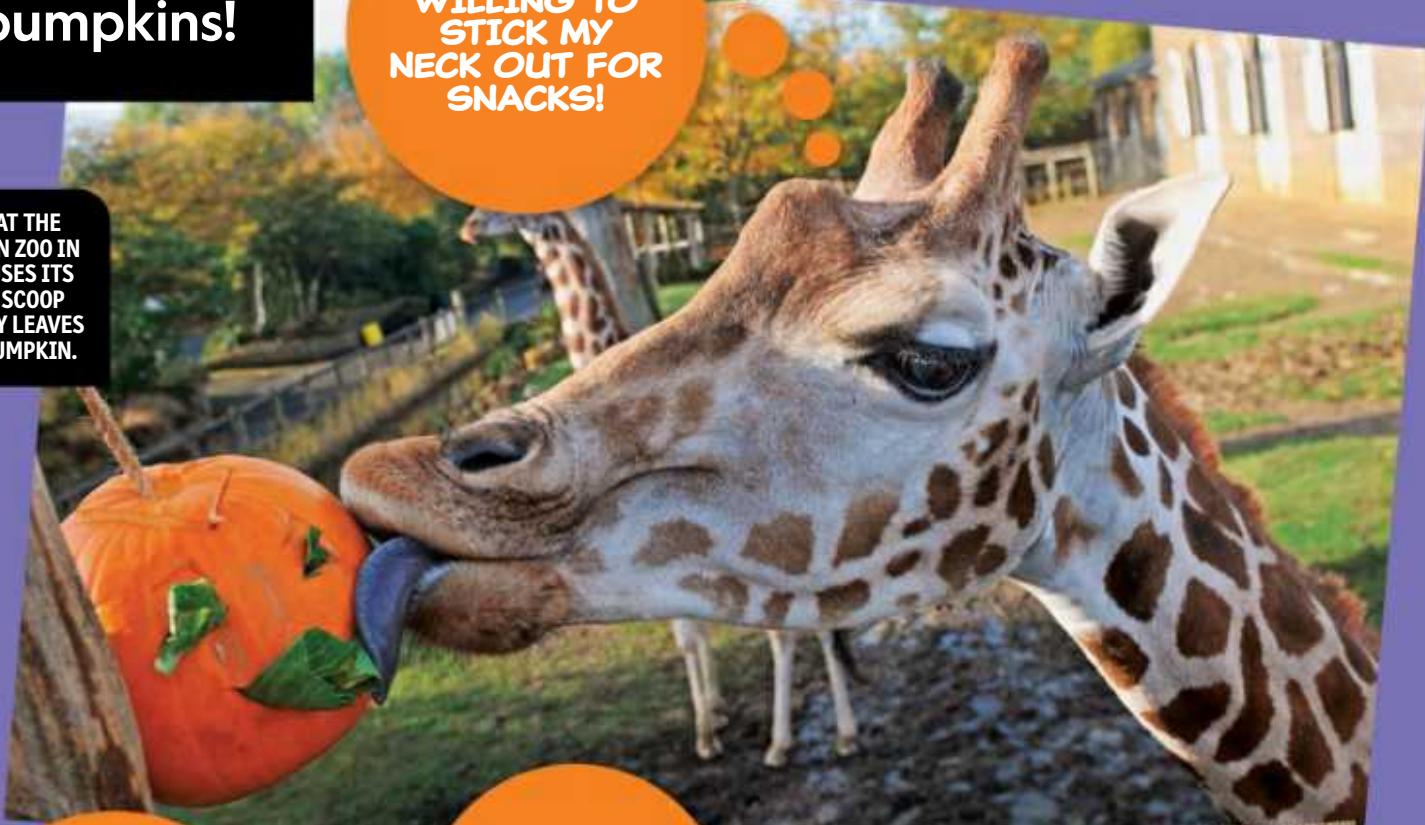
CHARLIE THE PORCUPINE HOLDS A TEENY PUMPKIN AT TENNESSEE'S NASHVILLE ZOO.

MALEE THE ASIAN ELEPHANT CHECKS OUT A PUMPKIN IN HER ENCLOSURE AT THE OKLAHOMA CITY ZOO.

SEE MORE ANIMALS PLAYING WITH PUMPKINS.
natgeokids.com/october

I THINK JACK-O'-LANTERNS ARE CLAW-SOME.

A TIGER CUB AT ENGLAND'S ZSL LONDON ZOO TEARS INTO A PUMPKIN COVERED IN CATNIP.



MONSTER MYTHS

BUSTED!

5 TERRIFYING TALES DEBUNKED

BY KITSON JAZYNKA
ART BY DEAN MACADAM

Are monsters more than just the stuff of freaky films? Some people think so. They believe that big, bad beasts lurk just out of sight in areas around the world. Luckily scientists have explanations that bust these tales. Check out five monster myths that have been defanged.



MYTH 1

THE LOVELAND FROG, A BIG AMPHIBIOUS CREATURE, PROWLS AN OHIO TOWN.

HOW IT MAY HAVE STARTED

This slimy, froglike beast is said to stand four feet tall and walk on two legs. In 1972 a police officer claimed he caught sight of it on a roadside while driving through Loveland, Ohio, at night. When another officer also reported seeing the freaky frog, the rumor took off.

WHY IT'S NOT TRUE

An investigation by local police found no evidence of the creature. Later, one of the police officers stated that he didn't actually believe that he had seen a monster, and that people had exaggerated his story. It's probable that the Loveland Frog was actually an escaped pet monitor lizard—some types can stretch 10 feet.

The calls of the Blanchard's cricket frog—found in Ohio and other U.S. states—sound like two marbles clicking.

MYTH 2

SHAGGY-HAIRED BEASTS CALLED YETIS ROAM ASIA'S PEAKS.

HOW IT MAY HAVE STARTED

Yetis are allegedly hairy ogres that look like a human-bear hybrid with jagged fangs. The legend of the yeti probably originated in Tibet, a territory nestled near Asia's Himalaya mountain range. Sherpas, a once nomadic people from the area, may have spread the myth to what is now Nepal and elsewhere during their travels in the 16th century. Sightings of yetis (which is Tibetan for "little manlike animals") continue today.

WHY IT'S NOT TRUE

When scientists did DNA tests on strands of hair found where yetis were supposedly spotted, results showed that some of the hair samples came not from an unknown beast, but from a descendant of an ancient polar bear species that may live in the area. It's likely that those who claimed to have seen a yeti really just saw one of these bears.



The Nepali name for Mount Everest means "Forehead of the Sky."

MYTH 3

THE DOBHAR-CHÚ—PART DOG, PART OTTER, ALL MONSTER—LURKS IN IRELAND.

HOW IT MAY HAVE STARTED

An otter-dog mix, the Dobhar-Chú (Gaelic for “water hound”) supposedly inhabits Ireland’s lakes. It’s known for unleashing eerie whistles and having an appetite for humans. No one knows where the legend of this beast came from, but it dates back to at least the 1700s, when a carved image of the creature appeared on the tombstone of one of its alleged victims.

WHY IT’S NOT TRUE

It’s more likely that Dobhar-Chú is a Eurasian otter. The animal is found in Ireland’s rivers and lakes and often whistles to communicate.

Lough Corrib, a huge lake in western Ireland, contains more than 360 islands.

MYTH 4

THE KONGAMATO, A FLYING REPTILIAN MONSTER, ATTACKS BOATERS IN AFRICA.

HOW IT MAY HAVE STARTED

Reportedly seen soaring over southern and central African swamps, the Kongamato (meaning “breaker of boats” in Kaonde, an African language) is said to have leathery wings, a snout filled with sharp teeth, and a bad habit of swooping down from the sky to smash boats that paddle into its territory. Some say the creature is a pterodactyl—a prehistoric flying reptile. Although this myth has been circulating for about a century, its origins are unknown.

WHY IT’S NOT TRUE

Scientists know the Kongamato couldn’t be a pterodactyl, which went extinct at least 66 million years ago. But it could be a swamp-dwelling hammerhead bat, the largest bat in Africa, with a wingspan that can stretch three feet. It could also be a big type of stingray that tips boats as it leaps from the water.

The wetlands of Lake Bangweulu in Zambia are home to roughly 390 species of birds.

MYTH 5

IN THE AMERICAS, THE BEASTLY CHUPACABRA DRINKS THE BLOOD OF FARM ANIMALS.

HOW IT MAY HAVE STARTED

When several goats and chickens in areas of Puerto Rico turned up dead with their blood seemingly drained in the 1990s, rumors spread that the culprit was a vampire-like monster with fangs, a forked tongue, and quills running down its back. A rash of similar deaths that occurred a few years later in Texas were also blamed on the Chupacabra (which roughly translates to “goat sucker” in Spanish).

WHY IT’S NOT TRUE

Investigators looking into the deaths of chickens in Texas found no real evidence that the animals’ blood had been drained, making the possibility of a vampire-like slayer way less likely. And sightings of the Chupacabra have usually turned out to be sickly coyotes or dogs suffering from mange, a skin condition that gives them a sinister appearance.

In the folklore of Native Americans from Texas and other southwestern states, coyotes are often seen as tricksters.

DEADLY CUTIES

This adorable animal has some seriously killer traits.

BY JAMIE KIFFEL-ALCHEH

Don't be fooled by the crazy-cute slow loris. The snuggly looking creature is the only venomous primate on the planet—and their bite packs enough toxin to kill a human. "We call them tiny little fur balls of death," says Anna Nekaris, a biologist who studies the animals in rainforests and bamboo groves throughout their Southeast Asian habitats.

A slow loris's painful bite can have an immediate impact—its prey usually feels the effects in just a few seconds. The not-so-fun results of the venom range from extreme swelling to (*yikes!*) death. But it's very rare for the slow loris to bite a human without first being provoked.

And venom isn't the only killer move the slow loris has. Check out five ways the adorable slow loris is actually downright dangerous.



Eight species of slow lorises live throughout Southeast Asia.

KILLER LOOKS

A slow loris's sweet face markings might say "Oh, he-ey!" to you, but they say "Danger!" to other animals. The markings are called aposematic (pronounced a-puh-sih-MA-tik) coloration, which means the markings warn off predators. To a potential predator like a large snake or orangutan, the markings are like flashing red lights near the loris's mouth, warning them that the loris could fight back with its deadly venom.

Scaring away predators is good for slow lorises because, well, they can be slow. The threat of painful venom means a predator will think twice before attacking a slow loris, giving time for the primate to make its escape. And a baby slow loris's venom might even be more intense than an adult's, plus they have extra face markings to signal that to predators. "Baby slow loris saliva contains proteins that cause extreme pain," Nekaris says. "The babies are dangerous, for sure."

TWICE AS TOXIC

Unlike other venomous animals that produce venom in one place, slow lorises produce toxins in two places: in their saliva and in a gland in their underarms. When lorises lick that gland and mix it with their venomous saliva, they cook up an even more toxic mixture they can inject with a bite.

But why do they even have venom at all? Researchers aren't sure. The primates are sneaky enough to catch and kill their prey—insects, lizards, and small snakes—without venom; they also have other ways to ward off predators, like camouflage. Nekaris thinks the defense might be a way to ward off other lorises.

"Lorises are territorial, or defensive of the areas they live in," Nekaris says. "We think they make this mixture to wound other lorises and protect their space."

HIDDEN HUNTER

Huge eyes make slow lorises look harmlessly huggable. But those peepers also make them effective hunters. Their oversize eyes have a special layer behind the retinas called a tapetum lucidum (pronounced tuh-PEE-tum loo-SUH-dum), which is tissue that reflects light back through the retina. That gives lorises better nighttime vision than most creatures, allowing them to hunt in near-total darkness.

A JAVAN SLOW LORIS HANGS OUT IN THE TREE CANOPY OF JAVA, AN ISLAND IN INDONESIA.

A BABY JAVAN SLOW LORIS CLINGS TO A TREE BRANCH ON THE ISLAND OF JAVA IN INDONESIA.

STINKY SMELLS

Slow lorises bite only if they have no other way to escape predators or chase away other lorises in their territory. If they do sink their teeth into another animal, their venom does more than just potentially harm its victims—the stench warns off other predators or lorises nearby. “Their venom smells like rotten eggs, but stronger,” Nekaris says. “It’s truly the worst smell.”

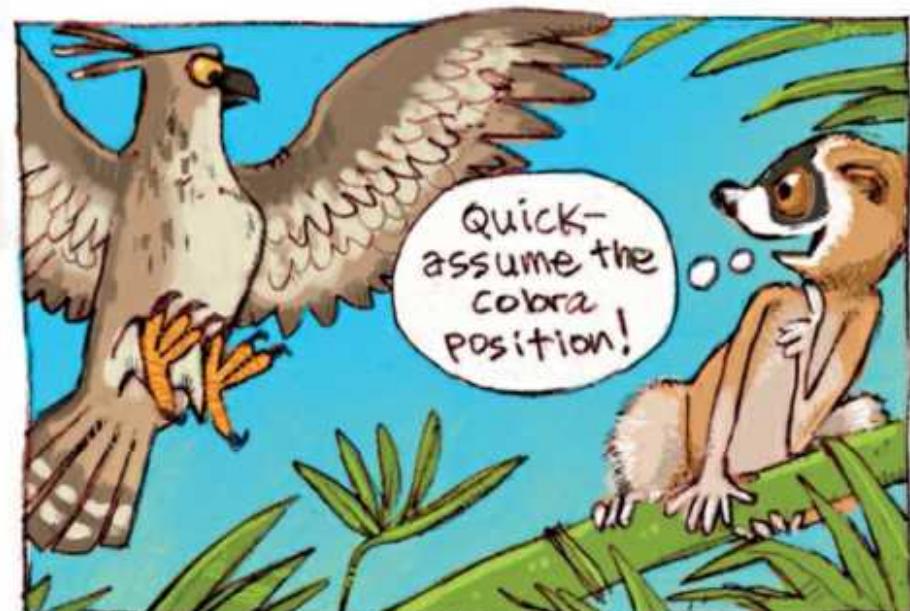
COBRA CONNECTION

A slow loris has another secret weapon: a snake dance. By raising their arms and shoulders to create what looks like a cobra’s raised hood and then swaying from side to side, slow lorises can mimic deadly cobras. (Their fur pattern even resembles a spectacled cobra’s skin.) “Slow lorises also have a long, dark stripe down their backs and an extra vertebra, or bone in their spinal column, like snakes do,” Nekaris says. “So when a slow loris moves, it really does look like a snake!” And if the dance doesn’t scare off predators, hissing like a serpent often gets the message across.

HOW SNAKEY, UH, SNEAKY SLOW LORIES TRICK PREDATORS



- 1 A crested hawk-eagle spies a napping Javan slow loris.



- 2 The crested hawk-eagle has landed—but the loris has an idea to avoid being eaten.

PLAY!

DANGEROUS Defenses

The slow loris isn't the only animal that has powerful protection skills. Match the creatures below to their surprising defense method on the right. ➤

- A Spewing stinky vomit
- B Spraying boiling liquid from its rear
- C Shooting blood from its eyes
- D Sliming its enemies
- E Playing dead
- F Injecting venom from its teeth



1 TEXAS HORNED LIZARD



2 HAGFISH



3 BOMBARDIER BEETLE



4 GILA MONSTER



5 KING VULTURE



6 OPOSSUM

ANSWERS: 1. C, 2. D, 3. B, 4. F, 5. A, 6. E.



3 Is it a slow loris? A spectacled cobra? The bird can't tell from the loris's stance.



4 Loris for the win! It's fooled the crested hawk-eagle.

DINO SECRETS REVEALED

Cool technology shows surprising discoveries about dinosaurs.

BY MICHAEL GRESHKO
ART BY DAVIDE BONADONNA

It's been 66 million years since the dinosaurs went extinct. So scientists should know everything there is to know about these creatures, right?

Well, not exactly. (It's not like there were cameras or even people back then!)

But thanks to technology like lasers, 3D models, x-rays, and even robotics, scientists are making amazing discoveries about what dinosaurs really looked like and how they behaved. For instance, "we've been able to pull all of these extinct bones into a computer, where we can do things with them," paleontologist Larry Witmer says. "We can reconstruct missing bits ... and run simulations and better understand how these animals actually functioned."

Check out three surprising dino discoveries that modern technology has helped scientists unearth.



SPINOSAURS HUNT A PREHISTORIC SAWFISH.

River Beast

The Sahara seems like a strange place for a river-dwelling dinosaur. But more than 95 million years ago in what is now Morocco, a country in northern Africa, today's giant desert was actually lush with waterways deep enough for car-size fish to swim in. That's where *Spinosaurus*—a predator longer than *T. Rex*—made its home.

At first, scientists believed that the sail-backed creature had some kind of watery lifestyle, perhaps hunting fish like a bear would. But after finding a partial skeleton in 2014, National Geographic Explorer Nizar Ibrahim and his team discovered that the dinosaur probably spent a lot of time in water.

And the paleontologists didn't stop there. Returning to the

site in 2018, they dug up a 17-foot *Spinosaurus* tail—one vertebra at a time. (Those are the same bones that make up your spine.) Ibrahim then teamed up with paleobiologist Stephanie Pierce and biologist George Lauder to use high-speed cameras and robots to figure out how the tail worked. Attaching an eight-inch-long cutout of the tail to a device that would send information to a computer, the scientists watched the mechanical tail paddle in an enclosed waterway.

What'd they learn? That the beast swam through rivers like a crocodile and could propel itself with eight times more power than related land dinosaurs. In fact, *Spinosaurus* is the first large dino found that had a tail designed for swimming in the water.

A YOUNG
MUSSAURUS
CHECKS OUT TWO
RHYNCHOSAURS
(PRONOUNCED
REEN-KOH-SOARS)
AS AN ADULT
LOOKS ON.



Baby Steps

Dinosaurs lumbered on all fours like a *Stegosaurus* or scrambled around on two legs like a *Tyrannosaurus*. But not all dinosaurs moved the same way as they grew up.

Paleontologist Alejandro Otero found that out by using a high-tech machine called a CT scanner to take x-rays of *Mussaurus* bones (pronounced moo-SOAR-us). He then turned the x-rays into 3D models using a computer program and then simulated how the dinosaur stood at different ages.

What'd the simulations show? It turns out that, like human babies, *Mussaurus* hatchlings walked on all fours—but started walking on their two hind limbs as they grew older.



Cracking the Case

A fossilized dinosaur egg looks kind of like a rock. So scientists were surprised to discover that the eggs of *Deinonychus* (pronounced die-NAHN-uh-kus) were probably blue!

When exposed to heat and pressure, microscopic dino remains can transform into stuff that can last for millions of years. That lets scientists take a closer look. When paleobiologist Jasmina Wiemann struck the *Deinonychus* eggs with a laser, the light reflecting back revealed compounds that give modern eggs bright colors and speckling.

That helped her figure out the blue color, but it also suggested something else: Like modern birds with similarly colorful eggs, *Deinonychus* likely sat on open-air nests to hatch their eggs.

CHECK OUT MORE COOL DINO FACTS.
natgeokids.com/october

FUN STUFF

GAMES, LAUGHS, AND LOTS TO DO!

GAMES, LAUGHS, AND LOTS TO DO!



PLAY



SCHOOL SPIRIT

**Everyone is dressed up
for Halloween. But only
one person is wearing
a unique outfit. Can
you figure out which
costume isn't a copy?**

ANSWER ON PAGE 35

WHAT IN THE WORLD?

SQUIRMY WORMY

These photos show close-up views of creepy little critters. Unscramble the letters to identify what's in each picture.

ANSWERS ON PAGE 35



DIEPSR



RCSOOINP



ELETEB



RETITMSE



NEIECTEDP



HRACKCOCO



OMWSR



ALAEMNRASD



GSUL

ZEUS

THE MIGHTY



Zeus the hamster lives with his friends at a pet rescue center. But he thinks he's a Greek god! Check out what happens when his two worlds collide, then go online to learn more about the book *Zeus the Mighty: The Maze of the Menacing Minotaur*. ZeusTheMighty.com

kids VS. PLASTIC

If you plan to go trick-or-treating this year, make sure you follow all local and state health guidelines to keep you—and everyone else—safe.

CHOOSE THIS

PILLOWCASE TRICK-OR-TREAT BAG

WHY?

To make your bag more festive, grab a parent and cut bats or pumpkins out of felt, then attach them to your pillowcase with safety pins.

INSTEAD OF THAT

PLASTIC TRICK-OR-TREAT BAG

Do your part to help prevent single-use plastic items from reaching the ocean.

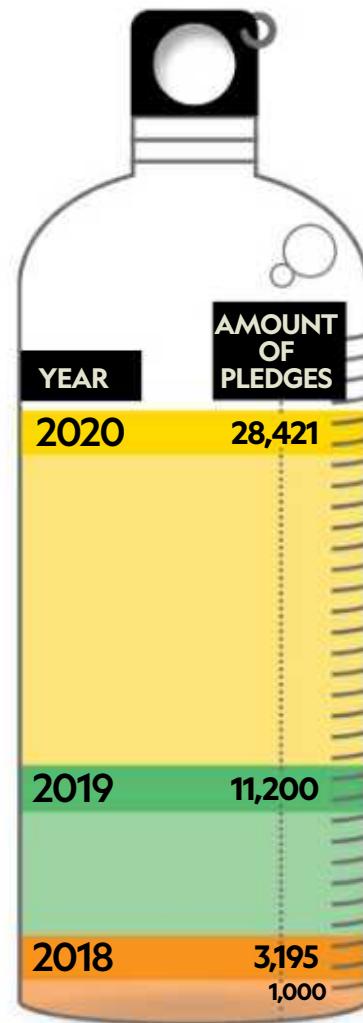
Check out ideas here, then go online for more.

natgeokids.com/KidsVsPlastic

MAKE A DIFFERENCE!

See how many kids have pledged to reduce their single-use plastic trash, then go online to take the pledge too!

[natgeokids.com/
KidsVsPlastic](http://natgeokids.com/KidsVsPlastic)



CANDY CRUSH

Want to avoid plastic-wrapped goodies? Ask your parents to look for candies in these other types of packaging to hand out on Halloween.

FOIL



PAPER



CARDBOARD



GET MORE TIPS FOR A PLASTIC-FREE HALLOWEEN!
natgeokids.com/KidsVsPlastic

EXPLORER ACADEMY

In the book *Explorer Academy: The Star Dunes*, 13-year-old Cruz Coronado breaks secret codes in order to fight dangerous villains and solve mysteries. Test your own skills by cracking the code on this page, then check out more about the book series at ExplorerAcademy.com.

TEXT AND PUZZLE BY GARETH MOORE

THE CODE: MORSE CODE

Letters in Morse code are represented by a combination of dots and dashes. Check out the written Morse code alphabet below.

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

CRACK THIS CODE!

Decode this Morse code message.

ANSWER ON PAGE 35

The first Morse code message was sent by telegraph from Washington, D.C., to Baltimore, Maryland, in 1844—a distance of 40 miles.

TRY THIS!

Grab a friend and try to send secret messages by tapping your finger on a table. For a dot, use a quick tap; for a dash, hold your finger on the table for a beat before tapping the next letter. Be sure to pause between each letter with your finger in the air so your friend knows when a new coded letter starts.

BREAK MORE CODES!
ExplorerAcademy.com



CHECK
OUT
THE
BOOK!



Whatcha

Think?

Check out how *Nat Geo Kids* readers responded to this poll, then go online to vote in the next one!

natgeokids.com/whatchathink

GETTY IMAGES (GUM); CREPESOLES / SHUTTERSTOCK (CHOCOLATE); MICHAEL C. GRAY / SHUTTERSTOCK (TAFFY); TOBIK / SHUTTERSTOCK (GUMMIES); HAYATI KATHAN / SHUTTERSTOCK (HARD CANDY)

17%

CHEWING GUM

36%

ANYTHING CHOCOLATE

What's
the
tastiest
candy?

33%

SOUR GUMMIES

7%

TAFFY

7%

HARD CANDY



ART ZONE

SPOOKY
JACK-O'-LANTERN
Nat Geo Kids readers drew
some pumpkins that are perfect
for anyone's porch!



▲ **Something's Witchy**

Zoë P., 14
Encinitas,
California

Fire-Eyed ▶
Pumpkin
Jacob B., 8
Waltham,
Massachusetts



▲ **Jack-o'-Bite**
Emmett B., 5
Grand Rapids,
Michigan

Draw a cool ghost or ghoul.

Send us
your
original
drawings:

Nat Geo Kids—
Ghost Art Zone
P.O. Box 98002
Washington, DC
20090-8002

Include your name, address, phone number, date of birth, a title for your drawing, a statement that it is your own work, and the name of your parent or guardian. Your parent or guardian must sign a release for publication if your illustration is selected. Submissions become the property of National Geographic Partners, and all rights thereto are transferred to National Geographic Partners. Submissions cannot be acknowledged or returned. Selection will be at the discretion of *Nat Geo Kids*.



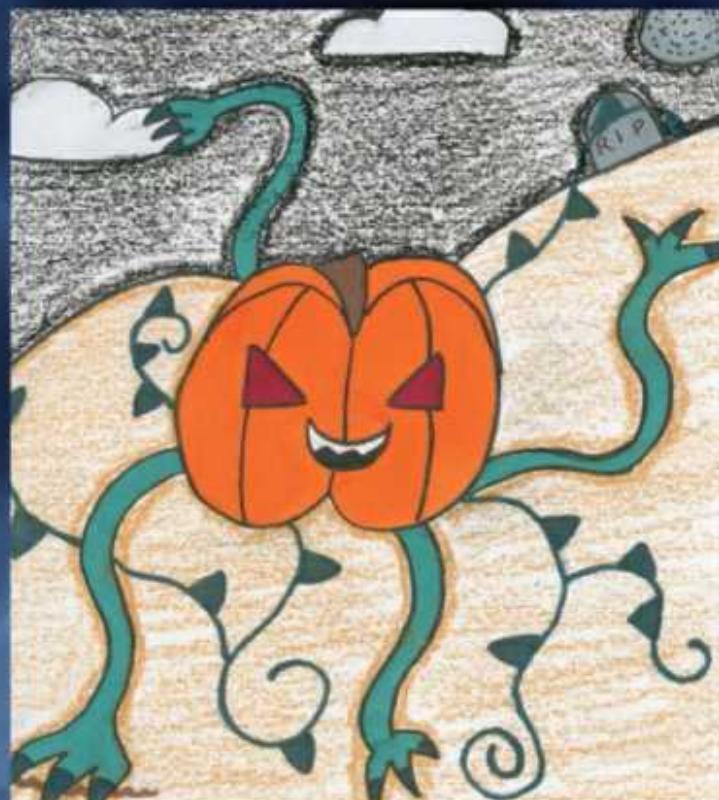
Monster Scare ▶

Lucas H., 6
Littleton,
Colorado



◀ Jack Scare-o

Chloe A., 8
Eliot, Maine



◀ Surprise!

Judith W., 14
Asbury, Iowa



▶ Haunted

Pumpkin
Anna F., 14
Clayton,
Delaware



▲ Hallo-rific

Raam N., 8
Dundas, Canada

▶ Frank-o'-Lantern

Sydney J., 11
Neosho, Missouri

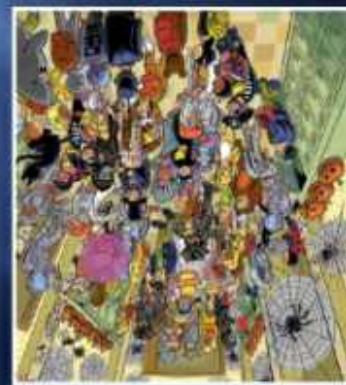


◀ Your Worst

Nightmare
Liam C., 9
Chagrin Falls,
Ohio

(page 32): Beware of spies.
"Explorer Academy"

worms, salamander, slug.
centipede, cockroach. Bottom row:
spider, beetle. Middle row: termites,
ants, bees. Top row: spider, scorpion.



The unique costume is the bee.
"School Spirits" (page 28):

ANSWERS