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# Explorer



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# Livin with L



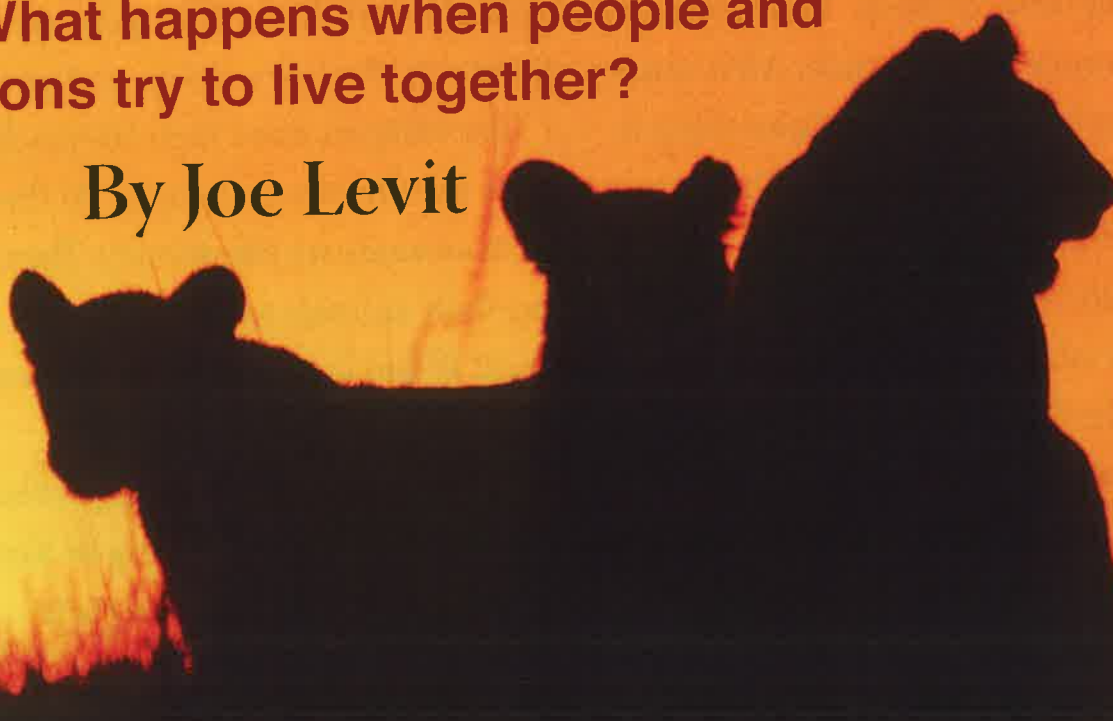


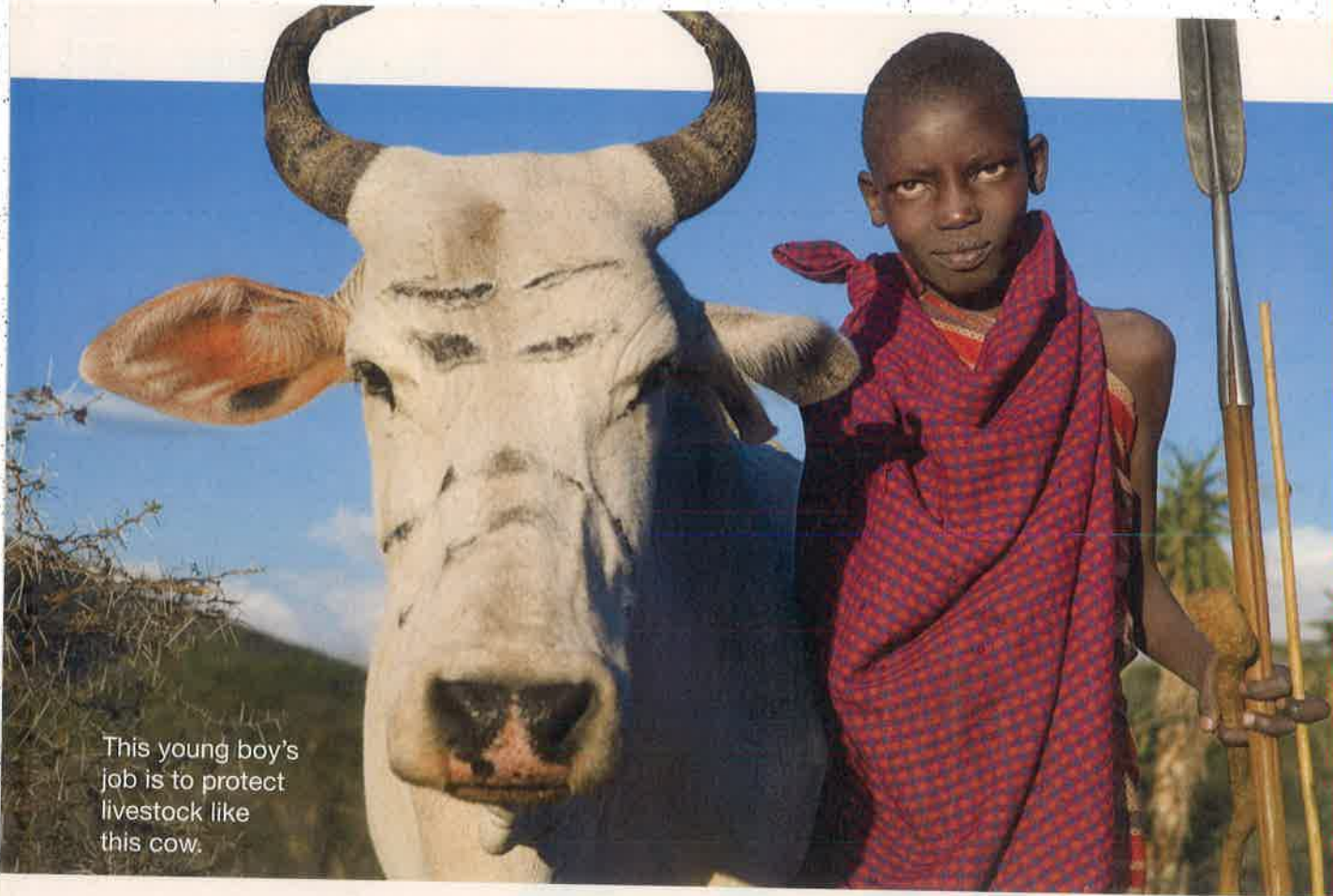


# g ions

What happens when people and  
lions try to live together?

By Joe Levit





This young boy's job is to protect livestock like this cow.

**Darkness falls** in Kenya, a country in Africa. The villagers are getting ready to sleep. Their cows rest in a wooden pen outside. All is quiet.

*Snap!* A twig breaks. Something is coming. It's a female lion. The lioness pounces on the pen. She rips through its walls. The cows scatter.

The villagers hear the noise and run outside. One cow is dead. The lioness is gone. The sounds made by the villagers scared her away.

The lioness returns to her **pride**. Her two cubs rub their faces against hers. She answers them with a low rumble. She needs to hunt again. Her cubs are hungry.

### **Trouble with Lions**

Lions are top predators. No other animal hunts them. They prey on **livestock** like cows, sheep, and goats.

The villagers need their livestock. They are the Maasai people. To them, farm animals are like money. They use their animals to buy what they need. When lions attack, the Maasai try to kill the lions.

Today, lion killing is a big problem. The number of people living in Kenya is growing. They are moving into areas where lions live. So the lions' habitat is getting smaller. The lions and humans are getting closer. That puts them both in danger.



## Losing Lions

In the past, lions lived in many places. Now most lions live only in parts of Africa and India. There may be only 20,000 lions left in the wild. If nothing is done to help, lions could die out, or become **extinct**.

Lions help keep life balanced in their environment. They prey on other animals. If the lions disappear, life in their environment would change. Other animals could be in trouble, too.

## Protecting Big Cats

That's why the National Geographic Society wants to protect lions. It gives money to people like Anne Kent Taylor who have ideas to help lions.

Taylor lives near the Maasai people. She knows the Maasai don't kill lions for fun. They only want to protect their livestock.

Taylor also knows lions don't kill livestock for fun. They kill to feed their pride. She wants to protect both lions and livestock.

This lioness carries her cub to a safe place.



## Flawed Fencing

There's only one way to protect both lions and livestock. They must be kept apart.

Maasai **herders** build round pens called bomas. Their livestock sleep in these pens. Bomas are made from thorny branches. A boma may seem like a safe place. It's not.

Sometimes lions claw through them. Other times they leap over the branches to attack the animals inside.

## Building a Better Boma


Taylor studied the bomas. She found a better way to build them. The herders used Taylor's idea. They hammered long nails into the branches that make up the boma. They wrapped a tall wire fence around the branches. The nails hold the wire in place.

The lions couldn't jump over the wire. They couldn't claw through it, either. Finally, they gave up and left. The farm animals were safe!



Herders keep an eye on their livestock.



A leopard is walking from left to right in the foreground. In the background, there is a boma (livestock enclosure) with a wire fence and a thatched roof. A cow is visible in the distance behind the fence. The scene is set in a rural, natural environment.

This boma uses a wire fence and a roof to keep lions from clawing or climbing into it.

## Not the Only Predators

Taylor's idea began to spread. More Maasai put wire fences around their bomas. The fence kept lions out. It kept other predators out, too.

Leopards used to climb the boma branches and jump in. When herders began adding wire to their bomas, the leopards stopped. They didn't like the wire. It spooked them.

The wire fence also might stop hyenas. Taylor learned that hyenas kill more livestock than lions do. They follow lions into bomas. Now that the lions can't break into the new pens, hyenas shouldn't be able to, either.

leopard





These hyenas are hunting prey.

### Fenced Out

Hyenas don't always wait for lions to do the work. One night, a herder woke up to hear his sheep and goats crying. It sounded like they were under attack. He raced to his boma.

He had built his boma in an open field. There wasn't much wood around. So he spaced out the few branches he found. He stretched the wire fence around them.

Now a clan of hyenas was running toward the fence. They didn't see the wire. *Wham!* They hit the fence and fell back. They charged again and again. Finally, they gave up and left.

### Unknown Attacker

Taylor felt good about her idea. The wire fences seemed to work. Lions had stopped attacking livestock. Herders had stopped killing lions. Then something bad happened.

One morning, a herder's livestock had been attacked. The boma had a wire fence around it. No lion, leopard, or hyena could have gotten in.

What happened was a mystery. Then Taylor spotted a small creature. It was trying to dig into another boma. Part of the wire fence had been buried in the ground. The animal couldn't dig under it.



## Mystery Solved

The animal was a honey badger.

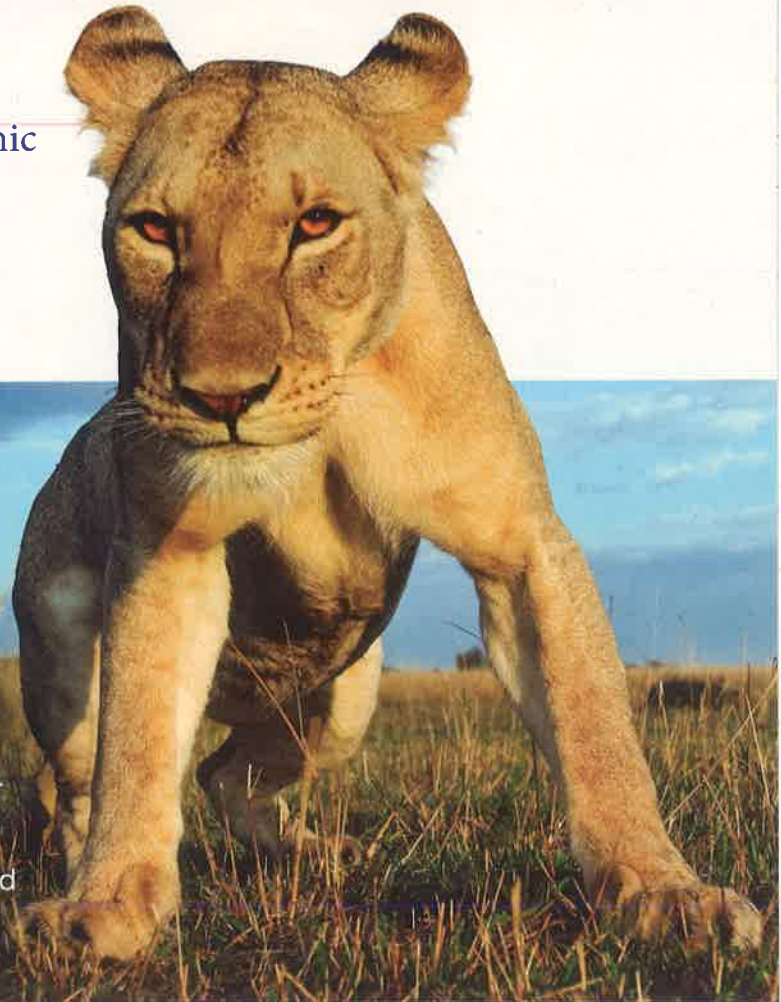
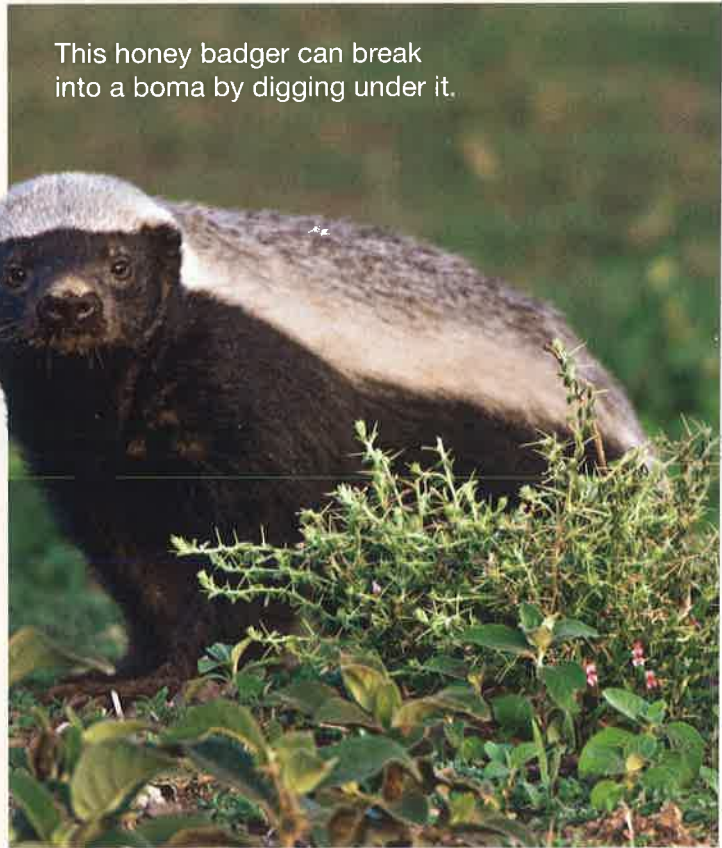
Honey badgers have long claws for digging. They can dig under the branches. That's how the badger got through to the livestock.

Taylor told the herders to bury the wire fence. After that, no animals got through. Not even honey badgers.

Putting wire fences around bomas helps both lions and herders. Now herders don't have to kill lions to protect their animals. Yet lions are not out of danger. They still may become extinct. Only people working together can help to save them.

You can help the National Geographic Society protect lions and other big cats. Go to [causeanuproar.org](http://causeanuproar.org).

This honey badger can break into a boma by digging under it.



## WORDWISE

**extinct:** when no more of a species exists

**herder:** a person who cares for groups, or herds, of livestock

**livestock:** animals raised and kept for food

**pride:** a group of lions



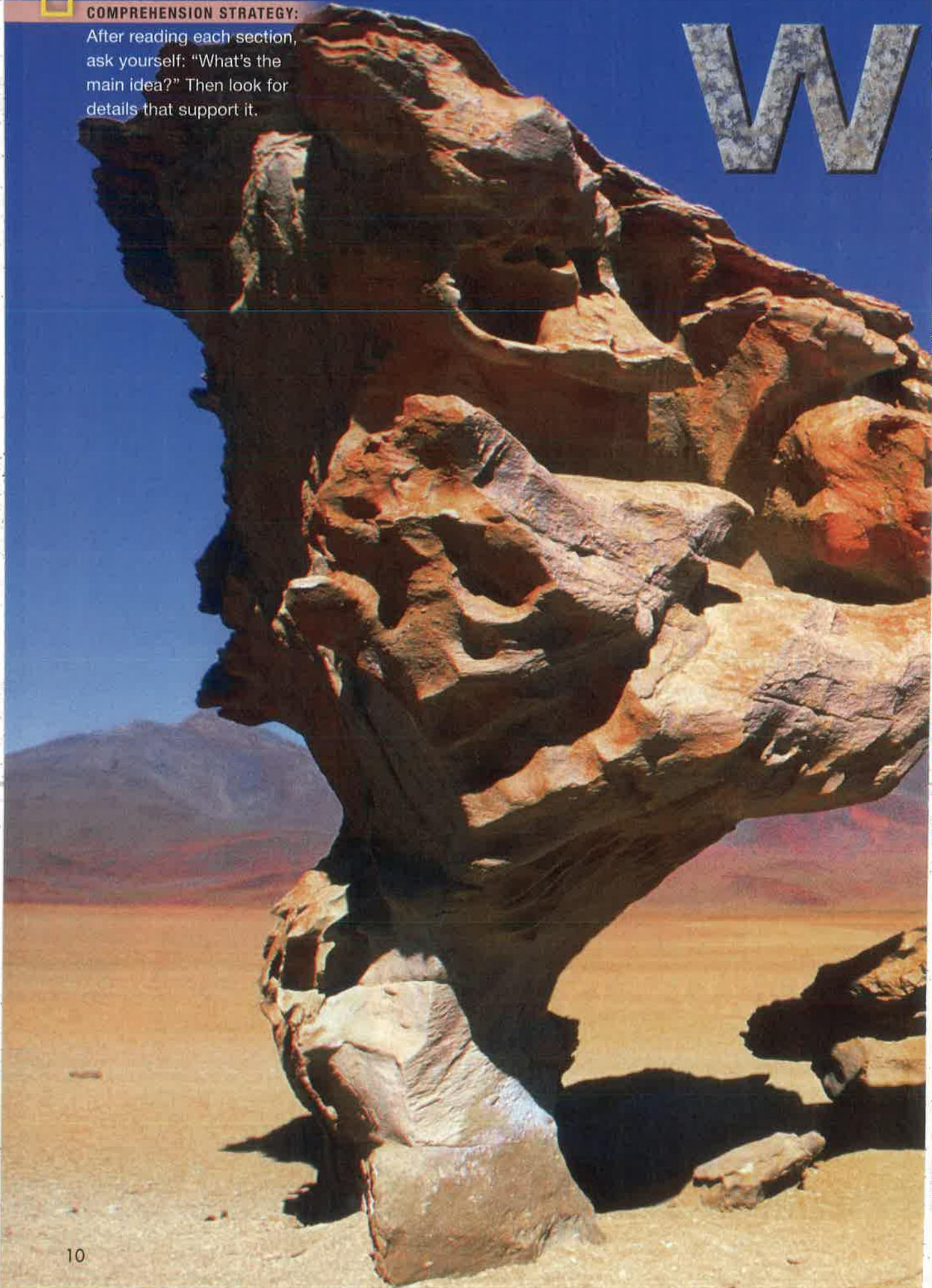


## Earth Science

### COMPREHENSION STRATEGY:

After reading each section, ask yourself: "What's the main idea?" Then look for details that support it.

# WW

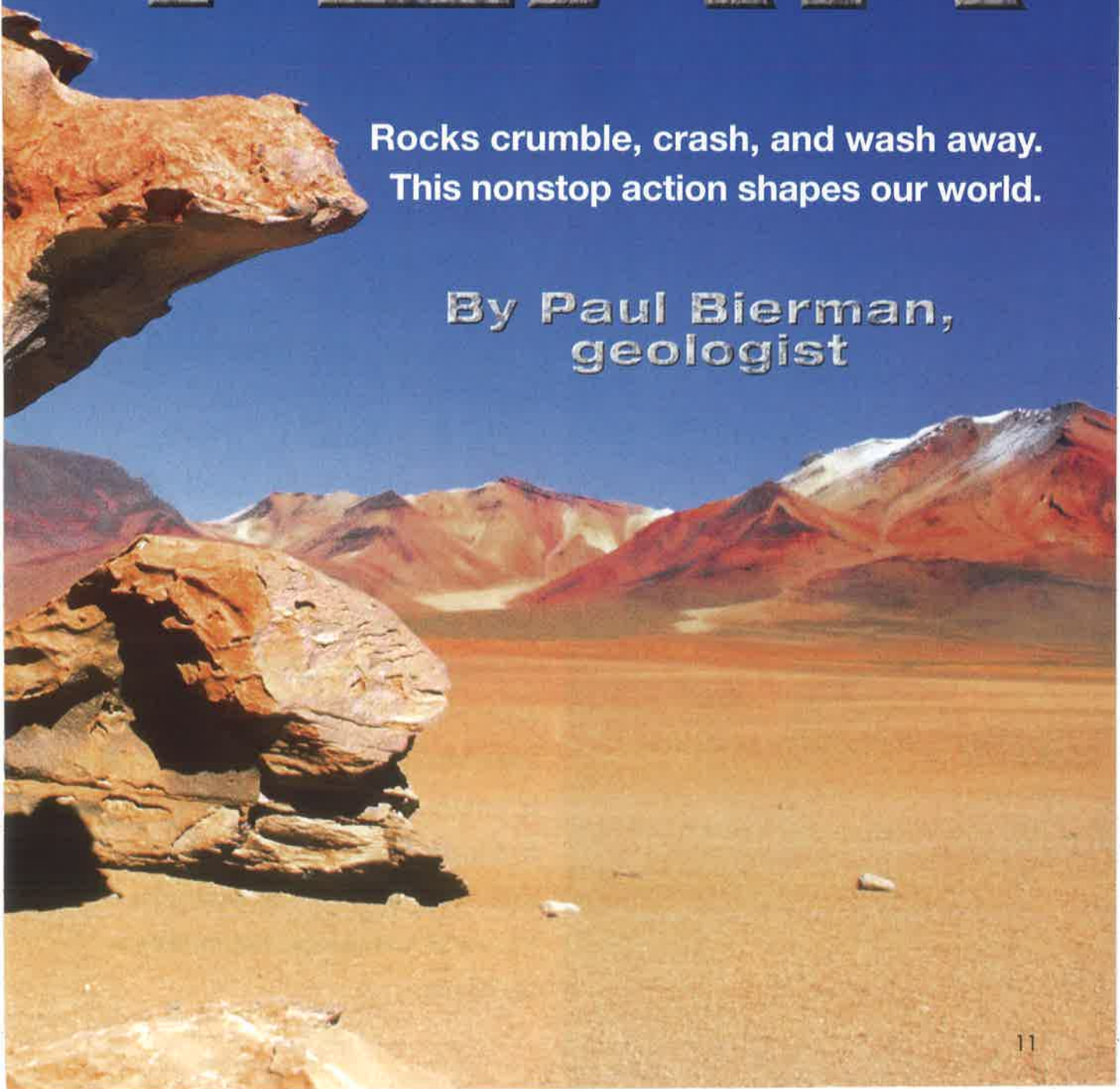




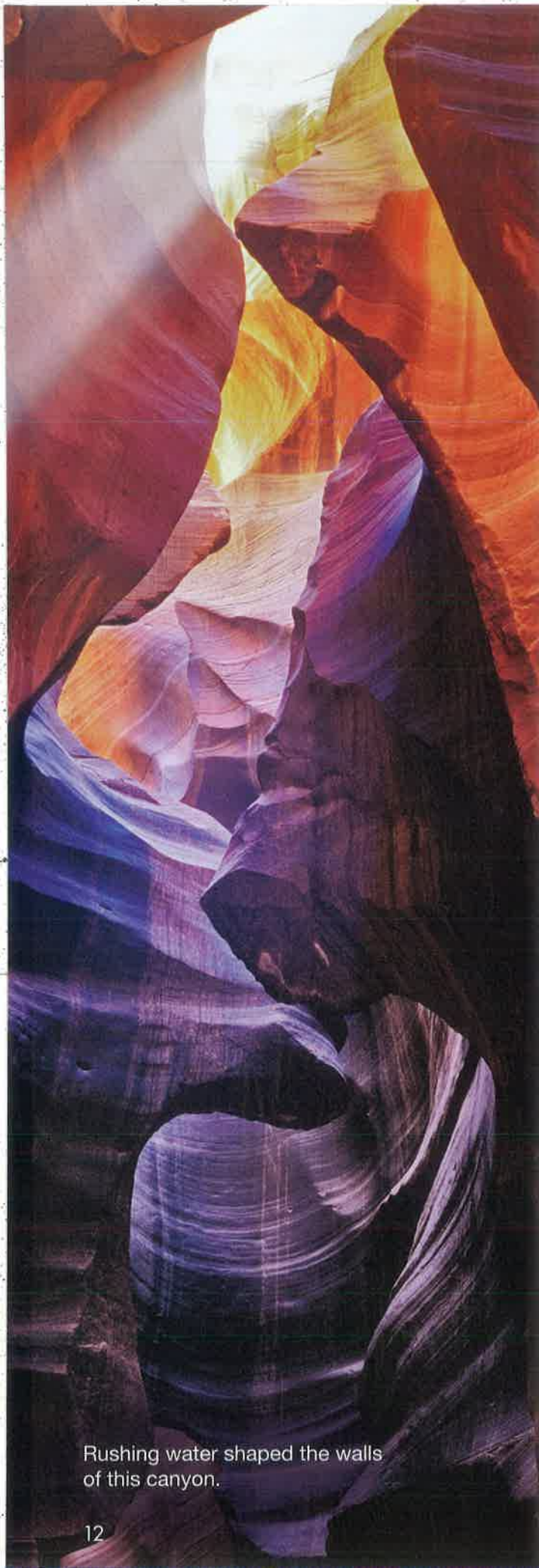
# WEAR AND TEAR

Rocks crumble, crash, and wash away.  
This nonstop action shapes our world.

By Paul Bierman,  
geologist







Rushing water shaped the walls of this canyon.

**I love rocks.** As a kid, I filled my pockets with them. When I look at rocks now, I see clues about Earth's past.

I see sandy beaches that were once boulders. I see canyons that were once valleys. I see hills that were once mountains.

My interest is more than a hobby. Rocks tell me how our planet was shaped. Let me show you some of my favorite rocky places.

### **Bits and Pieces**

Our first stop is a desert valley in the Middle East. Rocky cliffs rise out of the sand. Canyons twist through the rock. Rock arches hang in midair.

The sight takes my breath away. So does the wind. It blows sand into my eyes and my teeth. I don't mind.

The flying sand is a clue. It tells me wind shaped these rocks. The wind broke off little pieces of rock. This is called **weathering**.

Wind isn't the only force that wears away rock. Water does, too. There's some really hard rock near the ocean in South Africa. I've broken tools on it. Yet the ocean waves pound this rock. They polish it. In some places, the water even chips out chunks as big as cars.



Sea salt is eating away this rock.



### Ice and Salt

Ice also breaks apart rocks. Water flows into tiny cracks. When it freezes, it turns into ice. Ice takes up more room than water. It pushes on the crack. *Crack!* The rock breaks.

Salt water breaks rocks, too. When the water dries up, salt stays behind. Salt can carve pits into the rock. The rock looks like a honeycomb.

### Creepy Crawlers

Plants and animals weather rocks, too. Take a little tree that grows near my house. It's on top of a big rock. Its roots hold the rock like fingers. They twist into cracks. Then they push the cracks apart.

Bugs and other animals can crawl into cracks, too. They make homes. Bit by bit, they wear away the rock.



In time, these tree roots will break apart the boulder.



## Disappearing Act

When some rocks are weathered, they can dissolve. The rock found in a cave is a good example.

Here's how it works. First, it rains. The rain soaks into the ground. There is acid in the soil. It mixes with the water. This water is strong enough to eat away at a kind of rock called limestone. It makes tunnels.

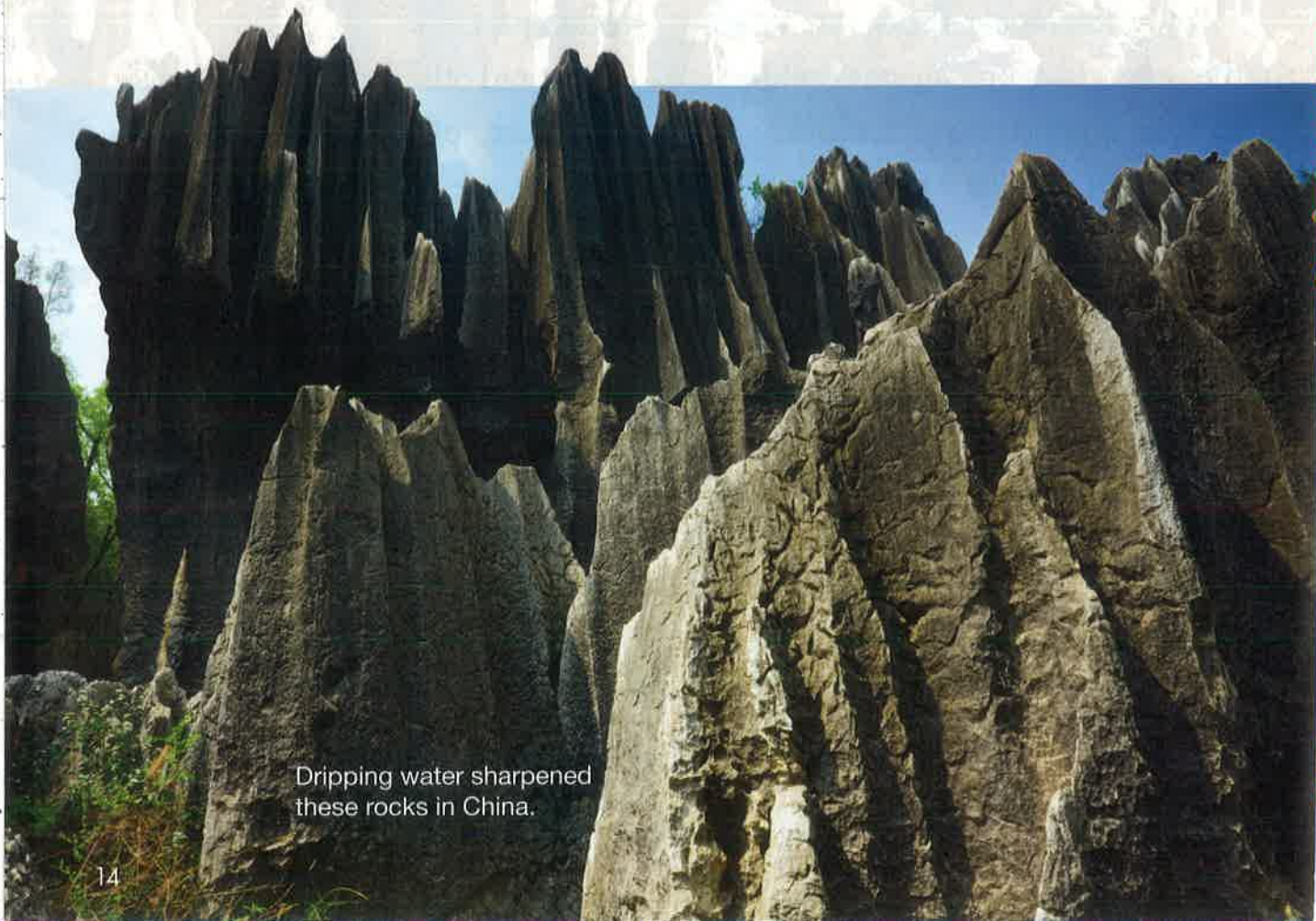
This can happen above the ground, too. In China, there's a place called the Stone Forest. The rocks look a little like tall trees. There's one difference, though. The water dissolved the edges of the rock. Now they are really sharp!

## On the Move

Rain, wind, and ice cause weathering. They can also cause **erosion**. Think of weathering like a hammer breaking up rocks. Erosion is like a broom. It sweeps the rock bits away.

Erosion moves sand and pebbles. It can move bigger rocks, too. I once stood by a rushing river. It rumbled and roared. The water was rolling big boulders away.

Erosion can even carve valleys. That's what glaciers do. Glaciers are giant rivers of ice. They slowly flow downhill. As a glacier moves, it picks up rocks. The ice and rocks move together. They scrape the land away.



Dripping water sharpened these rocks in China.



## Falling Face

Gravity helps erosion. Gravity is a force. It pulls objects toward the center of Earth. It tugs at every pebble. It pulls every mountain. It pulls glaciers downhill.

Once there was cliff called “The Old Man of the Mountain.” The rock looked like a man’s face. One day, the face fell off. The rocks came tumbling down. That’s gravity at work.

Grains of sand formed this sandstone.

## Making New Rock

Rocks move and change every day. Sand washes onto beaches. It blows into sand dunes. Pebbles pile up on the shores. Dust turns into mud.

Over time, these rocky bits turn into **sediment**. If it’s squeezed hard enough, sediment can become new rock. That’s why getting blasted by sand doesn’t bother me. Neither does getting stuck in the mud. I just know I’m seeing old rocks on the way to becoming new rocks.

## Wordwise

**erosion:** the process of moving rock from place to place

**sediment:** bits of soil and rock that have been moved from one place to another

**weathering:** the process of breaking rocks into smaller pieces









As you read, think about any animal homes you've seen and how they may have been built.

# ANIMAL ARCHITECTS

They pluck, stack, stitch, tunnel, dig, and chew. Discover how different animals build.

By Brenna Maloney