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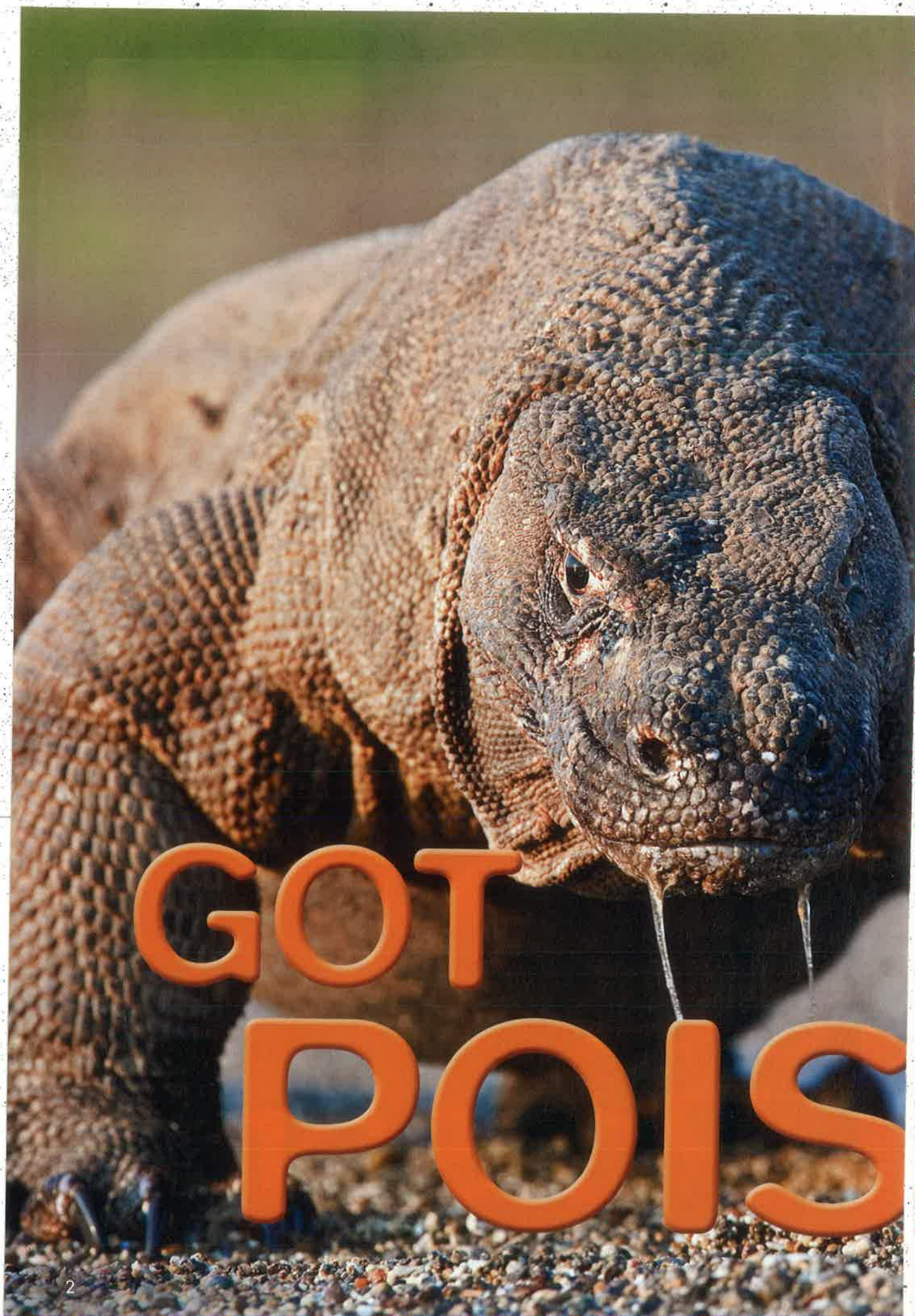
NATIONAL GEOGRAPHIC

Explorer

Got Poison? 2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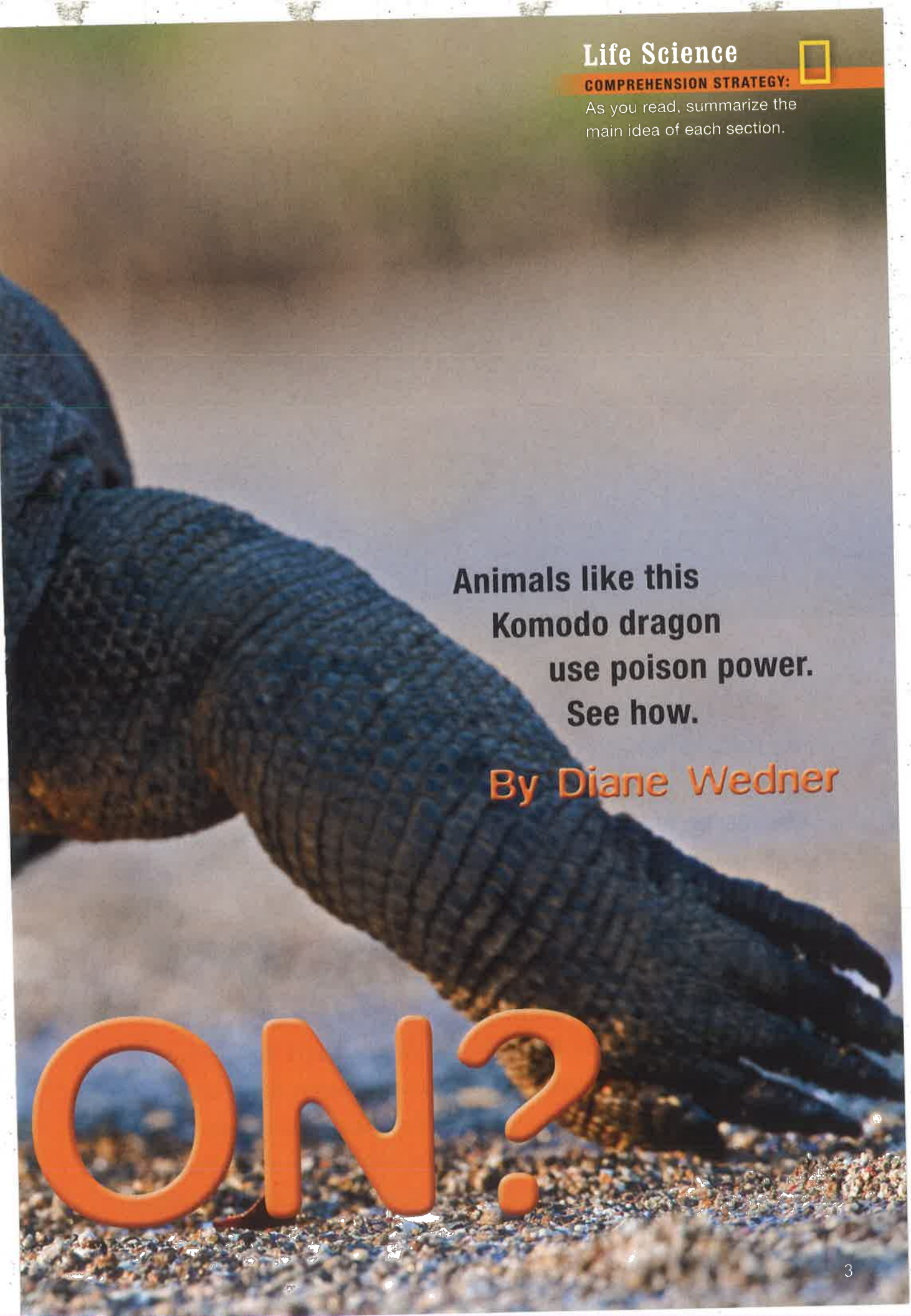


Life Science

COMPREHENSION STRATEGY:
As you read, summarize the main idea of each section.

Animals like this Komodo dragon use poison power. See how.

By Diane Wedner

ON?

This venomous Wagler's pit viper looks ready to strike.

It's night in a rain forest. A pit viper waits. It holds tight to a branch with its tail. It's ready to strike.

A bat flies by. With its tail holding it steady, the snake springs forward. It catches the bat. Its fangs sink into the bat's body.

The bat begins to struggle. The snake must work fast. The bat could still escape. The snake bites down harder. **Venom** pours through its fangs and into the bat's body.

The **toxins** in the venom act quickly. The bat goes limp. Then, *gulp!* The snake swallows the bat whole.

Poison Power

Many animals are like this viper. They use poison power to survive. These animals live on land and in water. They include snakes, fish, and even a dragon.

Some animals use poisons to attack prey. Others use them to defend themselves. Some poisons hurt the victim. Others kill it.

Animals have different ways to deliver poisons. Some bite with fangs. Others sting, poke, ooze, or even spit. The result is the same. Poisons cause pain or even death. Let's see how. We'll start with a viper's fangs.

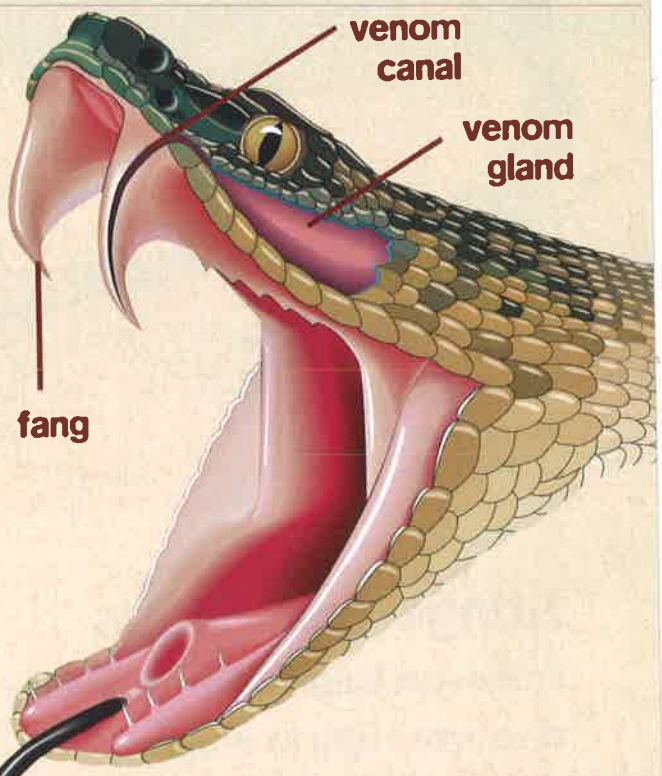
Ferocious Fangs

A viper's fangs are usually hidden. They fold up inside the snake's mouth. To attack, the viper opens its mouth wide. Its fangs swing down.

The viper squeezes venom out of **glands** behind its eyes. The venom races through the fangs.

As the snake bites, the venom shoots into the prey's body. It attacks the prey's red blood cells. Red blood cells carry oxygen to parts of the body. So the venom stops the oxygen supply, and the prey dies.

Poison Parts



Venomous bush vipers like this one live in Africa.

A scorpion carries its venom in the tip of its tail.

Stings and Stabs

Snakes use fangs to deliver venom. A scorpion uses its stinger. Its tail curls over its back. A stinger hangs from the tip of the tail. The stinger holds deadly venom.

The scorpion sticks the stinger into the prey. The venom attacks nerve cells. These cells control every muscle. Soon the prey can't move. The scorpion eats it.

A cone snail doesn't sting or bite. It stabs. This tiny sea snail is deadly. It carries nearly 100 toxins inside its shell. This snail can't swim or move fast. It buries itself in the sand.

When a fish swims by—*zap!* The snail shoots a poison barb into it. The venom stops the fish's heart and gills. The fish dies and the snail swallows it.

Poison Spit

Watch out for the Komodo dragon's bite. Venom oozes from between this giant reptile's teeth. It mixes with its spit. When the dragon bites a deer, its venom goes into the wound.

The deer's blood cannot **clot** because of the venom. That means the bleeding won't stop. When the deer loses too much blood, it falls to the ground. The dragon eats its dinner.

In the ocean, you can find an octopus with poisonous spit. This octopus hunts crabs.

When it finds a crab, the octopus grabs the crab with its arms. It drills a hole into the crab's shell using its sharp tongue. Venom mixes with the spit and flows into the hole. The crab dies. The octopus eats it.

Wild Facts

- **When a baby venomous snake hatches, it already has venom.**
- **A cobra can spit its venom up to 3 meters (9.8 feet).**
- **Some dart frogs have enough poison to kill 20,000 mice.**
- **Australia has more toxic species per square kilometer than anyplace else on Earth.**

This Komodo dragon's drippy saliva can be poisonous.

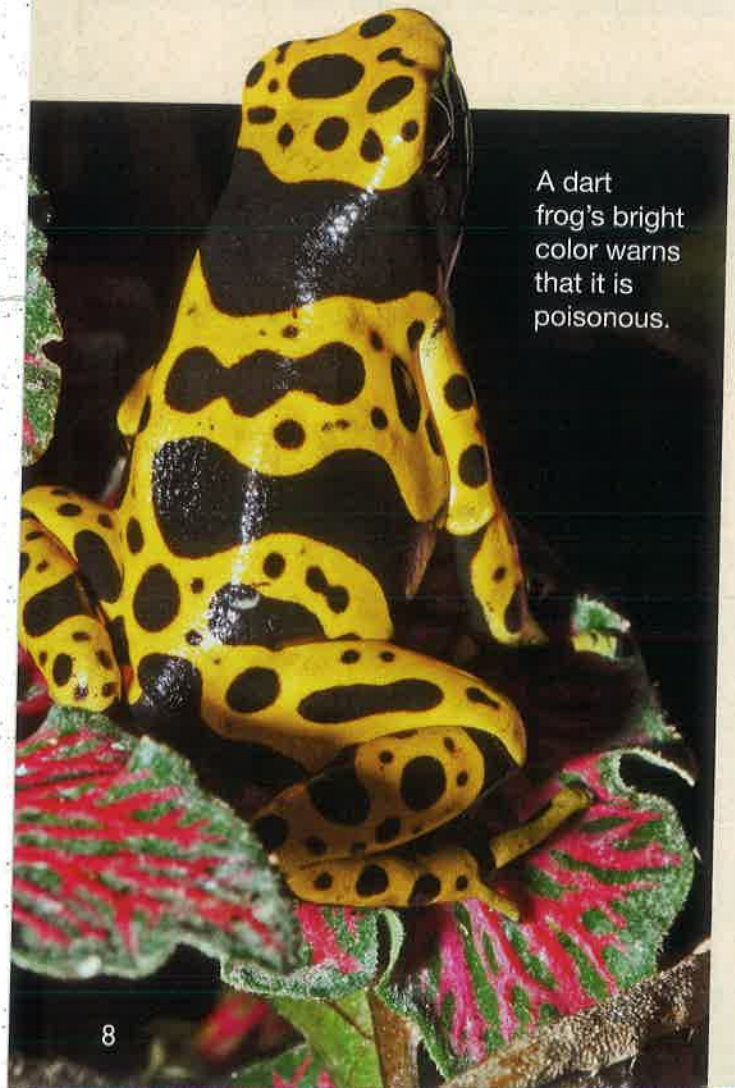
A blue-ringed octopus is one of the deadliest animals on Earth.

Deadly Diet

Not all animals use poisons to attack prey. Some animals use their poison power for protection. The dart frog is an example.

This frog's skin oozes a stinky poison that tastes like pepper. When a predator attacks, some of the frog's poison rubs off. The poison stops the predator's heart.

A dart frog is not born poisonous. Scientists think it gets the poison from insects it eats. The insects eat poisonous plants. So the poison passes from plant to insect to frog.



A dart frog's bright color warns that it is poisonous.

Poisonous Primate

Poison doesn't always need to kill to work. Sometimes it only has to hurt. Here's an example.

A wild cat sneaks up to a slow loris. The slow loris begins to sweat poison from the inside of its elbows. The slow loris licks its elbows. The poison mixes with the slow loris's spit.

When the cat gets close enough, the loris bites it. The poisoned spit flows into the cat. It really, really hurts! The cat runs away in pain.

A mother slow loris also puts the spit on her baby's fur. It makes the baby smell like dirty socks. The stink keeps many predators away.

Prickly Spikes

A lionfish uses poisons, too. Long, frilly spikes stick out of its body. Each spike holds venom. The spikes can stab any animal that gets too close.

When that happens, venom goes into the wound. It hurts! So most predators leave the lionfish alone.

All these animals might seem scary, but they aren't mean. They don't bite, ooze, sting, or jab for fun. They use poisons to hunt prey or to defend themselves. Their poison power helps them survive.

A furry slow loris packs poisons in its elbows.

The spikes on a lionfish are pretty but painful.

Wordwise

clot: to cause a liquid such as blood to become thick and lumpy

gland: a body part that makes a substance that the body can use

toxin: a poisonous material made by a living organism

venom: a poison made by animals that is injected into prey

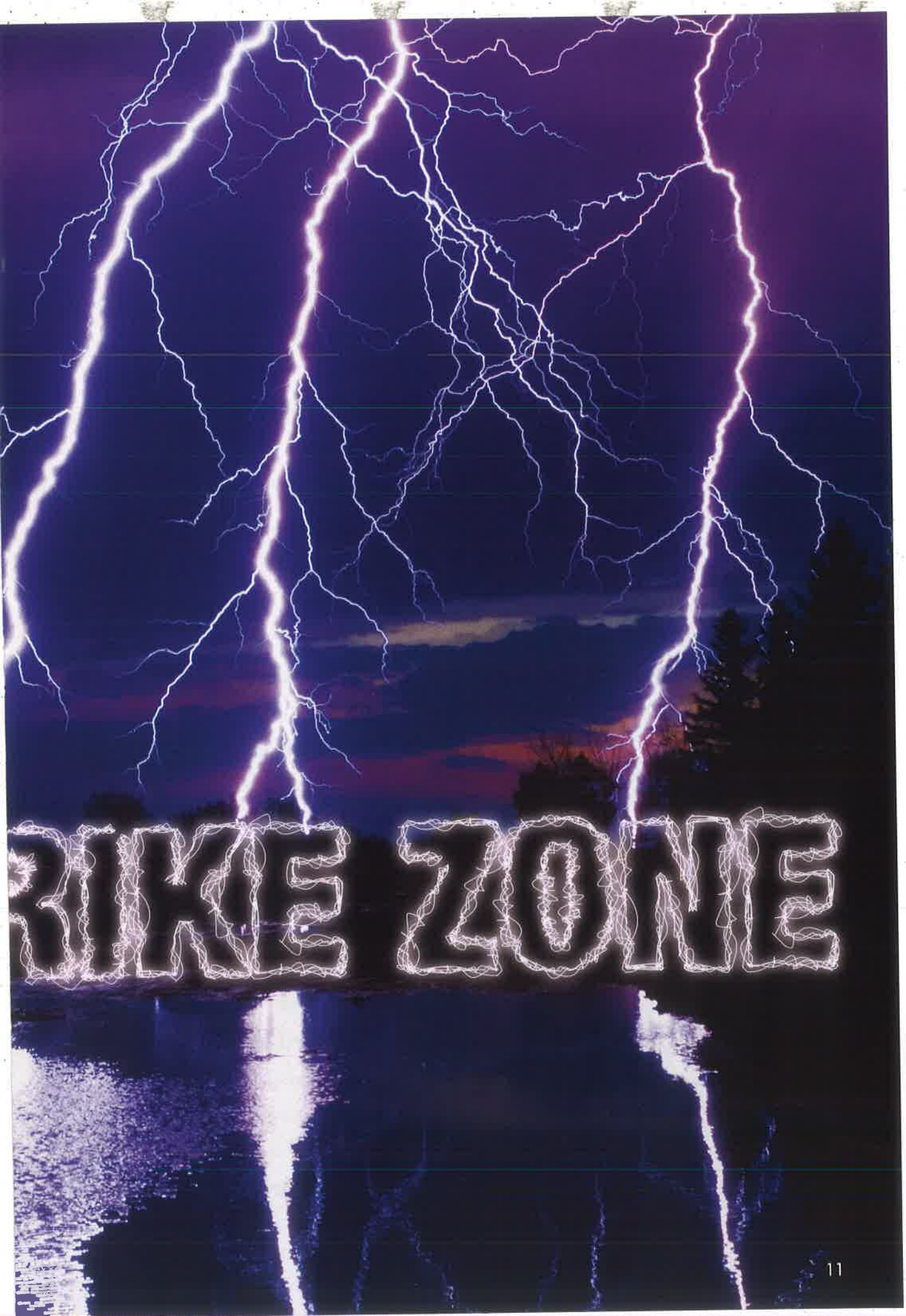
Earth Science

COMPREHENSION STRATEGY:
As you read, look for the order in which events happen.

IN THE STI

We had just started setting up our equipment when . . . FLASH! KA-BOOM! Lightning danced around us and thunder echoed across the field.

By Tim Samaras
with Glen Phelan


RIKE ZONE

A bolt of lightning strikes the ground.

The bright flash and loud crash filled the air. A bolt of **lightning** split a fence post just a few meters away from us. We didn't really mind. After all, big time lightning is what we had been looking for all day.

On the Hunt

My team and I are storm chasers. We chase lightning. Finding lightning is easy. We just look for bad weather. Bad weather is good weather for storm chasers.

Our cars and vans are loaded with equipment. Radar images light up the computer screens. They show us where rain is falling. Purple images mean heavy rain. That probably means lightning, too.

Weather reports on the radio also help. Radar and radio tell us where the storm is going. We learn how fast it's moving and how powerful it is.

I'm looking at the radar right now. I see that something big is going on about three hours from here.

Come with us to check it out. On the way, I'll tell you about lightning. I'll tell you about clouds, ice crystals, and **electric charges.**

Opposites Attract

Lightning starts inside a storm cloud. Water droplets and ice crystals zoom around. They bang into one another. This builds up electric charges.

Some charges are positive. They rise to the top of a storm cloud. Some are negative. They drop to the bottom of a cloud. Things on the ground build up positive charges.

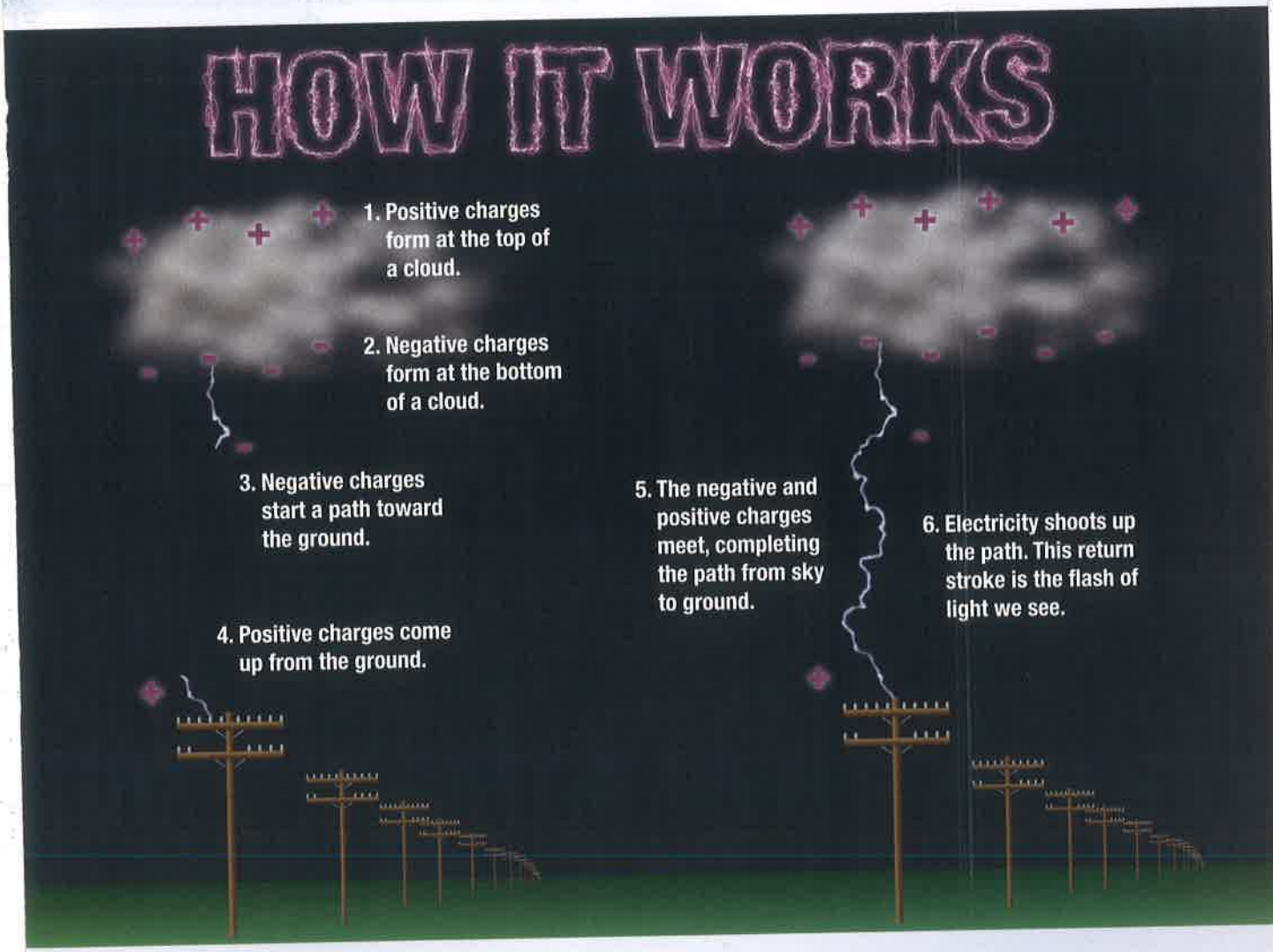
The negative charges from the cloud travel down. The positive charges from the ground travel up.

Lightning Bolts

The two charges meet. When they do, we see lightning. The most common type of lightning flashes within a cloud. The lightning bolt is hidden, but the cloud flickers with light.

There are other types of lightning, too. Sometimes lightning zigs and zags between two clouds.

The most dangerous kind of lightning is between a cloud and the ground. Streaks of lightning dance between the sky and the ground.



A truck takes radar readings to track a storm.

Lighting Up the Sky

We've been driving for hours, and now we've reached the storm. The sky is a mass of dark clouds. Suddenly, we see lightning. Then comes the **thunder.** *Ru-m-m-ble!*

Lightning causes the thunder. Here's how. A lightning bolt heats the air. The air gets hotter than the surface of the sun.

The hot air has no time to expand. Instead, it explodes outward. It makes a loud rumble.

Lightning and thunder happen almost at once. However, light travels faster than sound. So we see the lightning before we hear the thunder.

Risky But Not Reckless

Most lightning happens at the beginning of a storm. That's why we try to stay ahead of storms.

Lightning is very dangerous. A direct hit can kill. Sometimes lightning seems to come from nowhere. Lightning can travel away from the cloud where it started. The sky above us may be blue, but we could still get zapped.

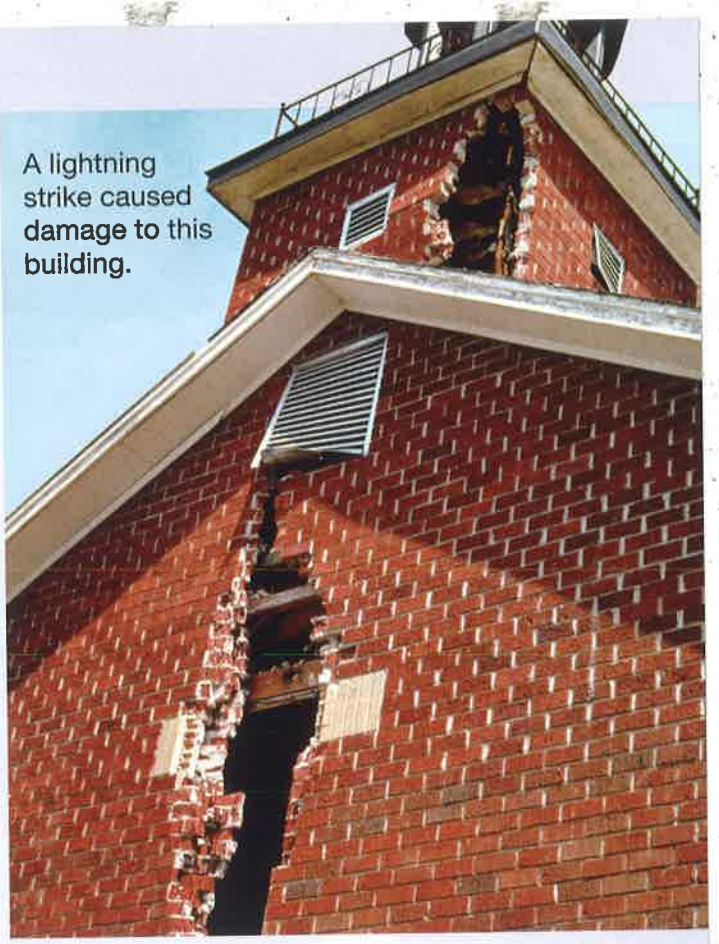
Luckily, we're fairly safe in our van. Lightning could strike it. If it does, it's not a problem. Electricity will travel through the metal. It might blow out a tire. We're okay as long as we don't touch the metal.

Weird Lightning

Sometimes lightning acts really strange. Some people have seen a type of lightning called "ball lightning."

This glowing light can be the size and shape of a basketball. It floats around after lightning strikes. Then it disappears. Ball lightning is a mystery. Scientists know very little about how it forms.

Lightning can leave its mark. It shatters trees. It leaves dark burns on metal poles. Its heat turns sand to liquid. When the liquid hardens, it looks like a lightning bolt.

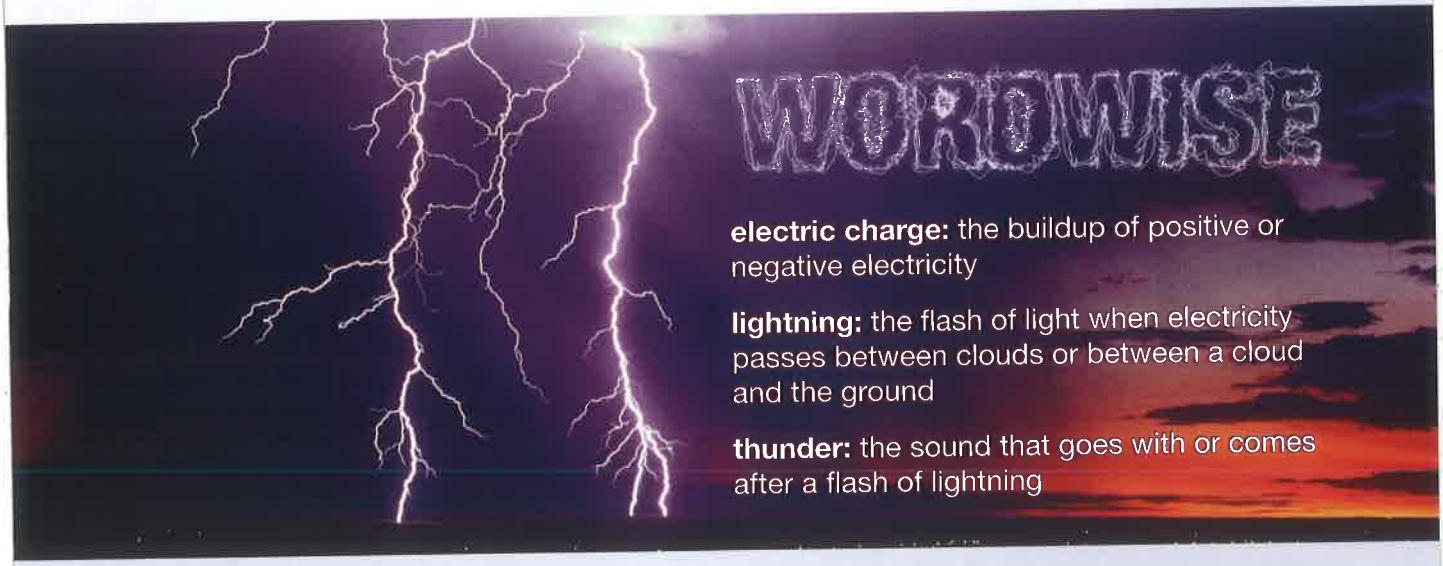


A lightning strike caused damage to this building.

Looking for Answers

Lightning has left its mark on me, too, but in a good way. People often ask me, "Why do you chase lightning?" Lightning is a powerful force of nature. It's thrilling to see.

For me, it's also thrilling to learn about lightning. I have so many questions about how lightning works. The answers to these questions may keep us all safer during storms.

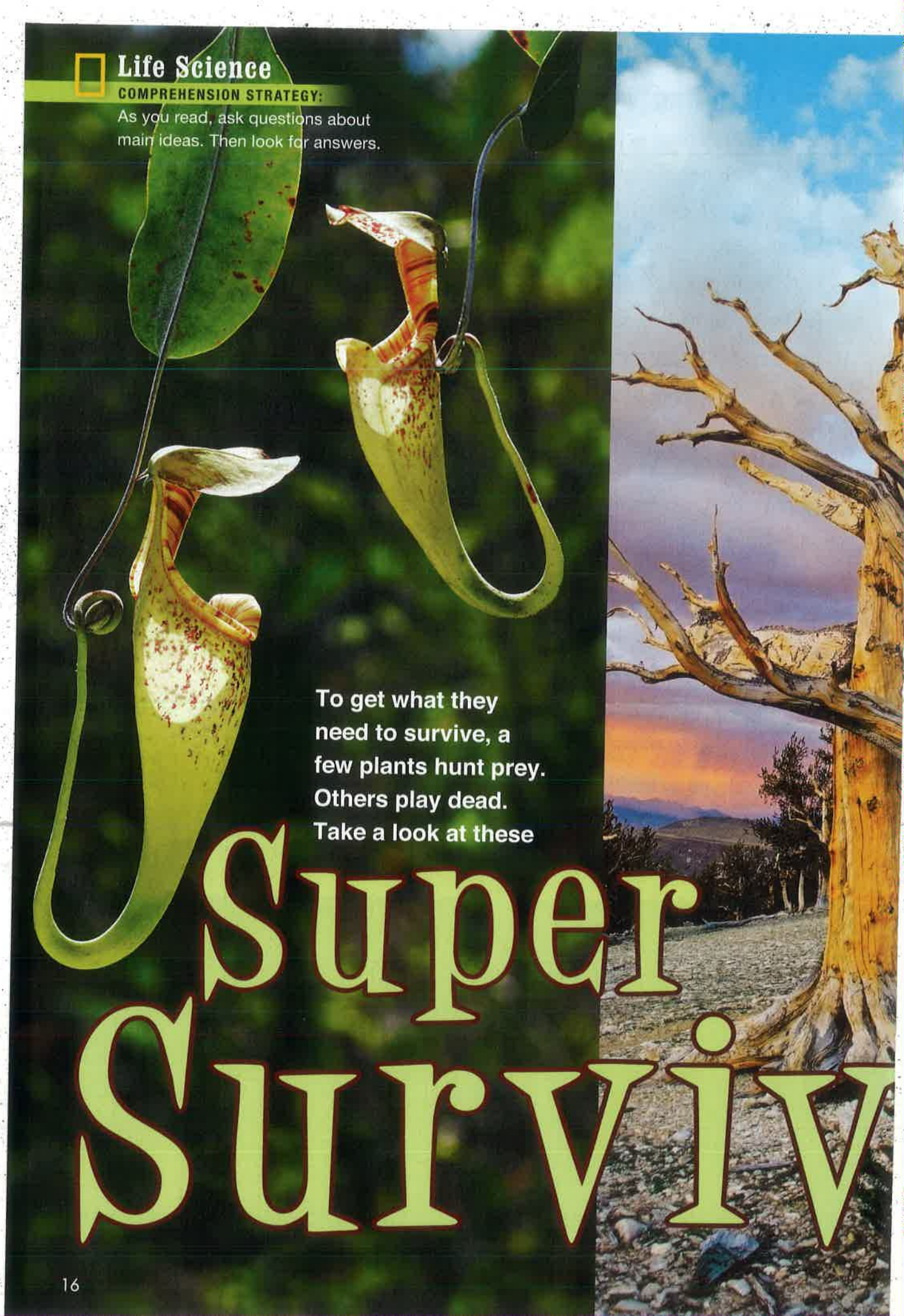


WORDWISE

electric charge: the buildup of positive or negative electricity

lightning: the flash of light when electricity passes between clouds or between a cloud and the ground

thunder: the sound that goes with or comes after a flash of lightning



Life Science

COMPREHENSION STRATEGY:
As you read, ask questions about main ideas. Then look for answers.

To get what they need to survive, a few plants hunt prey. Others play dead. Take a look at these

Super Surviv

ors

By Gary Miller

Sunlight shines

down on a swamp. The ground is wet, and the air is warm. This may seem like a great place for plants to live. It's not.

Plants can get a lot of what they need to live here. They can get air, water, and space to grow. One thing is missing, though. The soil is not rich. It doesn't have many **nutrients** in it. Yet plants need nutrients to make food.

Even so, one kind of plant thrives here. The sundew gets its nutrients from another source. It is a **carnivore.** That means it uses meat as food. It oozes a sticky gel to trap bugs. Then it eats them!

Meaty Meal

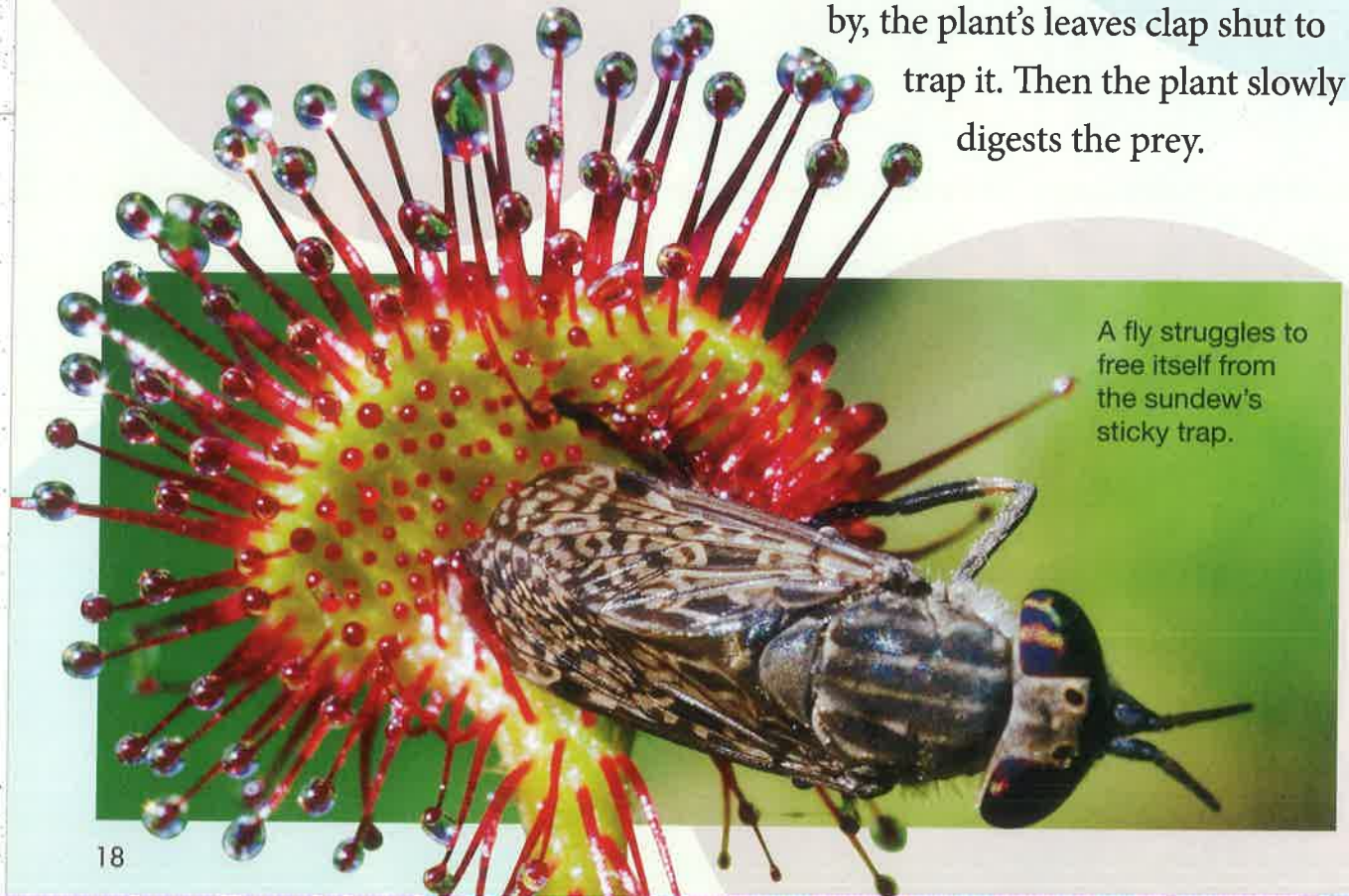
The pitcher plant is also a meat eater. Its cupped leaves are shaped like a pitcher. Rainwater fills the pitcher. Nectar lines the rim of the pitcher.

A fly smells the sweet nectar and comes to drink. It slides on the plant's slippery sides. The fly falls into the pitcher and drowns in the rainwater. The plant turns the fly into mush. This mush makes a fine dinner for the pitcher plant.

Small plants eat insects. Some big pitcher plants trap larger prey like frogs or even rats.

Other meat-eating plants use a snap trap to catch prey. The waterwheel plant hunts tiny water creatures.

It floats under water. As prey swims by, the plant's leaves clap shut to trap it. Then the plant slowly digests the prey.



A fly struggles to free itself from the sundew's sticky trap.