

Science

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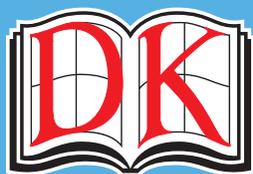
Life Science

Weird PLANTS



Genre	Comprehension Skill	Text Features	Science Content
Nonfiction	Draw Conclusions	<ul style="list-style-type: none"> • Captions • Labels • Diagrams • Glossary 	Plants

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by Laura Johnson

Vocabulary

chlorophyll
dormant
fertilization
ovary
photosynthesis
pistil
sepal
stamen

Extended Vocabulary

cilia
debris
epiphytes
nutrients
pores
succulents
tentacles

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Weird PLANTS

by Laura Johnson

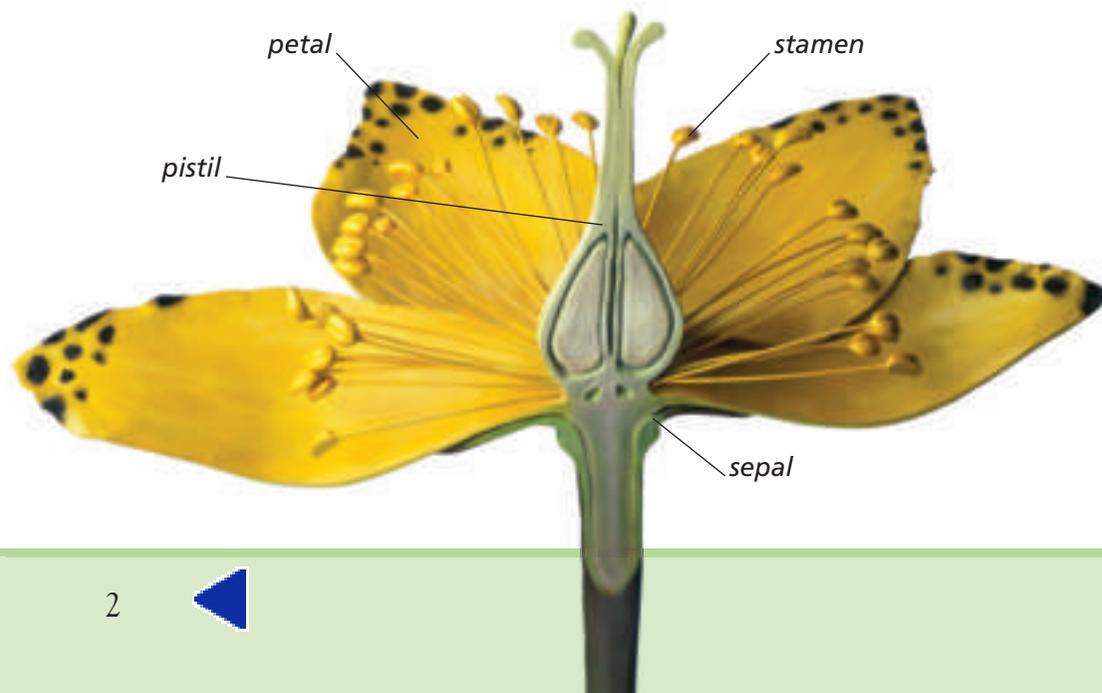




What You Already Know

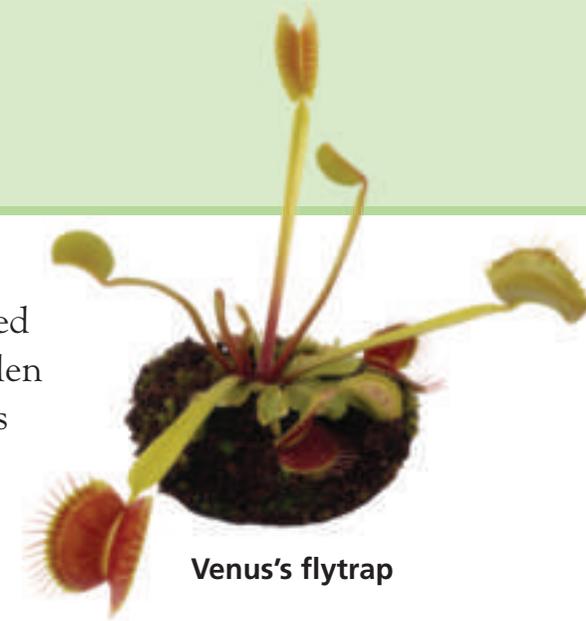
No matter how big or small plants are, they are all made up of tiny cells. Inside some of these cells are structures called chloroplasts. They make sugar, the plant's food, through a process called photosynthesis. A chemical called chlorophyll gathers sunlight that provides the energy for photosynthesis.

Plants have many different kinds of cells. The cells form tissues, which work together. These tissues form organs. Flowers are plant organs that make seeds, which grow into new plants. Most flowers have four parts. Petals attract animals to the flower. Sepals are leaves that protect the flower while it grows inside its bud. In the center of the flower are the pistil, which holds the eggs, and the stamen, which holds the pollen.



The pollen moves to the pistil in a process called pollination. Then the pollen moves toward the flower's ovary and combines with an egg. This is called fertilization. After fertilization, a seed forms and the plant's ovary grows into fruit. When the fruit is ripe, the seed is ready to become a new plant. It might be carried away by the wind or water. Or an animal might eat the fruit or get the seed stuck in its fur. The seed eventually lands on the ground, where it may lie dormant until conditions are right for it to start growing. Not all plants grow from seeds. Some grow from spores, which are like seeds, but made up of only one cell. Others can grow from a broken-off stem or a bulb. Strawberries send out special roots, called runners, that turn into new plants.

Most plants have the same parts. But in some plants, these parts have developed into very strange shapes. Some even appear to have mouths and teeth! Read on to learn more about these weird plants.



Venus's flytrap





Introduction



passion flower

You may have already heard about plants that trap creatures in their leaves and eat them. If so, you might think that these meat-eating plants are the weirdest plants of all. Well, have you ever heard of plants that actually steal from other plants?

How about plants that strangle other plants so they can be closer to the sunlight? How about plants that snorkel for air? What about plants with really strange shapes? You are going to find out more about all of these kinds of plants. Then you can decide for yourself which one is the weirdest.

The bird of paradise looks like a bird that has landed on a leaf.



Corpse flowers need to save up energy to bloom once every one to three years.



Close your eyes and picture the strangest flower you can. Did you picture one that looks like a bird with blue and orange feathers? That's what the bird of paradise flower looks like. Its appearance tricks animals into thinking that it's another animal, not a plant. Did you picture a flower that's taller than a person? Corpse flowers, which give off an incredibly nasty odor, can grow almost nine feet tall!

You might have pictured a flower similar to the passion flower. It has colorful petals and green sepals. What you can't see is how parts of some species of the flower rearrange themselves to dust pollen on visiting insects and then collect pollen from other insects.

The passion flower is always busy spreading and collecting pollen.





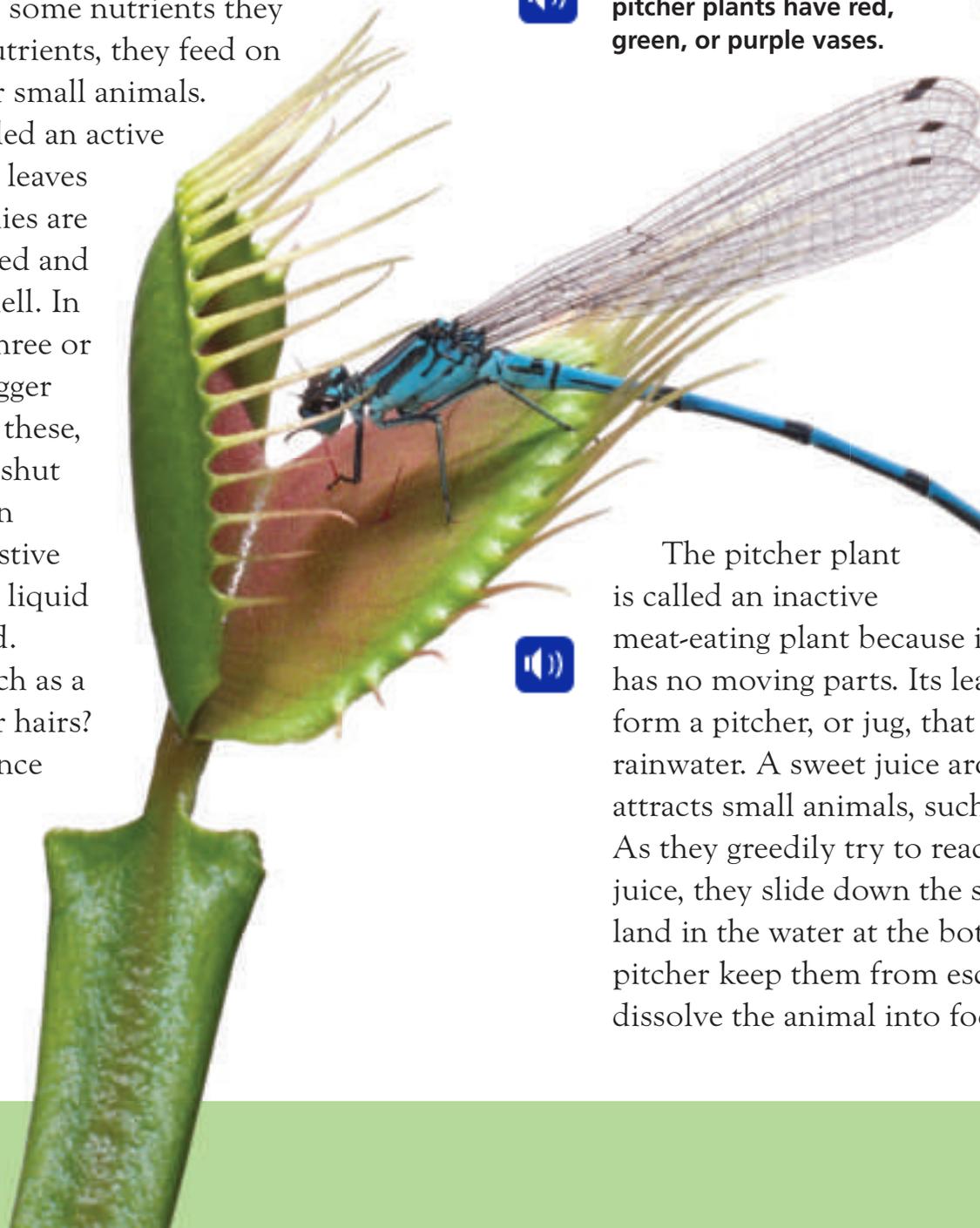
Meat-Eating Plants

All carnivorous, or meat-eating, plants grow in places where the soil lacks some nutrients they need to grow. To get these nutrients, they feed on the flesh of insects and other small animals.

The Venus's flytrap is called an active meat-eating plant because its leaves actually move to trap flies. Flies are attracted to the plant by its red and green leaves and its sweet smell. In the center of the leaves are three or four sensitive hairs called trigger hairs. If a fly touches two of these, the plant's spiny leaves snap shut in a tenth of a second. It then takes about ten days for digestive juices to dissolve the fly into liquid that the plant can use as food. What if a non-food item, such as a pebble, lands on these trigger hairs? The plant can tell the difference and drops it out after twenty-four hours.



The leaves of the Venus's flytrap are bordered by 18 stiff spikes called cilia.



The most common pitcher plants have red, green, or purple vases.



The pitcher plant is called an inactive meat-eating plant because it has no moving parts. Its leaves form a pitcher, or jug, that holds rainwater. A sweet juice around the rim of the pitcher attracts small animals, such as insects and spiders. As they greedily try to reach into the pitcher for more juice, they slide down the slippery surface. When they land in the water at the bottom, thick hairs inside the pitcher keep them from escaping. Digestive juices then dissolve the animal into food that the plant can use.

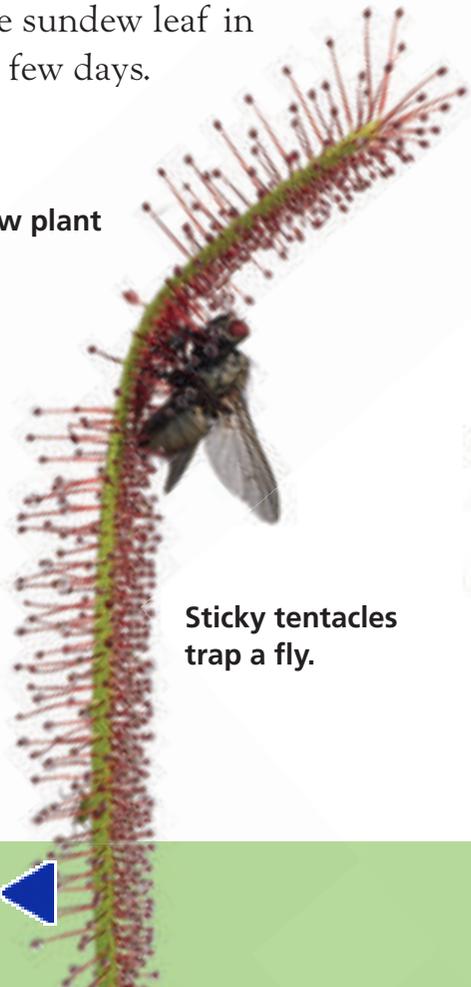




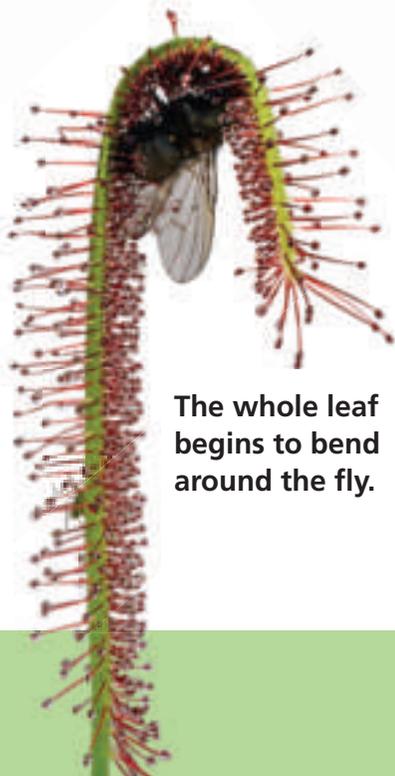
The sundew plant is another example of an active, moving trap. Tiny red hairs, called tentacles, cover the sundew's leaves. Each tentacle is tipped with a sweet, sticky juice. Flying and crawling insects are attracted to the leaves by the sweet smell. When they land on the tentacles, their feet become stuck to the juice. The more the creature struggles to escape, the more juice the sundew produces. The tentacles near the creature begin to bend toward it. Then the whole leaf begins to curl around it. Finally, the creature is surrounded by sticky tentacles and the leaf sends out digestive juices. Animals are dissolved by the sundew leaf in just a few days.



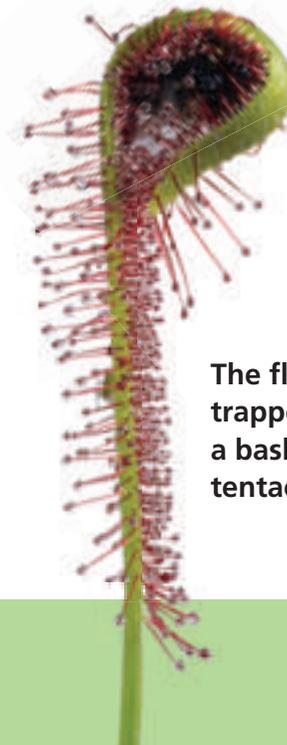
Sundew plant



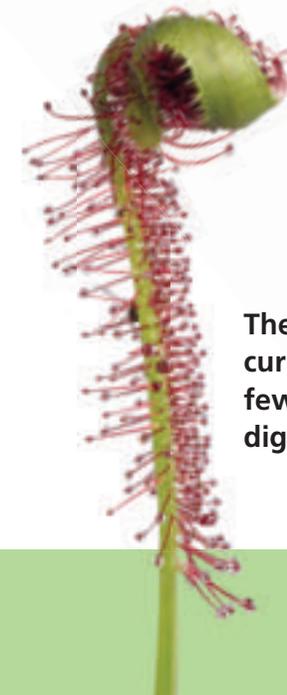
Sticky tentacles trap a fly.



The whole leaf begins to bend around the fly.



The fly is trapped inside a basket of tentacles.



The plant stays curled up for a few days as it digests the fly.



Then the leaf uncurls and waits for more food to arrive. Individual leaves will live long enough to catch and digest about three creatures.

Like the Venus's flytrap, the sundew senses the difference between food and non-food. Not wanting to waste energy, only a few tentacles close around non-food items. This allows the items to fall out of the plant.

Pitcher plants grow in the southeastern United States.





Epiphytes

Epiphytes are plants that grow on larger plants. They are like passengers going along for a ride! Epiphytes produce their own food through photosynthesis. They collect their own water and nutrients and rarely harm the larger plants they live on. So what's the advantage of being an epiphyte? Position! Most plants begin life as seedlings with their roots in the ground. In woodland forests and rain forests, tall trees block sunlight and absorb most of the water from the ground. Small plants don't have much of a chance there. Epiphytic plants, however, begin as seedlings with their roots on tall plants, off the ground.

Animals drop the seeds of epiphytes in places like tree branches.



Some kinds of orchids are epiphytic.



Several kinds of epiphytes can live on a single tree branch.



These seeds grow roots in the dirt and debris that collect in the tree bark. The plants get moisture from trapped rainwater and from the air. Since epiphytic plants begin their lives in high places, they don't need to grow long stems to reach the sunlight. They're already there!





Bromeliads

Have you ever seen a pineapple? If so, you've seen a bromeliad. Bromeliad is the name for a very large family of tropical plants.

Many bromeliads are epiphytes. They live on larger plants and collect rainwater that runs off their leaves and bark.

This way, they don't have to compete with other plants for the water in the soil.

Bromeliads are often called "air plants" because they can take nutrition and moisture from the air. Bromeliads can also store water better than most plants. Their thick, waxy leaves overlap tightly at the base of the plant. They form a bowl that catches and stores water. Tiny scales on the leaves help the plant absorb water.

The largest kinds of bromeliads can hold several gallons of water. Because of this, they often become miniature ecosystems that provide water and shelter for small animals.



Tree frogs, salamanders, snails, beetles, worms, and crabs often live in these plants. Larger animals know that bromeliads are good places to hunt for food.



An opossum searches for smaller animals that are attracted to the bromeliad.



Many bromeliads bury their roots in the plant they live on rather than in soil on the ground. They also provide homes for small water animals.





Parasitic Plants

Parasitic plants are thieves! Instead of making their own food through photosynthesis, they steal their food from other plants. The plants they live on are called host plants. Parasitic plants use suckers to attach themselves to the stems or roots of host plants. The suckers, called haustoria, grow into the host plant and absorb nutrients that the parasitic plant needs. Because parasitic plants do not need sunlight, many of them are hidden and difficult to spot.

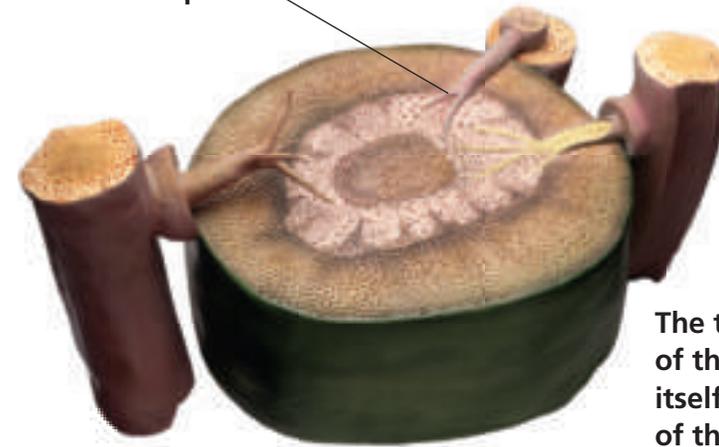


Rafflesia flowers weigh about 15 pounds and are about 3 feet in diameter.



The dodder's haustoria grow into the stem of its host plant.

dodder plant



The threadlike stem of the dodder wraps itself around the stem of the host plant.

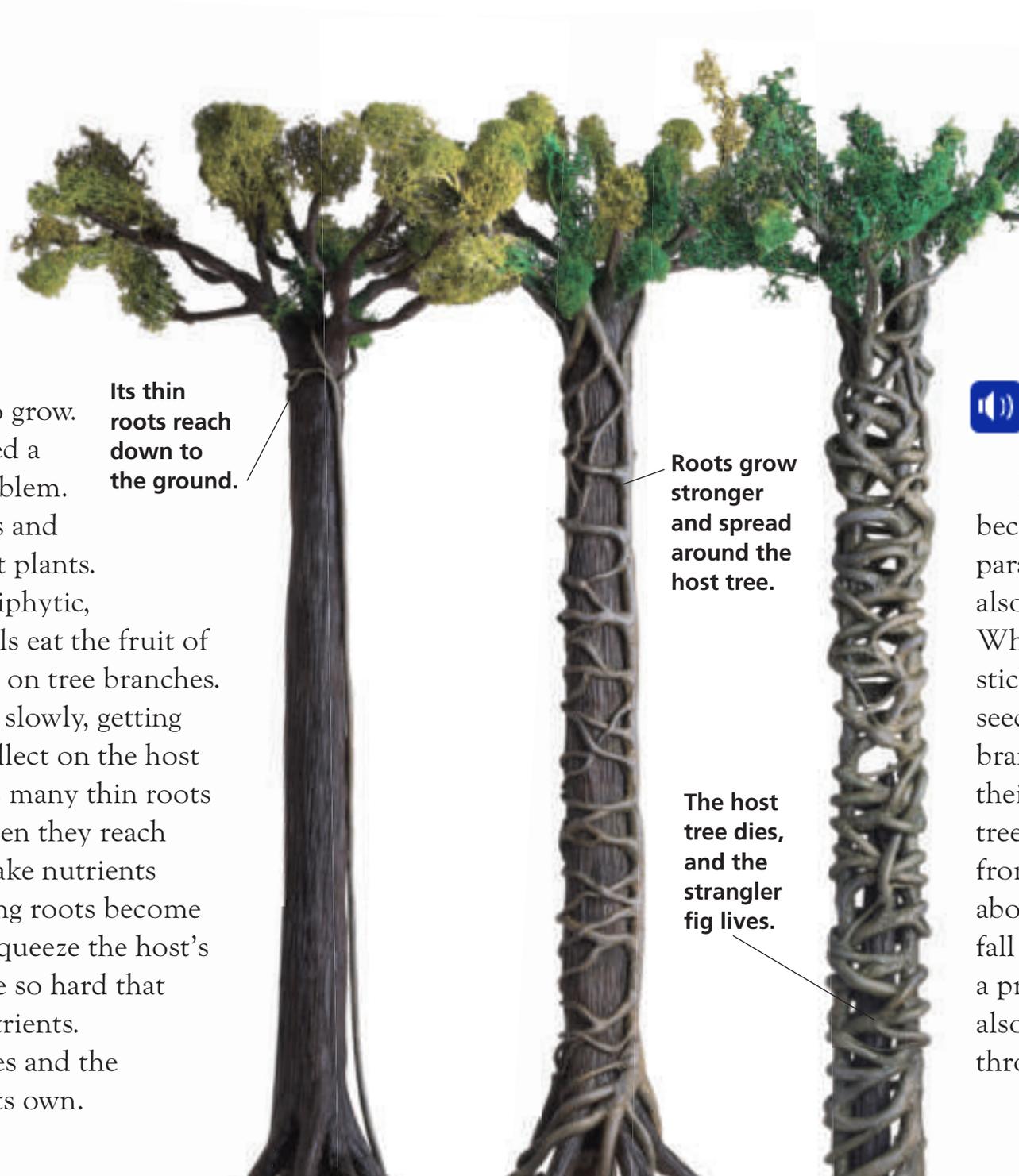
However, one of the largest flowers in the world is a parasitic plant. The rafflesia flower lives on the roots of vines that grow in jungles. When the giant sepals of the flower unfold, the flower gives off a terrible odor that smells like rotting meat. The smell attracts flies, which pollinate the flower.

The dodder is another kind of parasitic plant. When a dodder begins to sprout, the young seedling grows roots and immediately sends out stems that search for host plants. When it finds one, it quickly wraps itself around that plant's stem, like tangled string. Then its haustoria grow into the host plant to suck out nutrients. Once this happens, the dodder's own roots die because they are no longer needed.





A strangler fig attaches itself to a host tree.



Its thin roots reach down to the ground.

Roots grow stronger and spread around the host tree.

The host tree dies, and the strangler fig lives.



Mistletoe is growing in this white poplar tree.



As you have learned, the forest floor is a difficult place for a small seedling to grow. Strangler figs have developed a clever way to solve this problem. They begin life as epiphytes and then grow into independent plants. This is called being hemiepiphytic, or half-epiphytic. As animals eat the fruit of the fig tree, they drop seeds on tree branches. Strangler fig seedlings grow slowly, getting water and nutrients that collect on the host tree. The young plant sends many thin roots down the host's trunk. When they reach the ground, they begin to take nutrients from the soil. As the hanging roots become stronger and thicker, they squeeze the host's trunk. In time, they squeeze so hard that they cut off the flow of nutrients. Eventually, the host tree dies and the tall strangler fig stands on its own.

Mistletoe is unusual because it is usually a parasitic plant, but it can also live on its own. When birds drop its very sticky seeds in trees, the seeds usually attach to a branch. Seedlings send their roots into the host tree's bark and take food from the tree. What about any seeds that do fall to the ground? It's not a problem. Mistletoe can also produce its own food through photosynthesis.





Too Little Water

No plants can live without any water at all. However, some kinds of plants, called succulents, can survive years between rainstorms. They have adapted ways of collecting and storing water. Succulents have very long roots that grow close to the surface of the ground. When it rains, these “rain roots” collect water from a very wide area. Some succulents store water in their thick leaves. Others store water in thick roots. Cacti are succulents that store water in stems covered with a waxy surface that seals in moisture. The pores, or tiny holes, in this waxy covering need to open to take in carbon dioxide. This happens only at night, when it’s cooler and less water can evaporate.

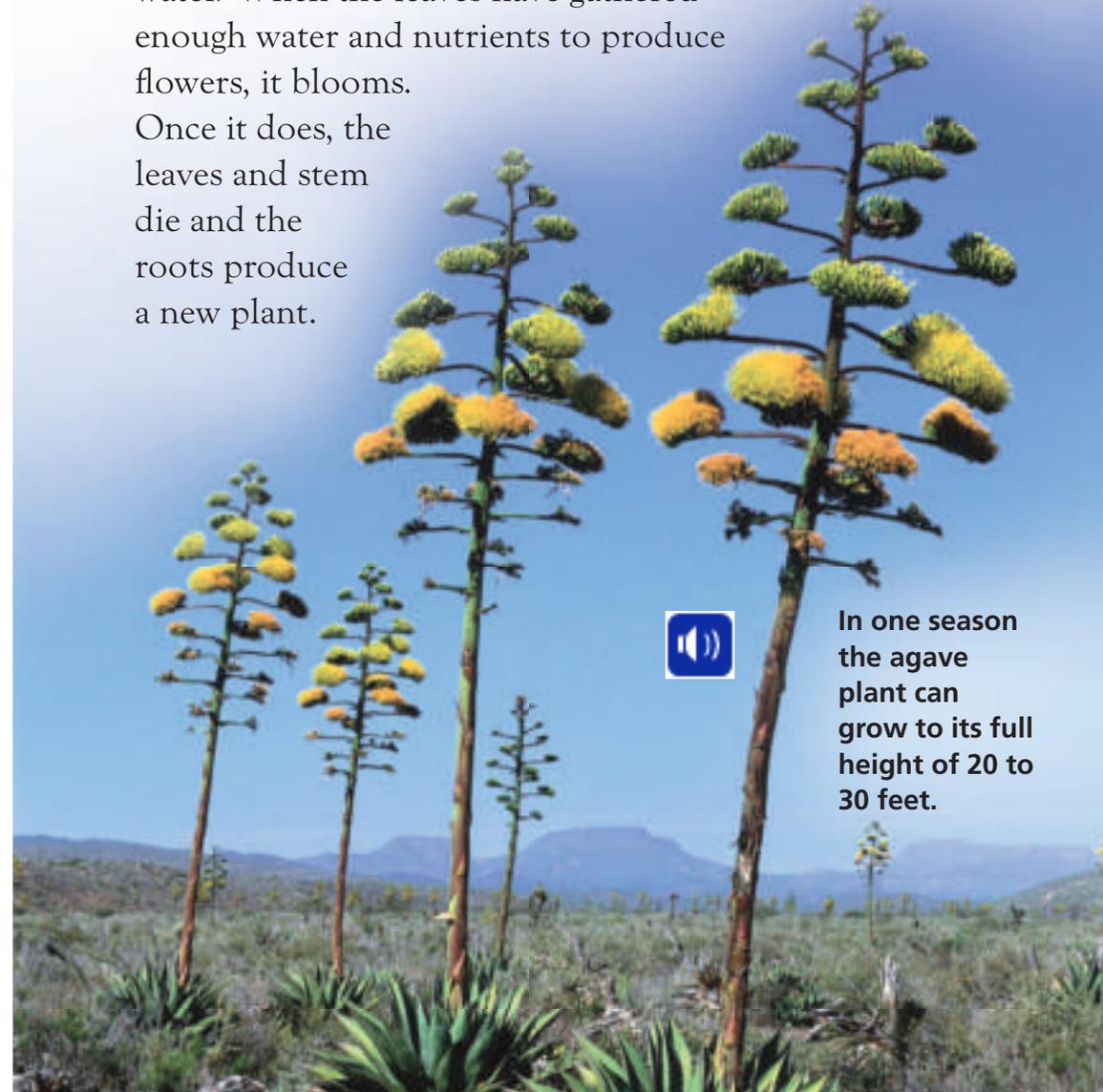


Most of the inside of a cactus stem is water storage.

These succulents store water in thick leaves.



The flowering agave plant grows in the desert. It is also called the “century plant” because it flowers only once after many years. It usually takes eight to twenty years, not one hundred. In the years before it blooms, its fleshy leaves store food and water. When the leaves have gathered enough water and nutrients to produce flowers, it blooms. Once it does, the leaves and stem die and the roots produce a new plant.



In one season the agave plant can grow to its full height of 20 to 30 feet.



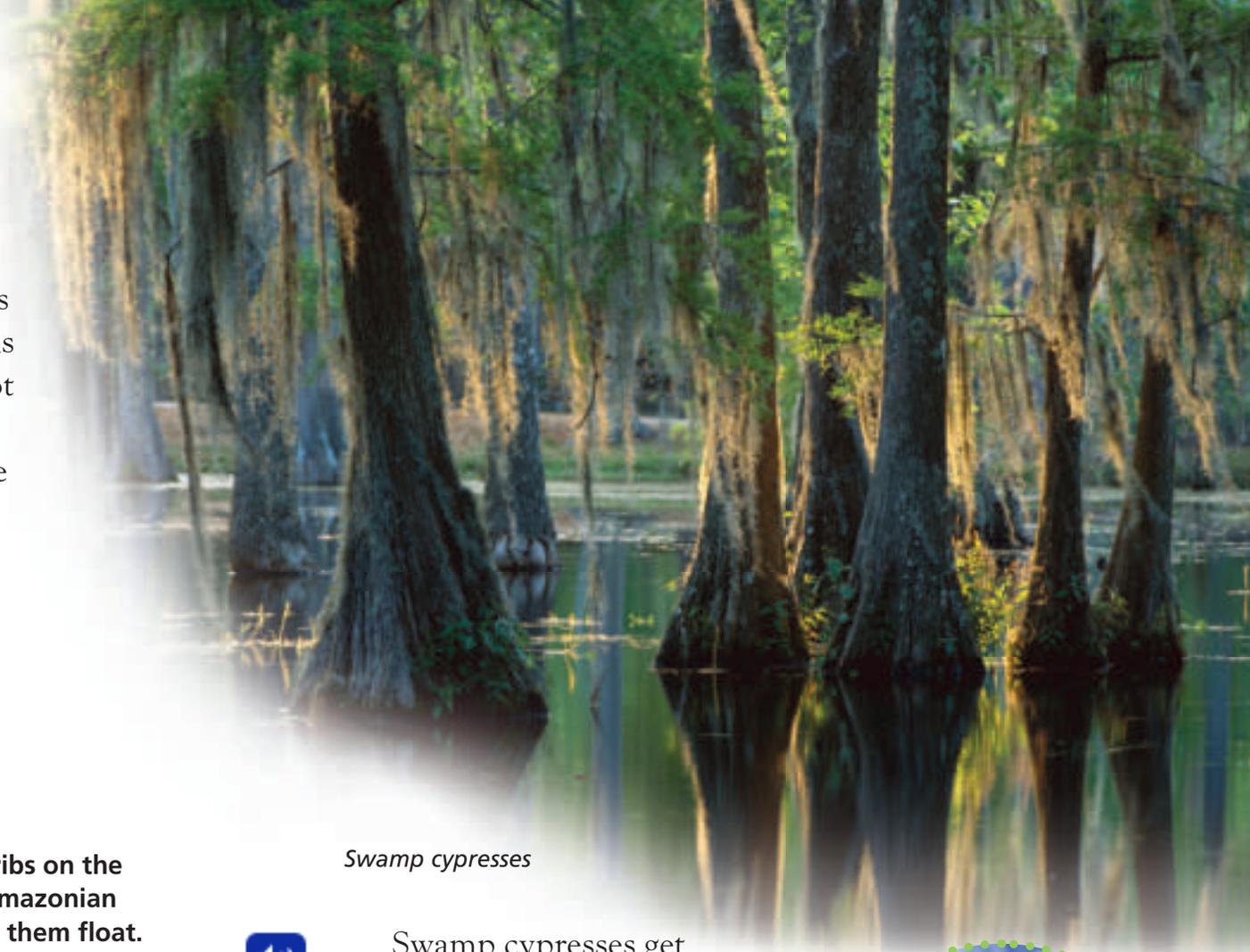


Too Much Water

Too much water can be just as big a problem for plants as too little water. It's difficult for roots to breathe underwater and in mud. To handle this problem, some plants have developed special root systems. Some mangrove trees, for example, have breathing roots that stick up out of the water like snorkel tubes. These roots are covered with a water-resistant bark. Spongy cells inside these tubes take in oxygen and send it to the plant. Mangroves have many shallow roots that help them to stand in the soft mud. They weave together to form a surface that floats like a raft. They also have some longer roots that anchor them to the bottom of the swamp.



Thick, air-filled ribs on the undersides of Amazonian water lilies help them float.



Swamp cypresses



Swamp cypresses get oxygen to their roots in a similar way. They have large bumpy bases, called knees. These knees rise a few feet above the average water level of the swamp. Like the breathing roots of a mangrove, the knees take in oxygen and carry it to the plant's underwater roots.



Mangrove tree





Plant Defenses

Plants can't run away from their enemies, so they have developed methods of self-defense. Some plants, such as cacti, have weapons such as razor-sharp spines and thorns. These not only keep animals from chewing on them, but they usually discourage the animals from even getting close.

Other plants use chemicals to defend themselves. For example, when an animal brushes past a stinging nettle plant, it is pierced with sharp thorns, called stings. But that's not the end!



Nettle stings are filled with chemicals.



The leaves of the nettle are covered with stings.

Stinging nettle plant



Ant house plant



The stings inject a chemical into the animal's skin that causes a painful reaction. Chemicals in some other plants give them a terrible taste and smell that animals avoid.

Still other plants form partnerships with animals. For example, ant house plants have hollow tunnels that ants can use as homes. In return, ants protect the plants and give them important minerals.

So plants can steal and share. They can attack and defend. They can survive with too little water or too much water. If you can't decide which plant is the weirdest, you might just settle for thinking that they are all quite amazing!



Glossary

cilia	hairs along the edge of a leaf or other structure
debris	scattered pieces or bits
epiphytes	plants that grow on other plants
nutrients	substances that are required by living things for energy, growth, and repair of tissues
pores	very small openings
succulents	plants having thick, fleshy, water-storing leaves or stems
tentacles	long, slender, flexible growths on an organism used to touch, hold, or move something

What did you learn?

1. How do bromeliads get water?
2. Describe the relationship between ant house plants and ants.
3. How is the agave plant able to bloom in the dry desert?
4. **Writing in Science** Strangler figs begin life as parasitic plants before becoming independent. Describe how they are able to do this. Use details from the book to support your answer.
5. **Draw Conclusions** Think about the kinds of environments where the plants in this book live. Look at the pictures for clues. What kind of conclusion can you draw about where weird plants live?

