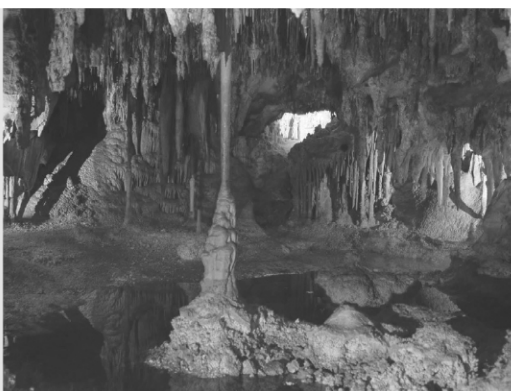


Worlds Beneath Our Feet



photos courtesy NPS

Mini Fact:

The longest cave is Mammoth Cave in Kentucky. It's 346 miles long.

Did you visit a cave this summer? They may seem scary, but we can think of caves as Earth's museums. Much of what we know about the first days of people on Earth we learned from cave discoveries.

Cave paintings were man's first artwork. Humans wrote some of their first words on cave walls long before paper was invented.

Caves also reveal to us the layers of the Earth, the materials found in them, and the forces that make them.

More than 40,000 caves have been found in the United States. Some experts think we have discovered only about one-third of all the caves that exist in the world.

How are caves made?

Caves can be created in several different ways by powerful forces of nature.

- **Sea caves** are created by waves pounding against weak rocks along rocky shores.

- **Solutional caves** are created when water mixed with a weak acid dissolves away rocks such as limestone. They are called "solutional" because they are formed in rocks that can be dissolved by water. About one-fifth of the land in the United States has the type of landscape, called **karst**, where this kind of cave can form.



Sea caves at Apostles Island National Seashore.

- **Lava caves** are created by the cooling of lava. A crust forms as lava cools. When the molten lava drains away, it leaves behind long tubes.

Other types of caves can be created by wind, earthquakes and collapsed rocks.

Underground wonders

Over hundreds of years, tiny crystals build up one on top of another to make a **speleothem** (SPEE-lee-eh-them), or cave deposit.

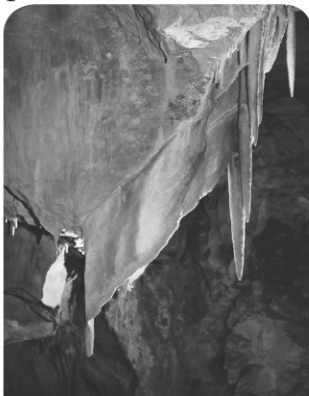
On average, it takes 100 years for one cubic inch of a cave deposit to form. The most common examples of speleothems are:

- **Stalactites** (stuh-LAK-tyts): Formations that hang from the ceiling. They look like icicles and have sharp points.

- **Stalagmites** (stuh-LAG-myts): Formations that rise from the floor. They usually are formed by water dripping from stalactites. They have rounded tops.

- When a stalactite grows down and meets a stalagmite growing up, the formation is called a **column**.

- A **drapery** is a thin sheet that hangs in folds like curtains. The one shown here is in Lehman Caves at Great Basin National Park.



Try 'n' Find

Words that remind us of caves are hidden in this puzzle. Some words are hidden backward or diagonally, and some letters are used twice. See if you can find:



CAVE, COLUMN, CONDITIONS, CRICKET, CRYSTALS, DEPOSIT, DRAPERY, DWELLERS, KARST, LAVA, LAYERS, PAINTINGS, PIGMENT, SEA, SOLUTIONAL, SPELEOTHEM, STALACTITE, STALAGMITE.

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

Cook's Corner

Tomato Tornado Soup

You'll need:

- 4 to 6 giant tomatoes
- 1 onion, chopped into big pieces

- 2 vegetable bouillon cubes with herbs or sea salt
- 2 cups water



What to do:

1. Put all ingredients in a big pot. Bring to a fast boil, then stir really well to mix everything up.
2. Turn heat to low and simmer for 10 to 15 minutes with the pot lid tilted. Turn off the heat and let cool.
3. When soup is cool, scoop into a blender and blend until smooth, adding a little water if it's too thick. Reheat in the big pot. Serves 4.

Adapted from "The Help Yourself Cookbook for Kids" with permission from Andrews McMeel Publishing (andrewsmcmeel.com).

* You'll need an adult's help with this recipe.

7 Little Words for Kids

Use the letters in the boxes to make a word with the same meaning as the clue. The numbers in parentheses represent the number of letters in the solution. Each letter combination can be used only once, but all letter combinations will be necessary to complete the puzzle.

1. walk aimlessly (6) _____
2. paid for (6) _____
3. noise from a team's fans (5) _____
4. cloth from a plant (6) _____
5. a place that lends books (7) _____
6. group of sheep (5) _____
7. connect (6) _____

TT	AT	CH	CHE
BOU	LIBR	TA	FL
CO	OCK	WAN	ARY
ER	DER	ON	GHT

Answers: wander, bought, cheer, cotton, library, flock, attach.



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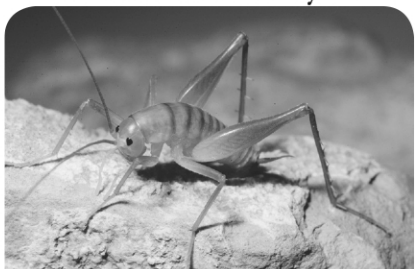
Living in a cave

Conditions in caves are difficult. To survive, cave animals must adapt to the special conditions.

Cave animals must be good at finding food. For example, cave fish are blind, but some have receptors in their heads that detect movement in the water. If food falls into an underground river, the fish can sense the movement, swim over and grab a snack.

Cave critters

Cave dwellers are animals whose bodies have adapted over time so they can spend all of their lives in caves. They live in the part of caves called the **dark zone**. Most are blind and could not survive above ground. Cave fish, cave shrimp, millipedes and cave salamanders are a few examples.



Caves crickets have adapted to life in caves. Notice their lack of pigment, or color, and their long feeling antennae.

Some other species of mammals, insects, birds and amphibians may visit caves or live in them part time. These include raccoons, skunks, frogs, bats, crickets and earthworms.

Resources



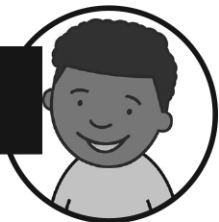
On the Web:

- bit.ly/MPgeology
- bit.ly/MPcaves

At the library:

- "Caves" by Ellen Labrecque

Mini Jokes



Cameron: Why do baseball pitchers stay away from caves?

Callie: They don't like bats!

Eco Note



Speleothems often form annual growth rings similar to those found in trees, and these may be deposited over hundreds or even thousands of years. Because the amount of water making its way into the caves determines the amount speleothems grow, their layers can indicate times of both heavy precipitation and drought in the area. By studying these formations, scientists can reconstruct climate conditions from the past.

adapted from climate.gov

For later:

Look in your newspaper for items about national parks or monuments in your area.

Teachers: For standards-based activities to accompany this feature, visit: bit.ly/MPstandards. And follow The Mini Page on Facebook!



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