

## GLOSSARY

**CAVE** = A natural opening in the ground extending beyond the zone of Light and large enough to permit the entry of Man.

**SPELEOLOGY** = The scientific study of caves.

**SOLUTION** = Are formed in carbonate and sulfate rocks such as limestone, dolomite, marble, and gypsum by the action of slowly moving ground water that dissolves the rock to form tunnels, irregular passages, and even large caverns along joints and bedding planes. Most of the caves in the world - as well as the largest - are of this type.

**LAVA CAVES** = Are tunnels or tubes in lava formed when the outer surface of a lava flow cools and hardens while the molten lava within continues to flow and eventually drains out through the newly formed tube.

**SEA CAVES** = Are formed by the constant action of waves which attacks the weaker portions of rocks lining the shores of oceans and large lakes. Such caves testify to the enormous pressures exerted by waves and to the corrosive power of wave-carried sand and gravel.

**GLACIER CAVES** = Are formed by melt water which excavates drainage tunnels through the ice.

**ICE CAVES** = Solution caves or lava caves within which ice forms and persists through all or most of the year.

**EOLIAN CAVES** = Shallow caves formed by the sandblasting effect of sand being thrown against a rock face.

**WIND CAVES** = Solution caves where strong air currents blow in and out of the cave as the atmospheric pressure changes.

**WATER TABLE** = The upper surface of the saturated zone where all the rock and its pores are filled with water.

**SPELEOTHEMS** = Decorative dripstone features in a cave.

**STALACTITES** = Deposits of calcite which hang downward from the ceiling.

**STALAGMITES** = Deposits of calcite which grow upward from the floor as a result of water dripping from the overhanging stalactites.

**FLOWSTONE** = Sheets of calcite that are deposited along the walls or floor by flowing water.

**HELICTITES** = Twisted or spiraling cylinders or needles.

**SPELUNKERS** = Sightseers and explorers of caves.

**COLUMN** = This forms when a stalagmite and stalactite grow until they join.

## QUIZ

1) When water combines chemically with carbon dioxide, it forms a weak solution called:

- A) Hydrochloric Acid
- B) Carbonic Acid
- C) Sulfuric Acid
- D) Calcium Carbonate

2) The main mineral in limestone is:

- A) Carbon
- B) Oxygen
- C) Calcium Carbonate
- D) Magnesium Sulphate

3) During the civil war caves in Kentucky, Tennessee, Virginia, Georgia and Missouri mined this as an essential ingredient of gunpowder:

- A) Nitrates
- B) Carbonates
- C) Sulphates
- D) Helictites

4) This material has been mined as a phosphate fertilizer in the Southern U.S. and Mexico.

- A) Limestone
- B) Dogtooth spar
- C) Bat guano
- D) Stalagmites

5) Calcite deposits which grow downward in a cave is also know as:

- A) Stalactites
- B) Stalagmites
- C) Helictites
- D) Flowstone

6) The constant action of waves which attacks the weaker portion of rocks lining the shores of oceans and large lakes is known as:

- A) Solution Caves
- B) Lava Caves
- C) Glacier Caves
- D) Sea Caves

Where might you expect to find the following features

7A) Are formed in limestone dolomite and marble.

7B) Shallow caves formed by sandblasting.

7C) Contains tunnels, irregular passages and large caverns.

7D) Drainage tunnels in ice.

7E) Air moves in and out of a cave because of atmospheric changes.

7F) Tunnels or tubes in lava.

7G) Formed by the constant action of sea waves.

- |                   |                  |
|-------------------|------------------|
| A) Solution caves | C) Sea caves     |
| B) Lava caves     | D) Glacier caves |
| E) Eolian caves   | F) Wind caves    |

## TEACHER'S ACTIVITIES:

### PRE-VIEWING ACTIVITIES:

1. Ask students if they have ever visited a cave. Discuss what they remember.
2. Discuss how water moves underground, not in water filled reservoirs, but through porous rocks such as sandstone and siltstone.
3. Collect some pictures of caves.

### POST-VIEWING ACTIVITIES:

1. List the new terms you recall.
2. Explain the process of cavern formation.
3. Review the chemical process in cavern formation.
4. Why are most caves found in sedimentary rock?
5. If calcite is available, show it to the class. Then demonstrate how a dilute hydrochloric acid can work on it.

### HOME ACTIVITIES:

1. Find where the closest cave is in your area.
2. Can you find examples of caves formed in igneous or metamorphic rock (lava tubes, lava tunnels, ocean caves from water).
3. Are any caves national parks? Where are they located (Mammoth, Jewell, Wind, Lehman, Oregon Cave, Cordsbury).

## QUIZ ANSWERS

- |     |   |
|-----|---|
| 1)  | B |
| 2)  | C |
| 3)  | A |
| 4)  | C |
| 5)  | A |
| 6)  | D |
| 7A) | A |
| 7B) | E |
| 7C) | A |
| 7D) | D |
| 7E) | F |
| 7F) | B |
| 7G) | C |

## Physical Geography II Series

# THE GEOLOGY OF CAVES & CAVERNS

KG1165VD

### PROGRAM DESCRIPTION

This program illustrates what water can do below the earth's surface over long periods of time. Using animated and real life sequences, the program explores some important caves and their formations. The objective is to acquaint the student with underground water, and how it dissolves limestone to form caves and caverns, stalagmites, stalagmites and boxfork formations.

This program examines how water moves through pores in underground rock. If the water collects small amounts of carbon dioxide as it falls through the air it becomes slightly acidic which in turn dissolves limestone. Eventually these small openings will become enlarged to form caves and caverns. This program investigates cave deposits such as stalagmites and helectites, and shows the formation of caves.

## TEACHER / STUDENT GUIDE

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