THE GROWTH of SPELEOTHEMS

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Features such as **stalactites** and **stalagmites** are technically called **speleothems**. The word "speleothem" is derived from the Greek words "spelaion"(cave) and "thema" (deposit). The process by which speleothems are formed is the reverse of that by which limestone is dissolved to produce caves. Speleothems consist mainly of **calcite**, the same mineral that makes up limestone, in its crystallized form.

Conditions are right for the process to begin when the water table lowers and air enters the cave. Calcite is dissolved from the limestone above the cave by slightly acidic water as it percolates downward through the soil. When the water reaches the cave, it redeposits the calcite, and forms a stalactite or other speleothem.

In the soil, where plant and animal remains are decaying, the carbon dioxide content is about 300 times that of the outside atmosphere. The carbon dioxide combines with the water and produces **carbonic acid**, which in turn dissolves some of the limestone it passes through as it moves downward toward the cave. When the acidic water reaches the cave, the carbon dioxide escapes the water, just as it does when opening a bottle of soda. As the carbon dioxide is released, calcite is precipitated (redeposited) on cave walls, ceilings and floors.

Speleothems form at varying rates as calcite crystals build up, one upon the other. Although it takes an average of 120 years for a cubic inch to form, several factors can determine the rate of growth. The temperature outside, which affects the rate of decay of plans and animals (amount of carbon dioxide in the soil), and the amount of rainfall are two important factors. The shape of the speleothems is determined by how the acidic water enters the cave (by dripping, seeping or splashing) and how the water stands or flows after entering the cave. Stalactites are the most common speleothems.

The color of speleothems is determined by their mineral content. Pure calcite is white and almost colorless. Iron and other minerals combine with calcite crystals to add shades or red, orange and black to the color of speleothems.

Speleothems in Glenwood Caverns
Due to the dry Colorado climate, geologists estimate that speleothems in Glenwood Caverns take approximately 1000 years (rather than the average 120 years) for a cubic inch to form. Glenwood Caverns hosts a wide variety of marvelous cave formations including stalactites, stalagmites, cave bacon, soda straws, cave popcorn, flowstone, moonmilk, aragonite crystals, helictites, gypsum flowers, and cave clouds.

THE GROWTH of SPELEOTHEMS (continued)