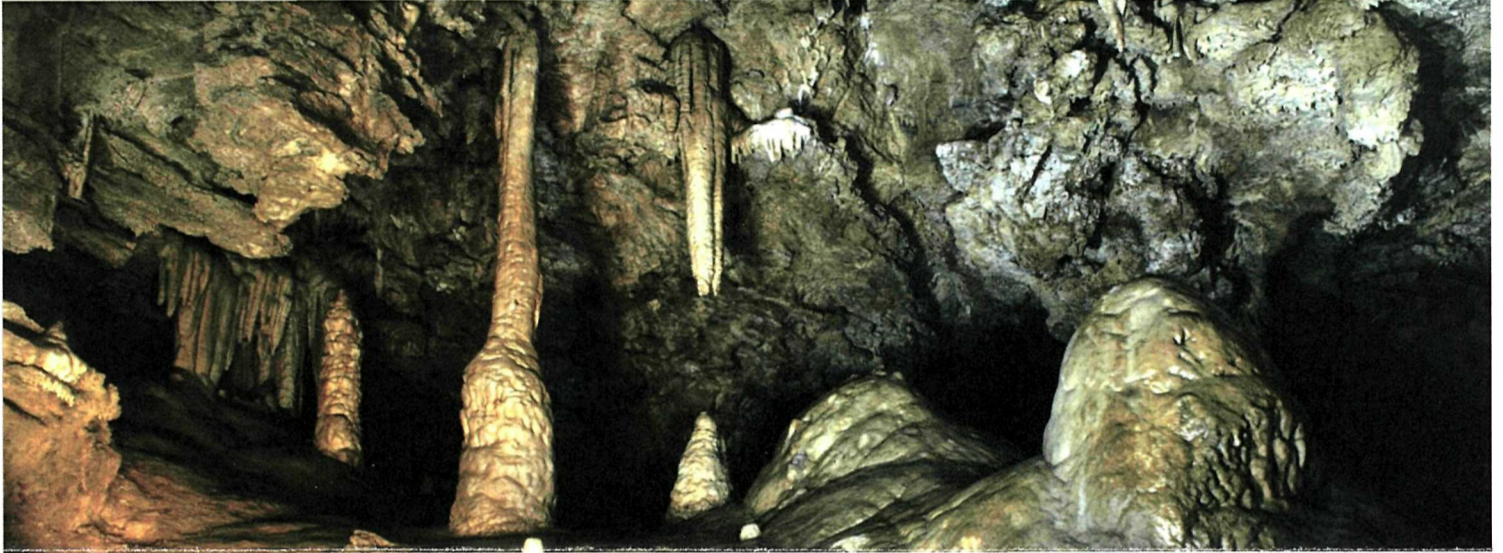




## Geology 101



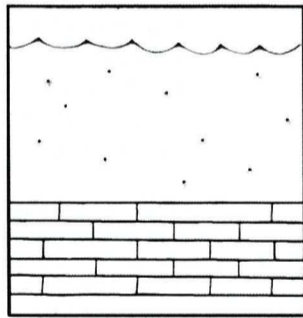
### Geology 101

Geology 101 gives the reader a basic understanding of cave formation.

### Formation of the Marble

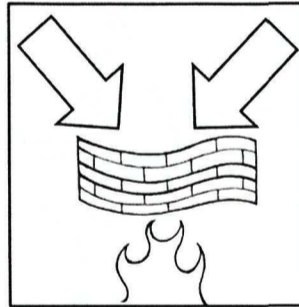
Remember that windy mountain road you drove up today? Well, 250 million years ago (before the first dinosaurs were on the planet), you didn't have to drive up here, because this was an ocean; all you had to do was swim! You wouldn't have had to worry about it being too cold, because it was as hot as bath water. It was so hot and full of acid that almost all of the sea animals died. One of the only living things in the water was bacteria. This bacteria was able to make the rock called limestone.

Over time, heat and pressure were applied to the limestone, and changed it into the rock we see today called marble. Think about it like baking a cake: you begin with the cake batter (limestone), put it in the oven (adding heat and pressure) and out comes a cake (marble)! Limestone and marble are made of the same things, just like batter and cake are made of the same ingredients. But when you cook the limestone or batter, they turn into something new.



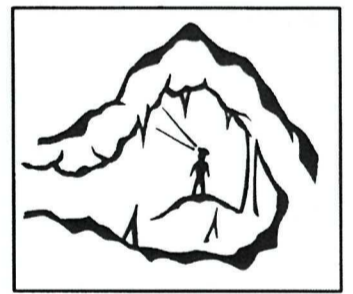
Limestone Reef

+

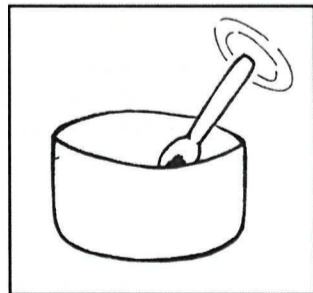


Heat and Pressure

=

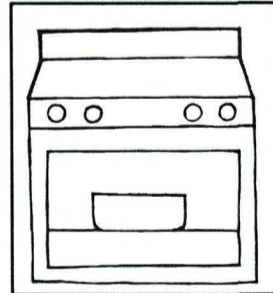


Marble (Cave!)



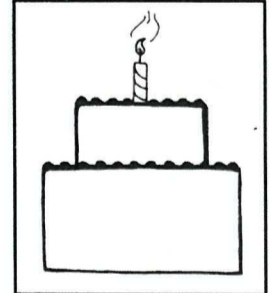
Cake Batter

+



Heat and Pressure

=



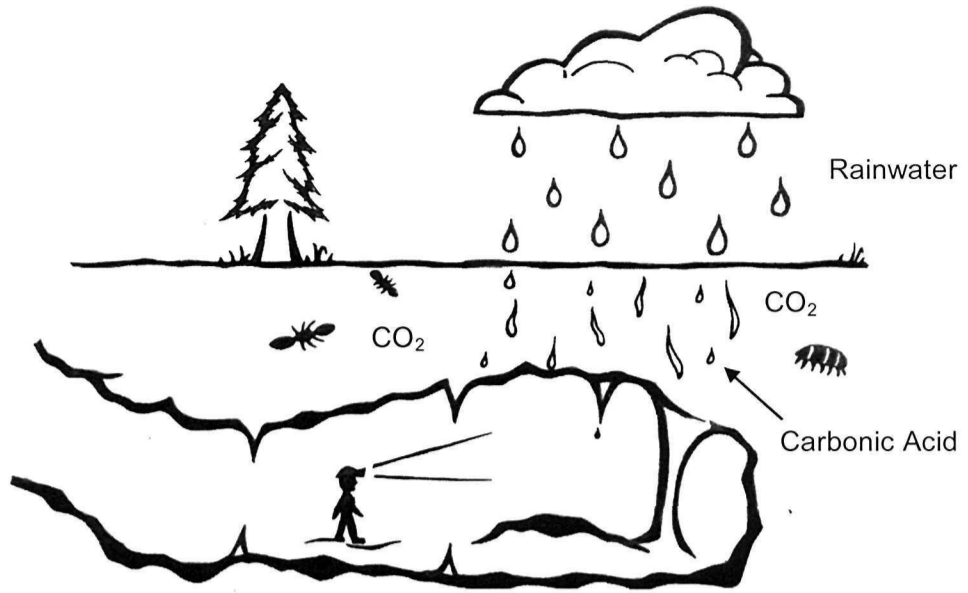
Cake!

### Creation of the Cave

Take a deep breath. When you breathe out, you are releasing carbon dioxide, also called CO<sub>2</sub>. All of the bugs and critters that live in the soil breathe out carbon dioxide too. Rain water falls from the sky and mixes with carbon dioxide in the soil. That forms a weak acid called carbonic acid. When the acid touches this special rock called marble, it is actually able to dissolve it away! This makes the "holes" in the rock that you can walk through.

Carbonic acid also comes from bacteria that live in plaque on your teeth. They eat sugar and breathe out carbon dioxide, which makes carbonic acid. The acid can actually make holes in your teeth, which we call a cavity (cave-ity). That is why it is very important to brush your teeth every night so the plaque does not build up! Image on following page.

## Creation of the Cave



## Cave Formations

Where do all of the cave formations come from? Most of them are made of a common mineral called calcite. Eggshells and cement are partly made of calcite. As water drips through the cave, it bubbles off carbon dioxide thus reducing the acid and releasing calcite.

When the water and calcite find an open area, the water can evaporate away, leaving just the calcite behind. Depending on the way the water moves in the cave, you get different formations. In our cave, formations may grow at an average rate of 1 inch every 1,000 years!

### Stalactites



Stalactites are formations that hang from the ceiling. These form when the water and calcite drip straight down. You can remember their name because they have to hold on *tight* to stay there.

### Soda Straws



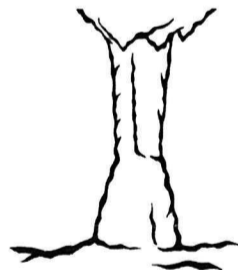
Soda Straws are "baby" stalactites. The difference is that they are thin and hollow, just like a straw. Once they get older, they often become solid and wider and are still called stalactites, though of a different type than are soda straws..

### Stalagmites



Stalagmites build up from the ground, often beneath a stalactite. Water that drips off the stalactite will fall onto the stalagmite, and deposit the calcite there. You can remember the name because you *might* trip over them!

### Columns



Columns are formed when a stalactite meets up with a stalagmite and reaches from floor to ceiling.

### Flowstone



Flowstone is formed when a sheet of water runs over other rocks. Some people think the rock is frosted because it looks so smooth and shiny.

### Drapery



Draperies are a combination of flowstone and stalactites. First water flows on the rock, then drapes over it to form what looks like ribbons or bacon if it has reddish or orange streaks.

### Cave Popcorn



Cave popcorn is a formation often found near entrances and very dry areas in the cave. The water dries up very fast, leaving little "bumps" of calcite cave popcorn.