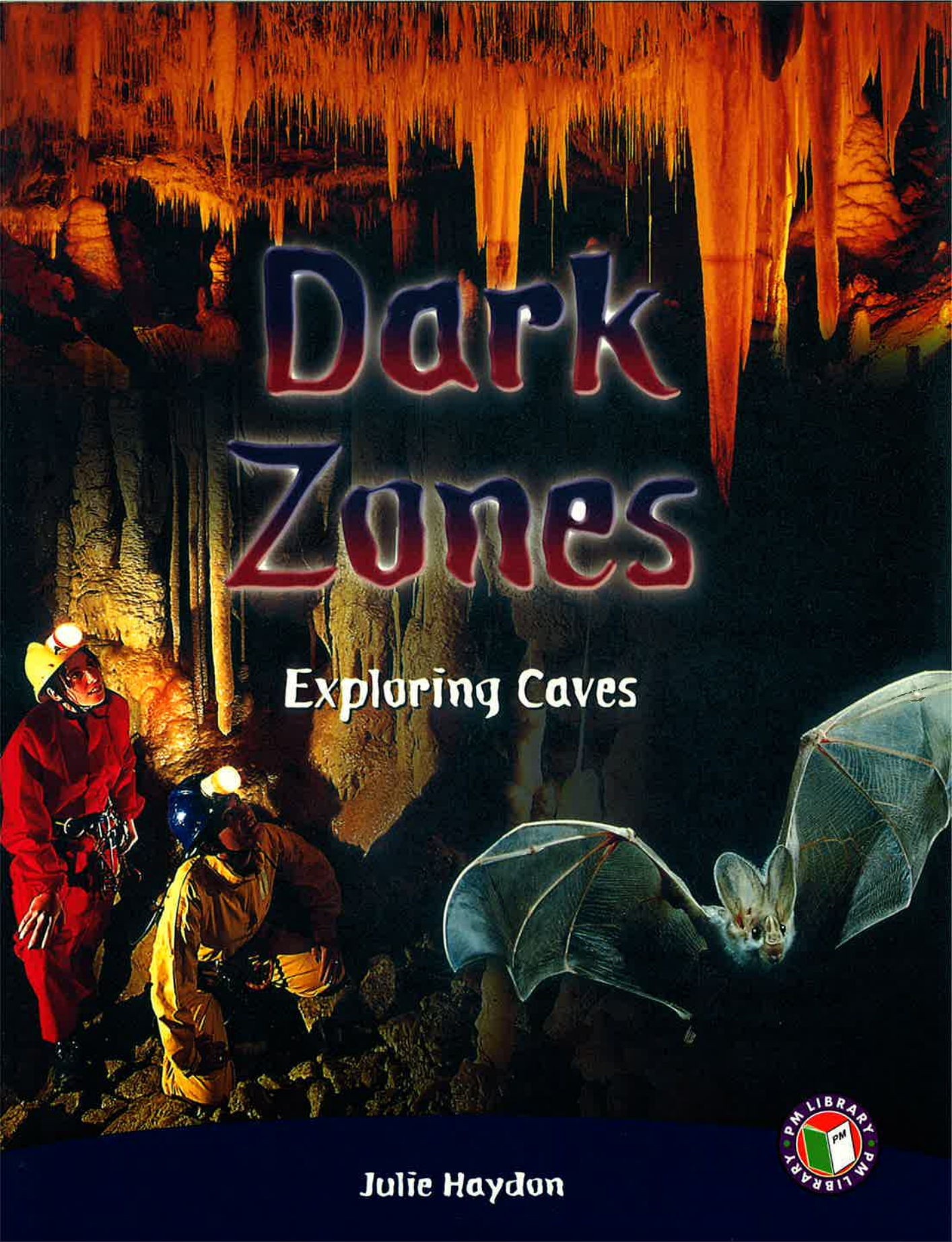
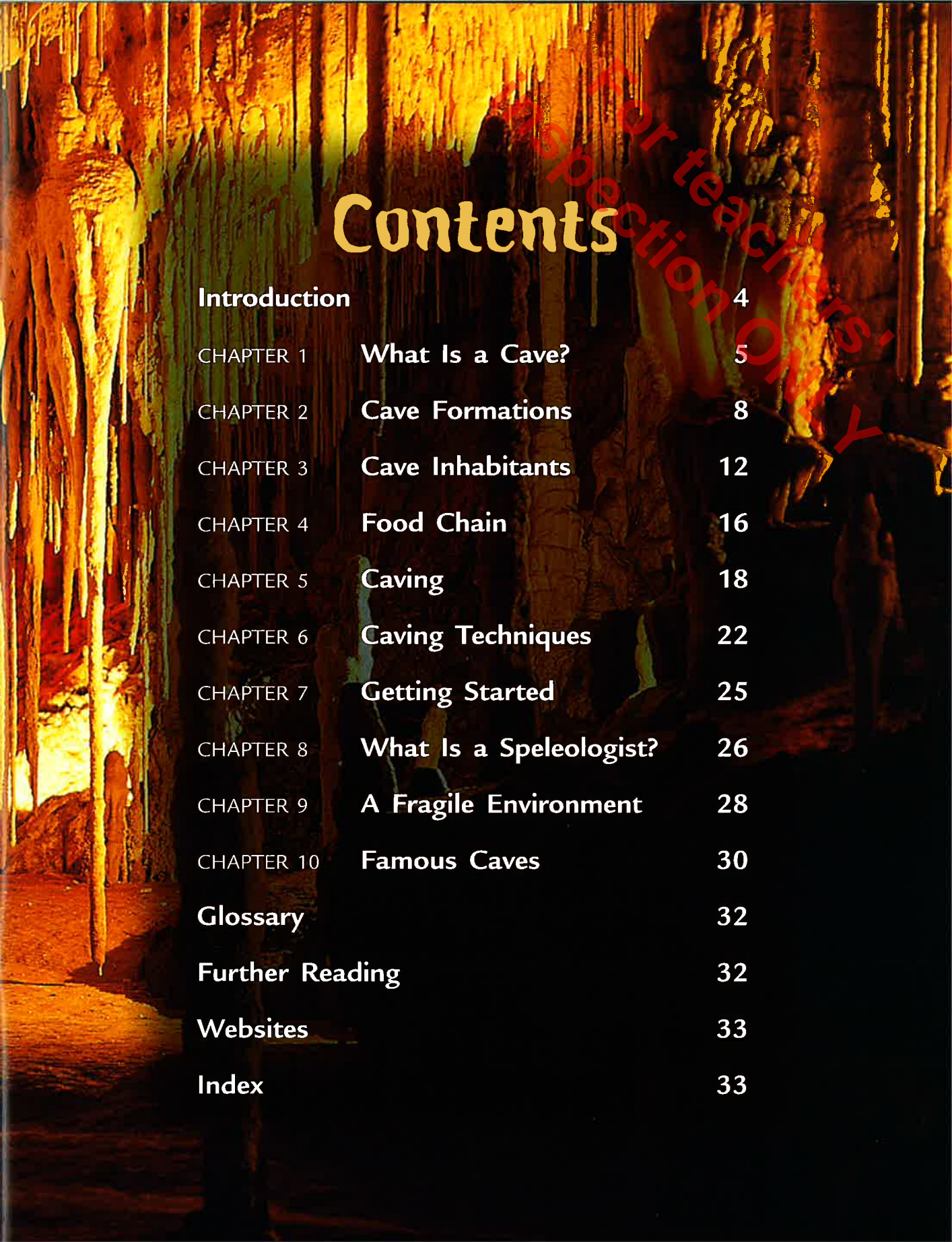

Dark Zones
Exploring Caves
PM LIBRARY
PM
Julie Haydon



For teachers' inspection Only

Contents

Introduction		4
CHAPTER 1	What Is a Cave?	5
CHAPTER 2	Cave Formations	8
CHAPTER 3	Cave Inhabitants	12
CHAPTER 4	Food Chain	16
CHAPTER 5	Caving	18
CHAPTER 6	Caving Techniques	22
CHAPTER 7	Getting Started	25
CHAPTER 8	What Is a Speleologist?	26
CHAPTER 9	A Fragile Environment	28
CHAPTER 10	Famous Caves	30
Glossary		32
Further Reading		32
Websites		33
Index		33



Introduction

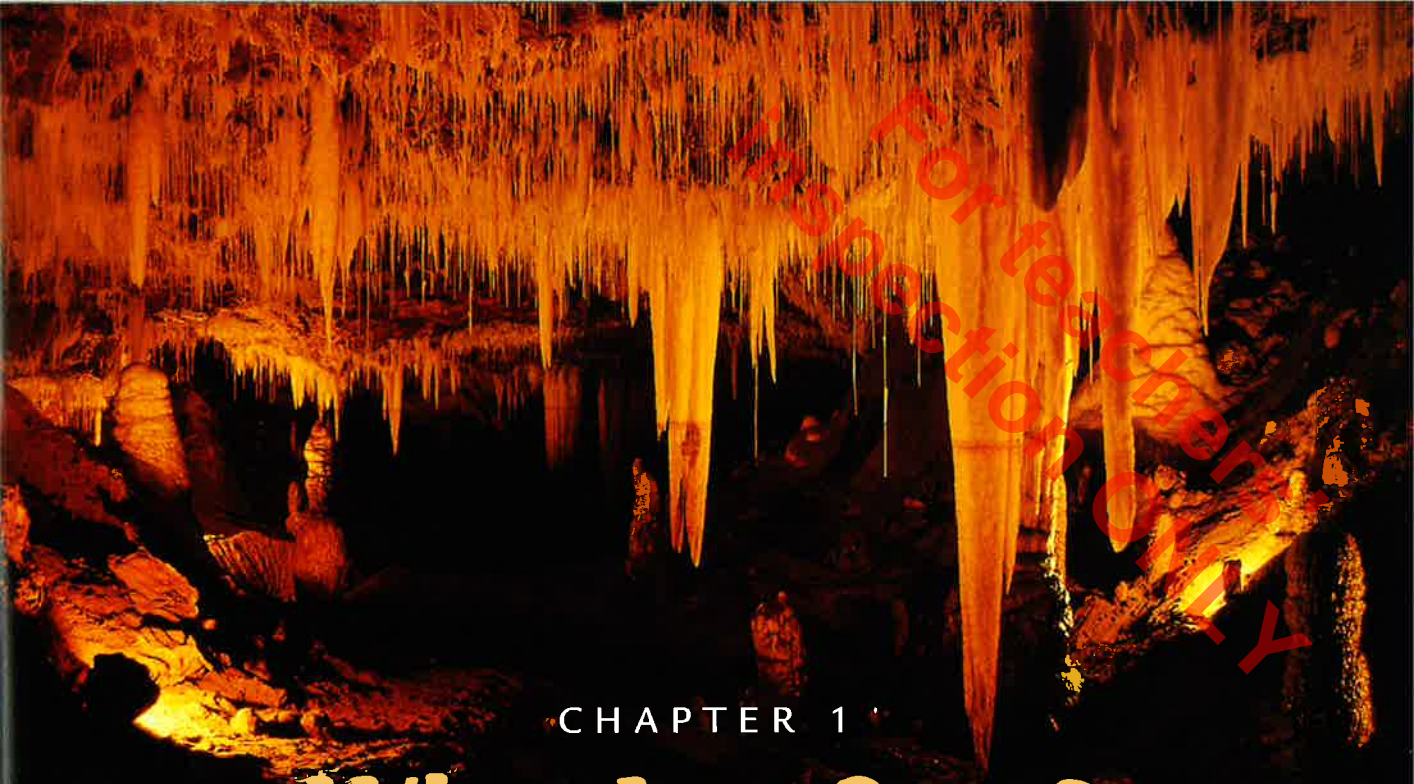
Imagine what it's like to explore a cave. It is so exciting to be under the earth's surface. You move from what is known as the *twilight zone* through to the *dark zone* of the cave. There is no sunlight here, no green plants, no birds. The only light is from your flashlight or the light on the front of your helmet. When you speak, your voice echoes in the cave's chamber. And all the while, you can hear the constant drip, drip, drip of water.

In the small pool of light created by the flashlight, you see a *stalagmite*. It is as tall as you are and is a rich, glowing orange. Above it is a *stalactite*. Perhaps, in a few thousand years, they will join up and form a *column*.

Most people think that caves are dark and scary places, cold and lifeless like a tomb, but caves do contain life – you just have to look closely!

Exploring caves can be a dangerous activity. Never enter a cave alone or without the proper training or equipment.

For teachers' inspection ONLY



For teacher inspection only

CHAPTER 1

What Is a Cave?

A cave is a natural cavity beneath the earth's surface. Some caves are small. Others, like the world's largest cave system, Mammoth Cave in Kentucky, USA, are enormous. Mammoth Cave is over 560 kilometres long! The only way to explore and map a cave is to walk, crawl, wade, climb (and sometimes scuba dive) through its interior.

But it would be wrong to picture Mammoth Cave as just one long tunnel. It has winding passages that spread over numerous levels and the system also contains rivers with names like Echo and Styx. Water is common in many caves. It creates most of the spectacular rock formations which are found inside caves.

CAVE QUIZ

What is the difference between a cave and a mine?

Answer: A cave is made by nature, a mine is made by people.

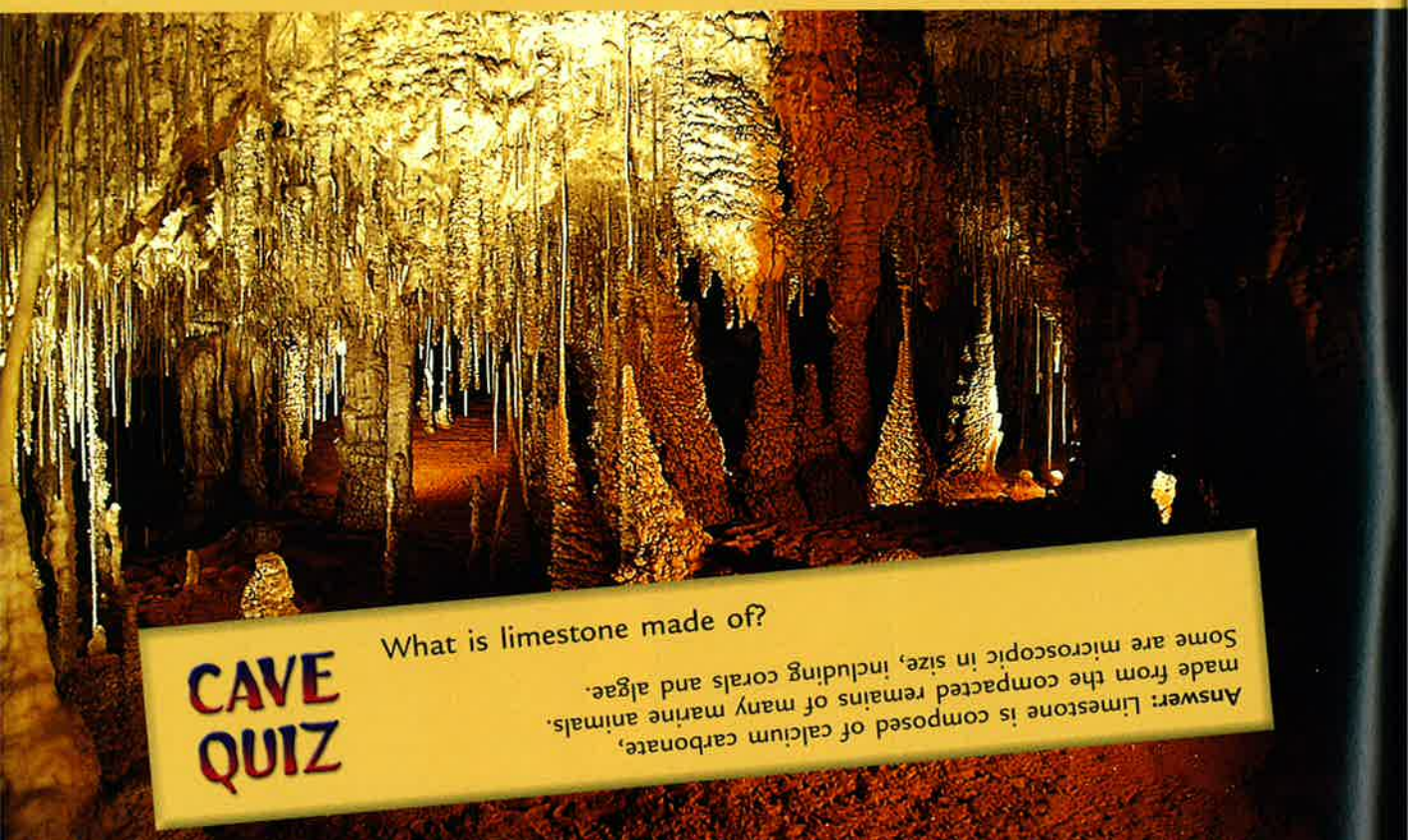
How Are Caves Formed?

For teachers' inspection ONLY

Limestone and Water

Imagine you are standing in a huge cave. It is very quiet. The light from your flashlight shows the roof of the cave chamber far above. Stunning rock formations hang from the roof and also thrust upwards from the ground. Ahead is an inky river. It moves almost silently. In its waters are strange, pale creatures. They are blind.

You step forward and touch the cave wall. This huge cave is made of *limestone*. The world's largest and deepest caves are formed from limestone and water. It is hard to believe that this cave did not always exist, and in its place was solid limestone. You wonder how this cave was created. The illustrations on the next page show how a cave forms in limestone rock.

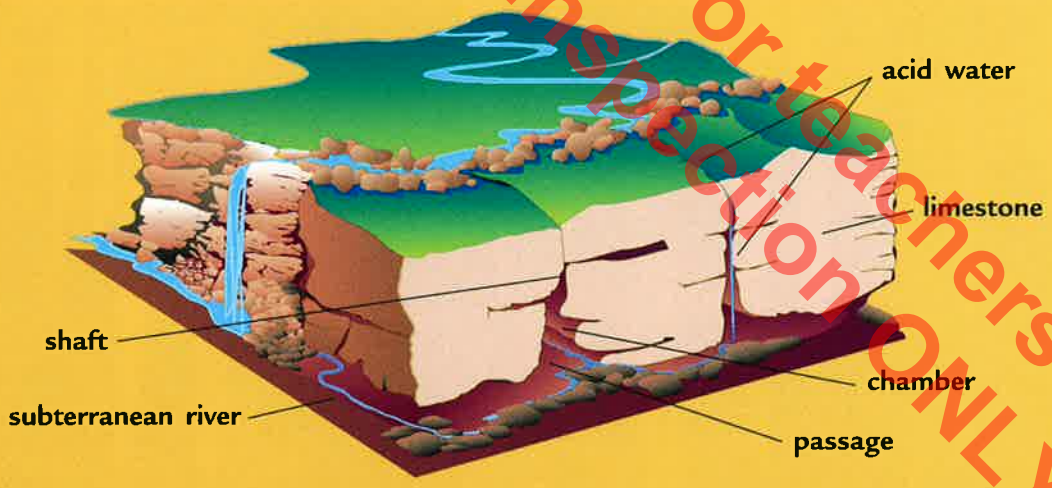


CAVE QUIZ

What is limestone made of?

Answer: Limestone is composed of calcium carbonate, made from the compacted remains of many marine animals. Some are microscopic in size, including corals and algae.

For teachers' inspection ONLY

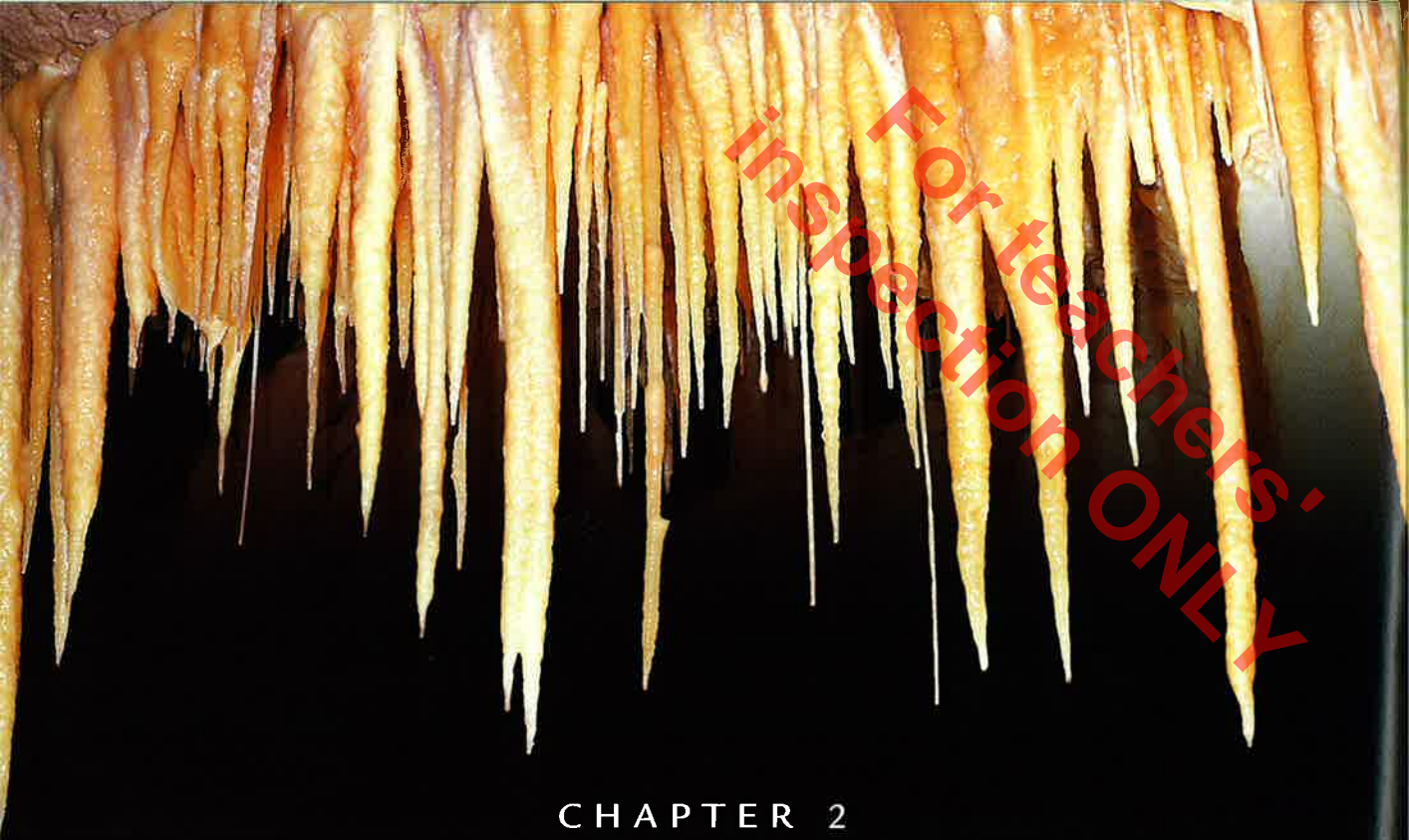


1. When rain falls, it absorbs a gas called *carbon dioxide* from the air and the soil. This gas turns the water into a weak acid, which seeps into cracks in the limestone rock beneath the soil.

2. The acid water begins to dissolve the rock. Holes form. More acid water seeps into the holes, enlarging them. Over many thousands of years, these holes become the chambers, passages and shafts of a cave.



3. Rain continues to fall, seeping down through the cave. *Subterranean* rivers form. The rivers *erode* more limestone and the water travels further down through the rock.



For teachers' inspection ONLY

CHAPTER 2

Cave Formations

Nature can create beautiful things — just look at the cave formations in the photograph above. These formations come in varied colours such as white, tan and red. They can be shaped like icicles, cones, flowers, crazy twists and curls, and even curtains. Cave formations are called *speleothems* and they help transform the dark interior of a limestone cave into an exciting wonderland for cavers.

Speleothems, like the caves themselves, are formed by water. The part of the limestone that is dissolved and carried away by acid water is called *calcium carbonate*. As the water travels through the cave, it leaves behind a mineral called *calcite*. Most speleothems are made from calcite. The best known speleothems are stalactites, which grow down from the ceiling, and stalagmites, which grow up from the ground.