



Eye Wonder

Earth

Open your eyes to a world of discovery





Eye Wonder

Earth





LONDON, NEW YORK, MUNICH,
MELBOURNE, and DELHI



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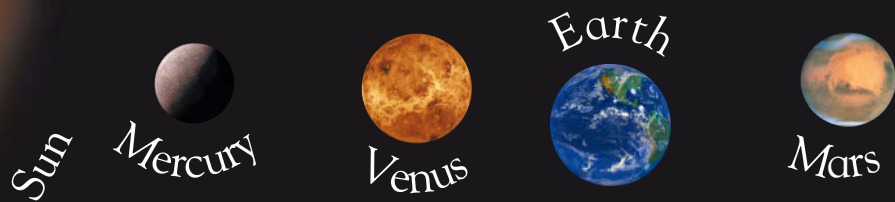
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Where are we?

Where is the Earth? Good question. Let's look into space and find out where we are and what is around us. Then we'll zoom in closer.



Let's zoom in on the Earth.



Can you see the towns?

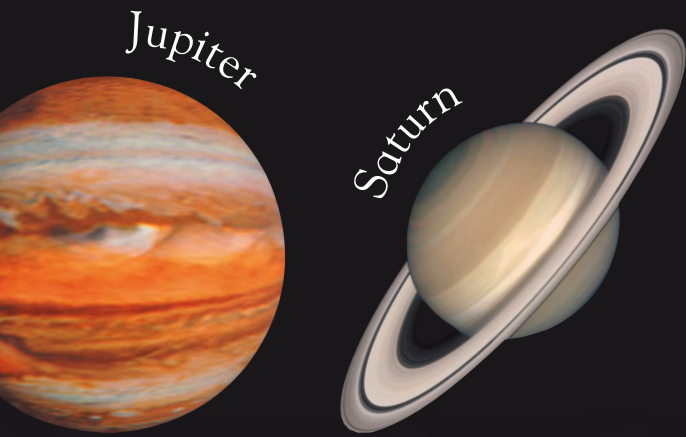


The Earth from space

When we zoom in and take a look at our Earth from space, we can see how the countries and oceans are laid out. You are somewhere down there. This is a photograph of the United States taken by a satellite.

Spotting cities

When we look a bit closer, we start to see built-up city areas and green country areas. You are now looking at Florida. Can you see anyone yet?



Jupiter

Saturn

The Solar System

Our Earth is in the middle of a family of planets that all move around our Sun. We call this the Solar System. So far, life has not been discovered on any other planets besides Earth, but it soon might be!



Uranus



Neptune

Hunting down houses

Diving down a bit, we can now see a town in Florida next door to the beach. But we still can't see any people down there.



Where are the people?

Crust to core

We think we know so much about the Earth and even about space, but what lies beneath our feet? Imagine that the Earth is an apple. The crust that we stand on would be as thick as the apple skin. That leaves a lot of something else underneath.

Journey to the center of the Earth

Man has only dug about 8 miles (13 km) into the Earth, which is only about a five-hundredth of the journey to the center. Scientists can only guess what is beneath, but we do know that it is very, very hot.

Earth facts

- You may think the Earth is big, but the Sun could swallow up 1,303,600 Earths.
- If you wanted to walk all the way around the Earth along the equator, then it would take you about a whole year, nonstop. You wouldn't even be able to sleep!

All around the Earth is a blanket called the atmosphere that contains the air we breathe.



Granite



Basalt



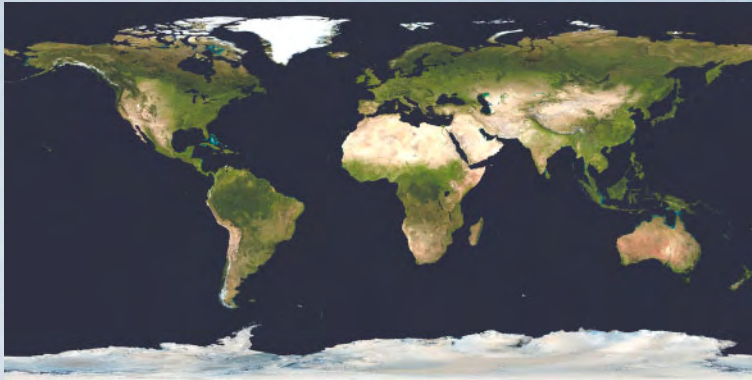
Peridotite

The crust is the thin layer of rock that covers the Earth. It can be between 3 1/2 and 42 miles (5 and 68 km) thick.

The mantle is the layer that lies below the crust. The deeper mantle is solid rock, but the upper layers are plastic, moving rock.

The Earth's surface

Earth is made up of rocks. Granite is a typical continental (land) rock. Basalt is a typical ocean floor rock, and peridotite is a mantle rock.



Earth map

About 29 percent of the Earth's surface is made up of land, which is divided into seven continents (a piece of land that is not broken up by sea). These are North America, South America, Europe, Africa, Australasia, Asia, and Antarctica.

People only live on 12 percent of the Earth's surface.

The outer core is completely liquid. It is made of iron and nickel.

The inner core is a red hot, solid ball of molten iron and nickel that is 8,132°F (4,500°C). That's hot!

The continents ride slowly on plates of crust.

Moving world

The Earth's crust is made up of huge plates, which fit together like a jigsaw. The plates have been moving for millions of years and still shift today, with dramatic effects on the shape of our planet's surface.

This is what the continents looked like 200 million years ago.



The continents we know today started to take shape 150 million years ago.



This is the Earth as it is today. What will it look like in another 150 million years?



Plate line

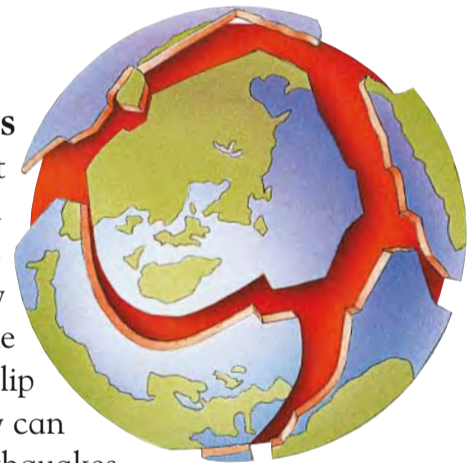
The line that two plates run along side by side is called a fault. When the plates move against each other, they can create earthquakes, volcanoes, or even mountains.

Slow progress

The plates drift in certain directions. As they shift, they change in shape and size – this takes many millions of years. See what the Earth looked like 200 million years ago compared to today.

Plates

This is what the seven biggest plates look like when they are taken off the Earth. If the plates slip past each other, they can cause tremors or earthquakes on the Earth's surface.



Under the continents, the crust can be as much

as 42 miles (68 kilometers) thick.

Melting mantle

Deep down under the crust, hot, molten rock is constantly rising up. Parts of the mantle are so hot that the rocks have melted into a butter-like liquid.

Earth words

Tectonic plate is the name for large moving parts of crust and upper mantle.

Spreading boundary is where two plates move apart and new material rises up.

The tips of the world

Without mountains, the Earth would look far less spectacular. About 5 percent of the world's land surface is made up of amazing highland.



Old mountains

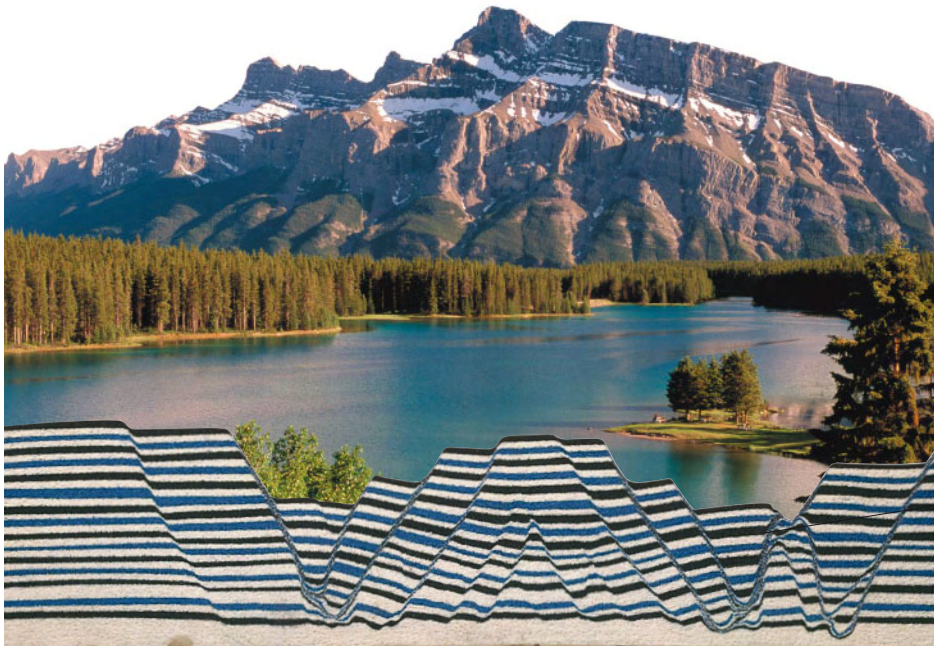
Mountains are made when the Earth's crust is pushed up in big folds or forced up or down in blocks. The 450 million-year-old Scottish Highlands used to be craggy like the Himalayas, below, but wind and rain have worn them down.

New mountains

The Himalayan Mountains, in Asia, are good examples of fold mountains. They are 50 million years old, which is relatively new! Mount Everest in the Himalayas is the highest point on Earth.

The plate pushes forward slowly over the years, making more and more folds.

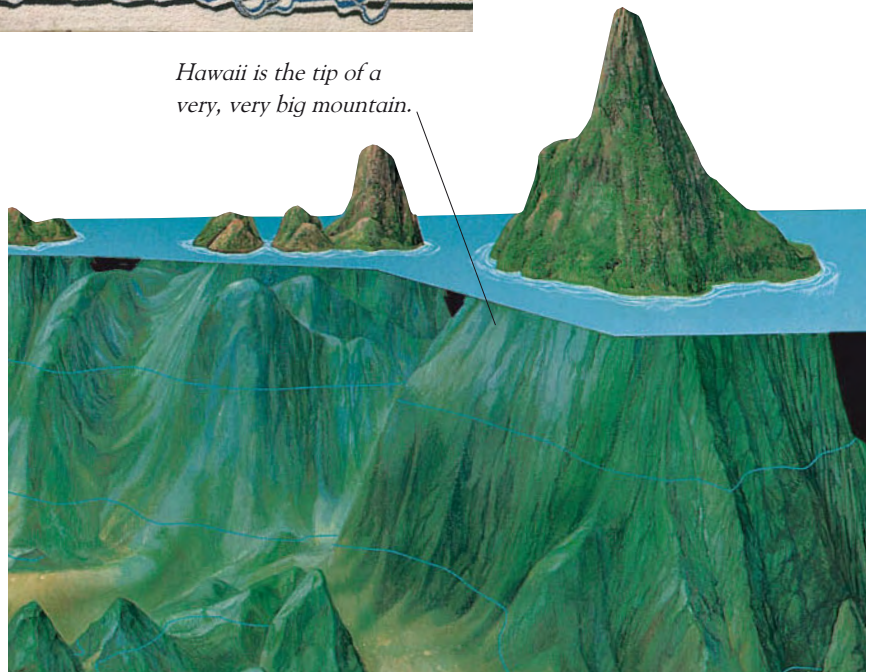
This model shows how plates push together, from the left side, forcing one side to crumple into mountains.



Block mountains
 Block mountains are formed when the Earth's crust is moved up or down in blocks. Mount Rundle, Banff National Park, Canada, is a spectacular example of a block mountain.

Fault lines occur and a block drops or lifts to produce a high mountain and a low plain.

Hawaii is the tip of a very, very big mountain.

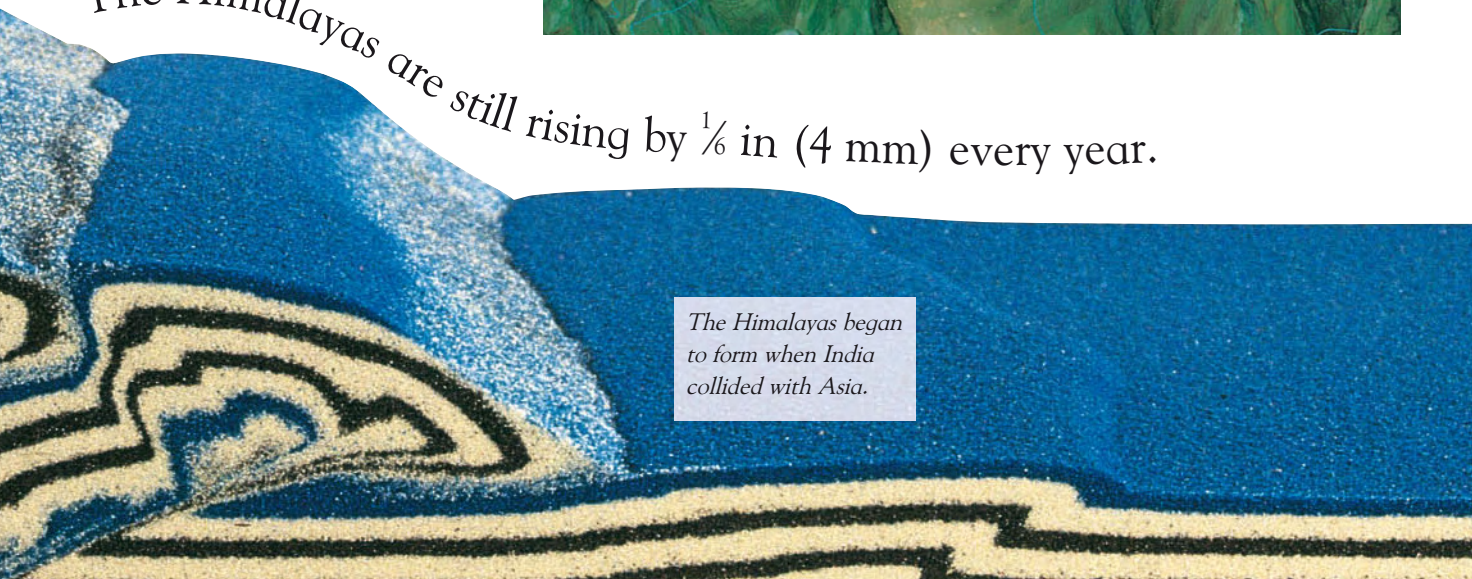


Underwater mountains

Long lines of islands in the oceans are actually the tips of huge mountain ranges, which lie underwater. The island of Hawaii, Mauna Kea, is the world's tallest mountain from the bottom of the sea to the tip.

The Himalayas are still rising by $\frac{1}{8}$ in (4 mm) every year.

The Himalayas began to form when India collided with Asia.



The fire mountain

The pressure builds up underground. Hot, liquid rock, called magma, finds its way to a weak part between the Earth's plates and explodes. Welcome to the volcano.

The big killer

The force of an exploding volcano is enormous – like opening a can of shaken, soda. Chunks of molten rock as big as houses can be flung high into the air, and dust can travel as much as 13 miles (20 km) high.



Mountain makers

As the insides of the Earth explode out of the ground, the lava and ash settle, and over time a perfectly shaped mountain is formed. In effect, the Earth is turning a little bit of itself inside out.



The lava that bursts out of a volcano is 10 times hotter than boiling water.

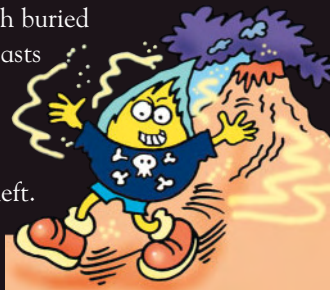


Rivers of fire

When magma pours out of volcanoes, it is called lava. It rolls slowly downhill in a huge river, burning everything in its path. When it cools, it solidifies into rock, called igneous rock.

KILLER GAS

Sometimes the gas that comes out of a volcano is poisonous. In AD 79, Mount Vesuvius, Italy, erupted violently. A cloud of gas rolled down and poisoned many people in Pompeii, the town at its base. Ash buried them and casts have been made from the spaces the bodies left.



Bubble trouble

In some volcanic areas, you can see heat coming up from under the ground. Mud bubbles and hot water jets, called geysers, shoot up high. They sometimes smell of rotten eggs because of a gas called hydrogen sulfide.



Earthquake!

Imagine waking up one night to find the ground trembling and shaking. That's what it's like to feel an earthquake. These sudden movements in the Earth's plates can cause terrifying damage.

Fault line



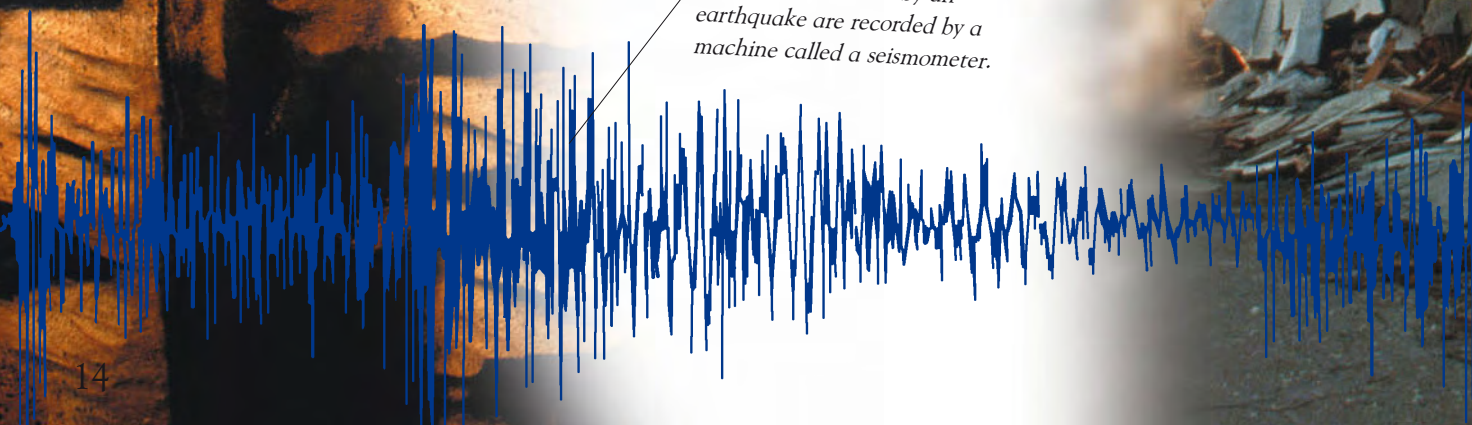
The deadly tsunami

When an earthquake happens underwater, vibrations cause ripples in the sea. They grow and grow until they are enormous, deadly waves, or tsunami, that crash onto the shore.

Whose fault?

An earthquake is caused when two of the Earth's plates slide against each other. The line that they slide along is called a fault. When they move, they cause vibrations across the ground.

Shock waves caused by an earthquake are recorded by a machine called a seismometer.



Devastation
Earthquakes can be so strong that they cause whole buildings to collapse. Children who live in areas that have earthquakes are drilled regularly on how to remain safe.

The most powerful earthquakes are in Japan.

One in 1923 killed 143,000 people.



The rock cycle

Geologists divide the rocks that make up the Earth's crust into three groups: igneous, sedimentary, and metamorphic. But they all come from the same original material, which moves around in a big cycle.



Igneous rock

Granite and basalt are typical examples of igneous rock. They start their lives as melted rock, such as underground magma and lava that comes out of volcanoes.

Original rock

Igneous rock either cools down and hardens beneath the surface or on the surface when it erupts from a volcano. It is rock from deep in the Earth's crust.



You can see the different pieces of sediment in this limestone.

Chalk is also a type

Break down

Little pieces of igneous rock are broken off by rain and wind and are carried to the sea where they pile up as layers of sediment. The remains of sea creatures are buried in the layers and may become fossils.

Sedimentary rock

Limestone and sandstone are typical sedimentary rocks. You can often see the layers in a big piece of rock when they have been squashed down on the seabed, such as in this photo of the Painted Desert in Arizona.

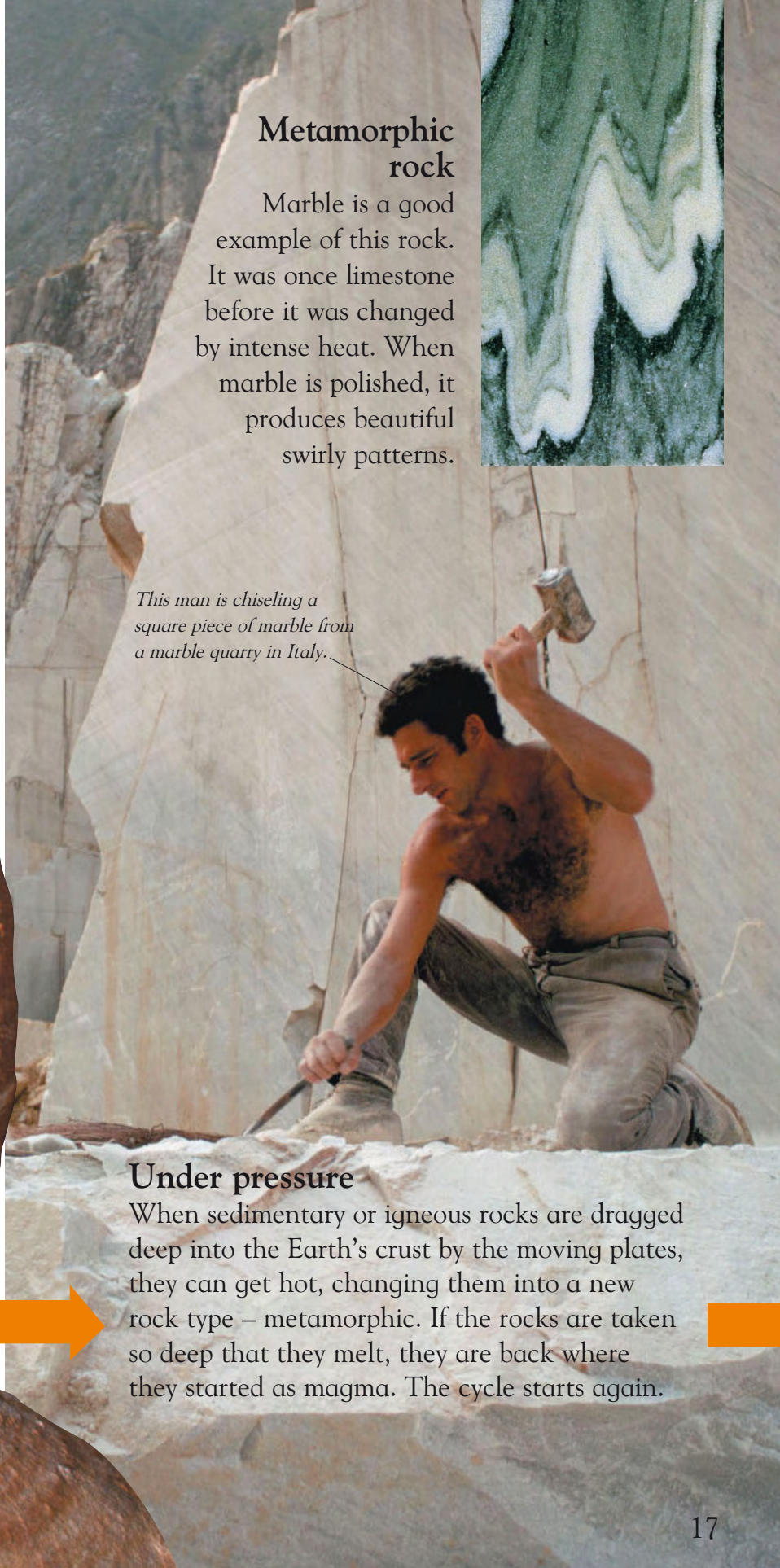
of sedimentary rock.

Metamorphic rock

Marble is a good example of this rock. It was once limestone before it was changed by intense heat. When marble is polished, it produces beautiful swirly patterns.



This man is chiseling a square piece of marble from a marble quarry in Italy.



Under pressure

When sedimentary or igneous rocks are dragged deep into the Earth's crust by the moving plates, they can get hot, changing them into a new rock type – metamorphic. If the rocks are taken so deep that they melt, they are back where they started as magma. The cycle starts again.

Vital survival

All around the Earth is a protective shield called the atmosphere. It keeps us from burning under the Sun during the day and from freezing at night. Within our atmosphere lie the water and air cycles.

The water cycle

It's incredible to imagine, but the water that we use every day is the same water that was on the Earth millions of years ago. It goes up into the clouds, and back down to Earth as rain, and never stops its cycle.



Water, water everywhere

Water goes up and water comes down. It is evaporated into the atmosphere by the Sun and turns into clouds. When the clouds cool down high up in the sky, rain falls from them.

The air cycle

The air that we breathe is also in a continuous cycle. Animals breathe in a gas called oxygen and breathe out carbon dioxide. All plants take in carbon dioxide and make oxygen.



Essential air

Because of the air cycle between animals and plants, we could not possibly live without each other. We make the air for each other that is vital for life.



Down to earth

Without soil, life would be impossible as nothing can grow without it. Soil is the part of the Earth that lies between us and the solid bedrock.



Useful soil

Soil can be used in so many ways, from making bricks to providing clay for pottery, but it is most vital for growing plants for us to eat. In Southeast Asia, they build terraces on hillsides to stop soil from washing away when it rains.



A handful of soil contains about six billion bacteria!

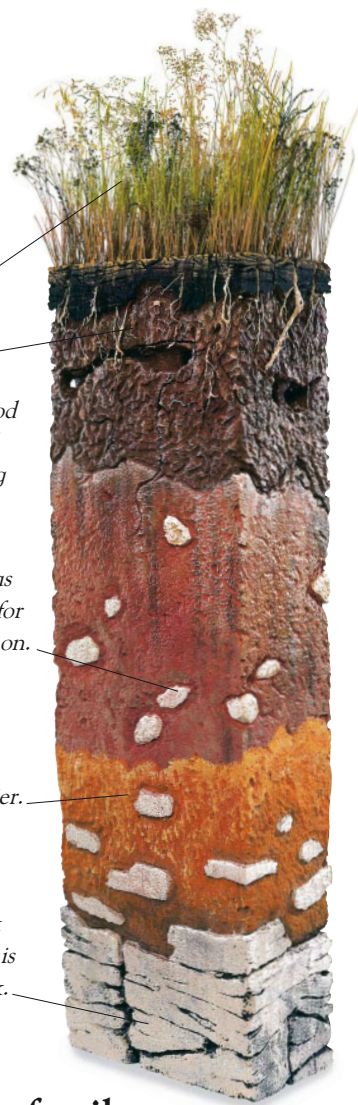
Out of the soil grow many plants.

This level is called topsoil. It is rich in food for plants and contains living creatures.

The subsoil has less goodness for plants to feed on.

As you get lower, the soil becomes rockier.

The solid rock below the soil is called bedrock.



Layers of soil

If you cut a section through the soil, down to the rock beneath, you would find lots of layers. The material nearest the top is the rich soil needed for plants to grow, and the bottom is solid rock.

What is soil?

Soil is made up of rocks, minerals, dead plants and animals, tiny creatures, gases, and water. As plants and animals die, tiny creatures and bacteria break them down to become soil.

Essential food

Plant roots take in nutrients and water from the soil. Plants need these in order to make food and grow.

Wriggling worms

Worms are vital to the soil. They eat decaying plants and animals and deposit them into the soil as they wriggle through it. As they tunnel, they help the soil to breathe.

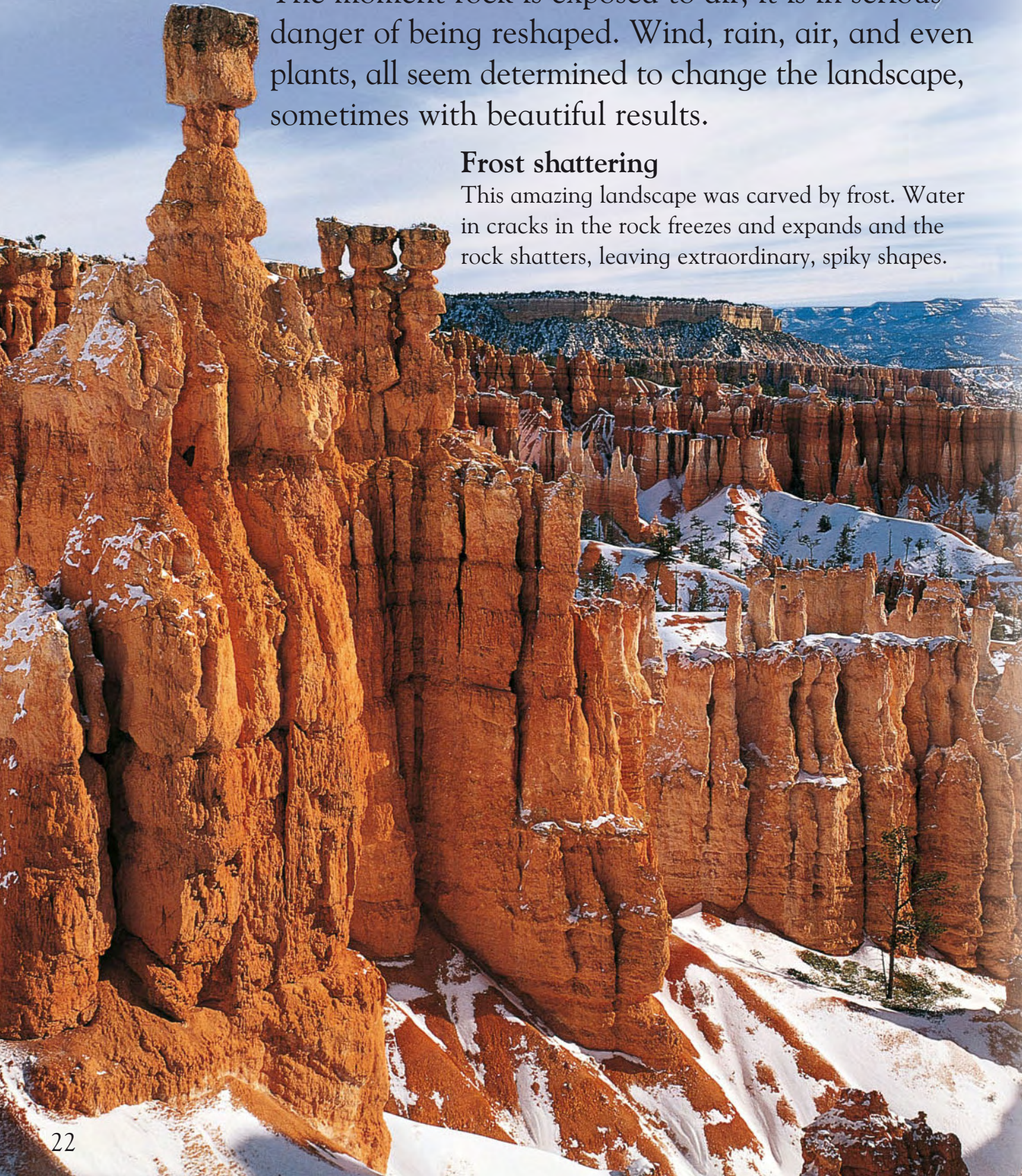


Nature's sculptures

The moment rock is exposed to air, it is in serious danger of being reshaped. Wind, rain, air, and even plants, all seem determined to change the landscape, sometimes with beautiful results.

Frost shattering

This amazing landscape was carved by frost. Water in cracks in the rock freezes and expands and the rock shatters, leaving extraordinary, spiky shapes.





Pillars of the Earth

These strange pillars are called hoodoos. They are formed because soft rock lies below hard rock. Downpours of rain wash away the softer rock, leaving pillars of harder rock above.

Limestone pavement

Limestone is a soft rock that is affected dramatically by rainwater. The slightly acid rainwater changes the limestone into a softer rock, which is washed away. Cracks get larger, and the ground becomes uneven.

When air, wind, ice, or plants change the shapes of rock, it is called “weathering.”

Watch out! Plant attack

Trees sometimes speed up rock cracking with their roots. As the roots grow, they creep between cracks; when they thicken, they force the cracks to open wider.



River facts

- The longest river in the world is the Nile in Egypt. Beneath the Nile runs another river deep underground that holds six times as much water.
- The highest waterfall in the world is Angel Falls in Venezuela. The water falls $3\frac{3}{4}$ times the height of the Eiffel Tower in Paris.

Flow of water

Water is incredibly powerful stuff. When there is a lot of it, moving at huge speeds, it can carry away a lot of loose rock and mud. When water changes the shape of a landscape, it is called erosion.

Running wild

As water rushes from its source, in the highlands, down to the sea, it constantly picks up chunks of rock, sand, and mud along the way. It then deposits it elsewhere, changing the shape of the land as it goes.

This harder rock is left behind after floods.



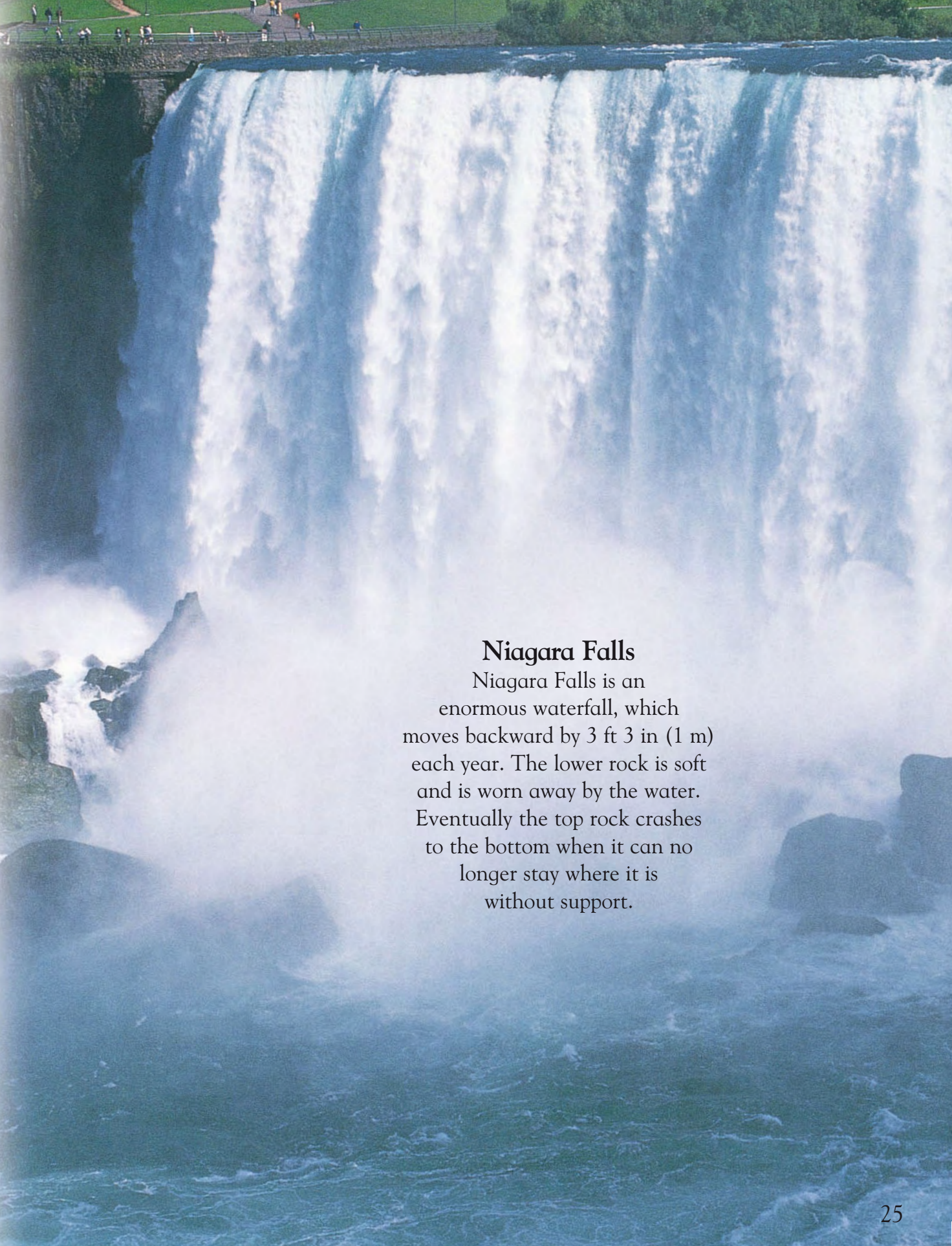
Desert floods

Water can even shape the desert. Heavy floods sometimes rush through the land, taking the land with it and leaving weird towers of rock behind, such as in Monument Valley, Arizona.



Water power

The Grand Canyon is the largest gorge in the world. It has been carved by the Colorado River over 20 million years. Different rocks react in different ways to the water, so the shapes are incredibly spectacular.



Niagara Falls

Niagara Falls is an enormous waterfall, which moves backward by 3 ft 3 in (1 m) each year. The lower rock is soft and is worn away by the water. Eventually the top rock crashes to the bottom when it can no longer stay where it is without support.

Underworlds

Caves can be pretty scary places – dark and damp – but they can also be beautiful. They form when water seeps through cracks in soft rock, such as limestone, and take thousands of years to become caverns.

Most caves are dripping with water.

Gorges form when cave roofs collapse.

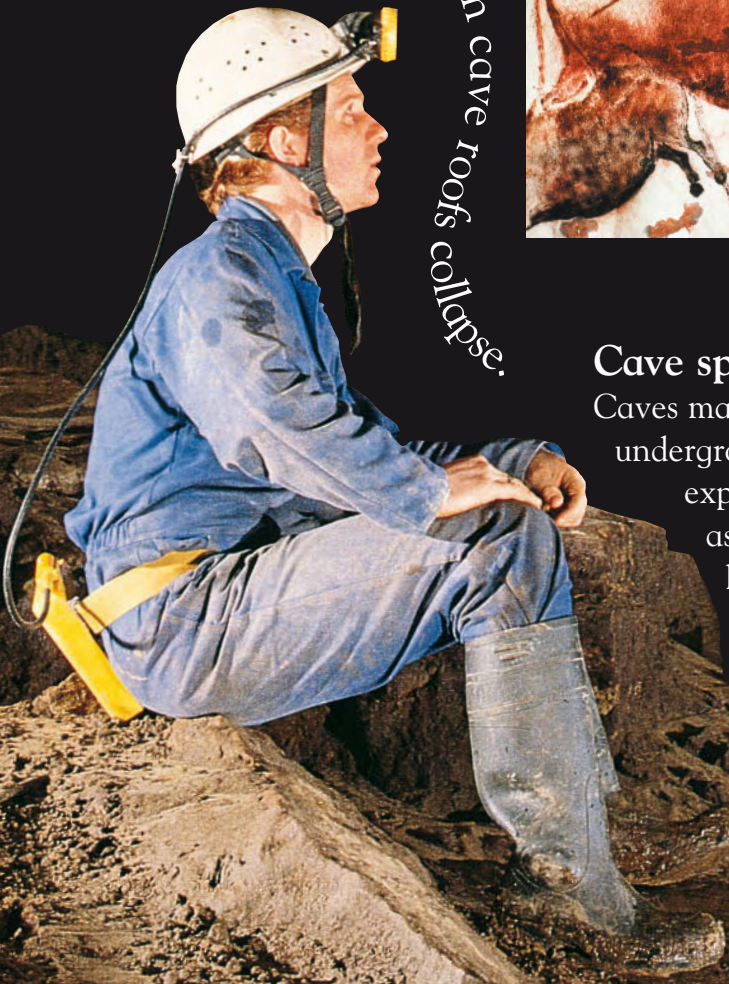


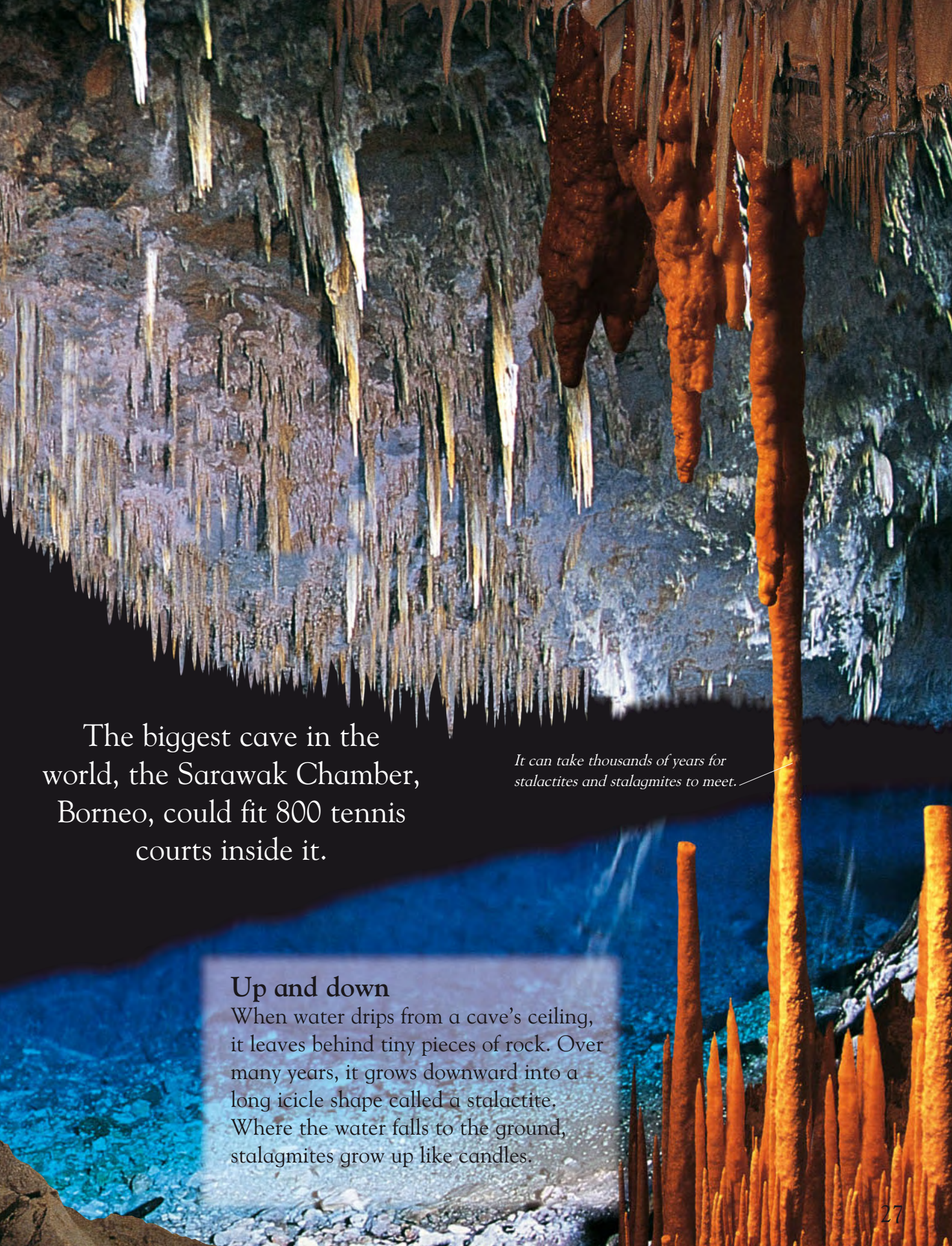
Ancient murals

Before people lived in houses, they lived in caves. They painted drawings on the walls like this cattle one. It was painted 17,000 years ago, and found in Lascaux, France.

Cave sport

Caves may be dark, but they are also magical, underground landscapes, and some people enjoy exploring them as a hobby. This is known as spelunking. It's a very dangerous sport, however, and must always be done using the right equipment.





The biggest cave in the world, the Sarawak Chamber, Borneo, could fit 800 tennis courts inside it.

It can take thousands of years for stalactites and stalagmites to meet.

Up and down

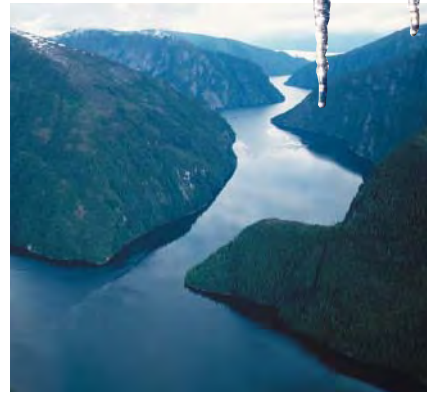
When water drips from a cave's ceiling, it leaves behind tiny pieces of rock. Over many years, it grows downward into a long icicle shape called a stalactite. Where the water falls to the ground, stalagmites grow up like candles.

The power of ice

There's more to snow and ice than meets the eye. Not only do they produce some of the most spectacular scenes on Earth, but they are powerful tools that sculpt it.

Earth's natural plow

A glacier is an enormous mass of ice that flows downhill slowly. When glaciers melt, they show how much of the Earth has been gorged away. You can see how it has shaped this Norwegian fjord.



The mighty glacier

A glacier is incredibly powerful. It carves its way through mountains, leaving huge gorges or valleys behind. On the way it swallows up and moves giant boulders. Yet it only moves at a speed of about an inch a day.



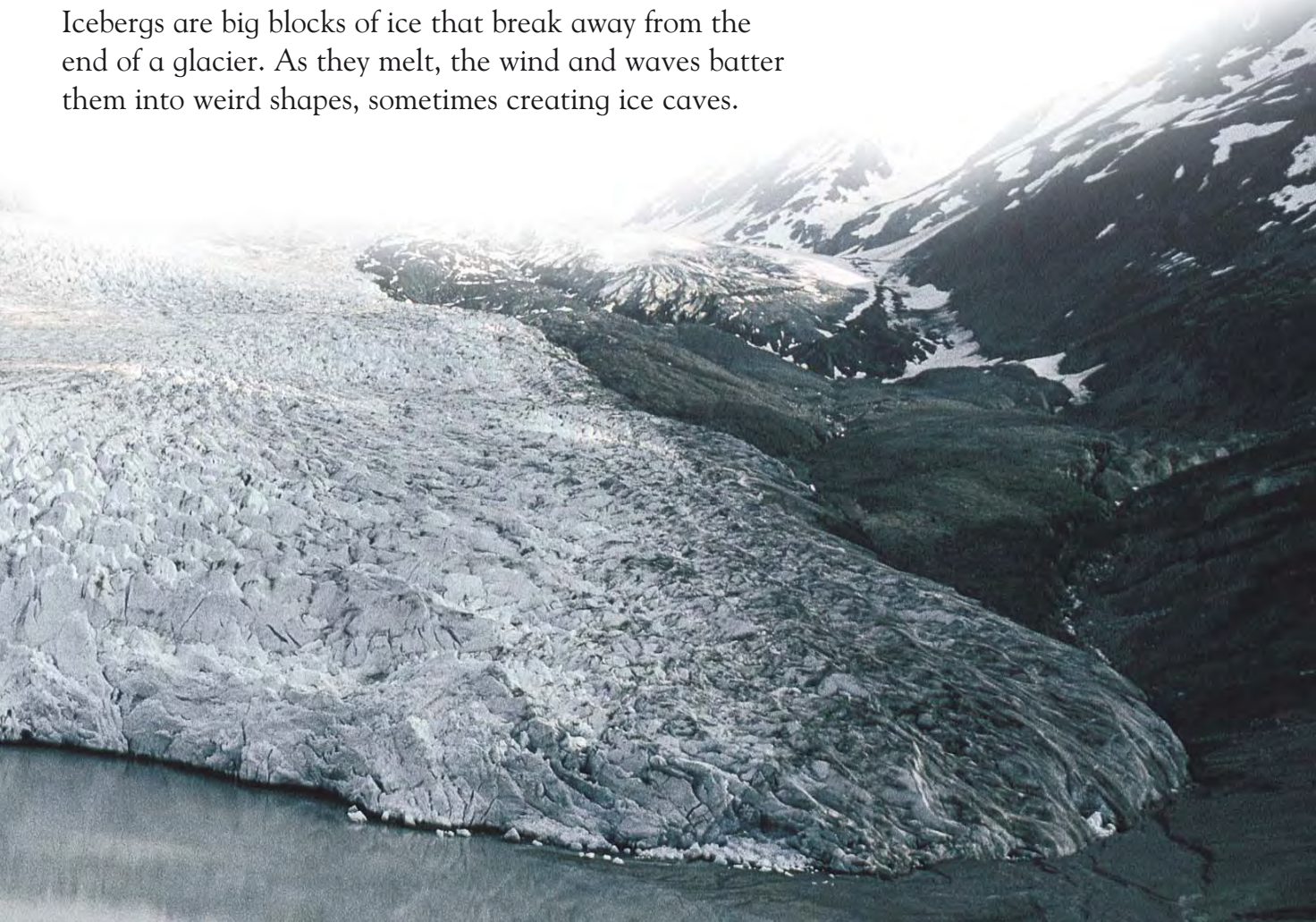
Floating island

Some icebergs are huge. But whatever you see above water, there is even more below. Two-thirds lies underwater.



Ice caves

Icebergs are big blocks of ice that break away from the end of a glacier. As they melt, the wind and waves batter them into weird shapes, sometimes creating ice caves.



The mighty wave

When you play on a sandy beach, have you ever noticed how often the waves crash onto it? Well, believe it or not, that wave movement is constantly changing the coastline.

Waves are even powerful enough to reshape cliffs!

Waves destroy

Shock waves

- As the waves force coastlines back, sometimes houses built on the cliffs fall into the sea!
- A series of pounding 33 ft (10 m) high storm waves can remove more than a yard (1 m) of cliff in one night.

Making a bay

The sea is very persistent. When it finds a weak part along a coast, it breaks through and spreads out as far as it can. It eventually creates a bay, such as Wineglass Bay in Tasmania.



some coasts but make brand new beaches elsewhere.

Creating sand

Sandy beaches take hundreds of years to form. Waves near the shore pummel boulders into pebbles, and with more battering they eventually become the soft, fine-grained sand that you find on a beach.

It's amazing that just water can turn this pebble into fine sand.



Coastline sculpture

This picture shows how powerful waves are. The sea has completely battered its way through the rock on this cliff and formed an archway. Eventually, when the arch gets too weak, it falls in on itself, leaving stacks behind.



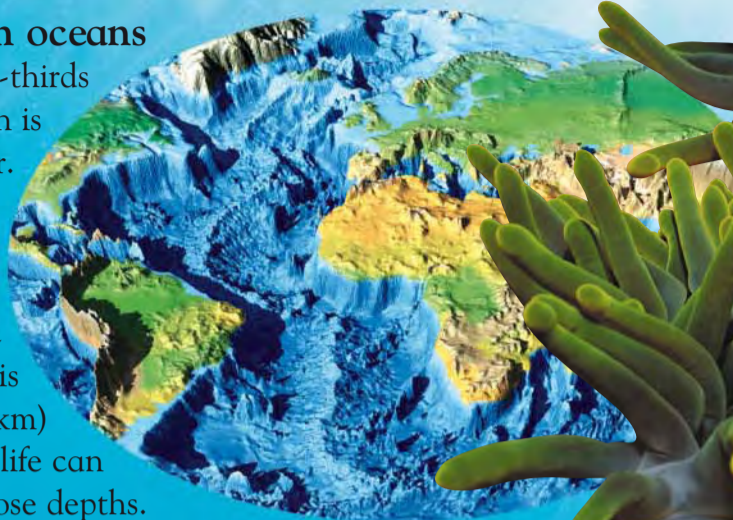
The ocean floor

The ocean is a mysterious place – we can't go beyond certain depths because the pressure will kill us.

However, we know that the ocean floor has some features that are very similar to those found on land.

Earth oceans

More than two-thirds of the Earth is covered in water. The deepest part of the ocean is the Mariana Trench, in the Pacific Ocean, which is 7 miles (11.5 km) deep. Very little life can survive in those depths.

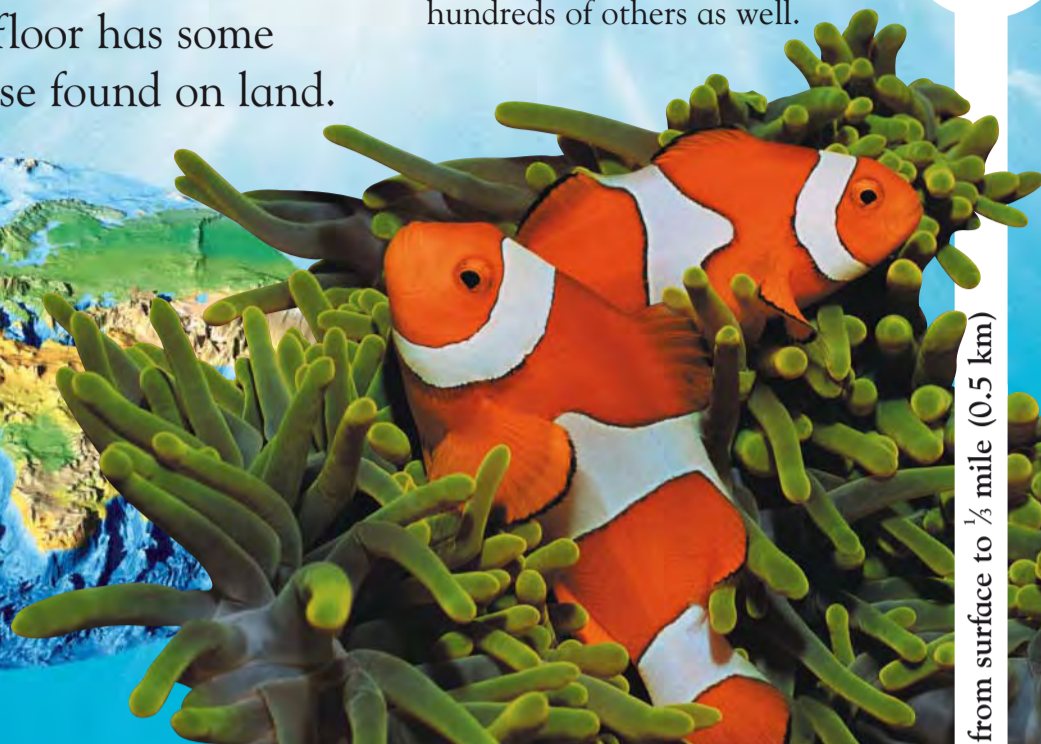


Coral reef

Coral reefs are found in clear, warm waters near the shore. Corals are living things and are home to hundreds of others as well.

DEPTH GAUGE

Sea level
0 miles
(0 km)



Coral from surface to 1/2 mile (0.5 km)

Black smokers

Where the ocean plates move against each other, vents open and hot steam rises into the water. These are called black smokers.

There are many massive abysses on the ocean floor.

Diving down

It is very difficult for humans or submarines to go down deep underwater. This submarine is called the Nautilus and can take three people down to depths of 2 1/2 miles (4 km).



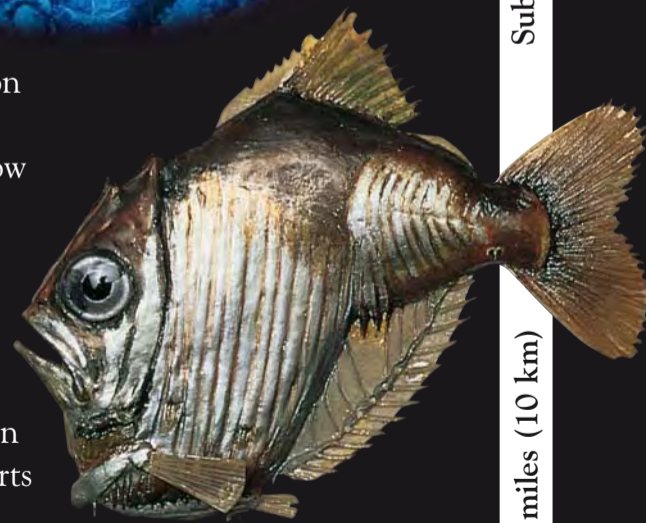
Submarine 2 1/2 miles (4 km)

Pillow lava

Where volcanoes erupt on the ocean floor, the lava solidifies into round, pillow shapes in the water.

Hatchet fish

Hatchet fish are one of the few creatures that can survive in the deepest parts of the ocean.



Hatchet fish 6 miles (10 km)

Exploding ground

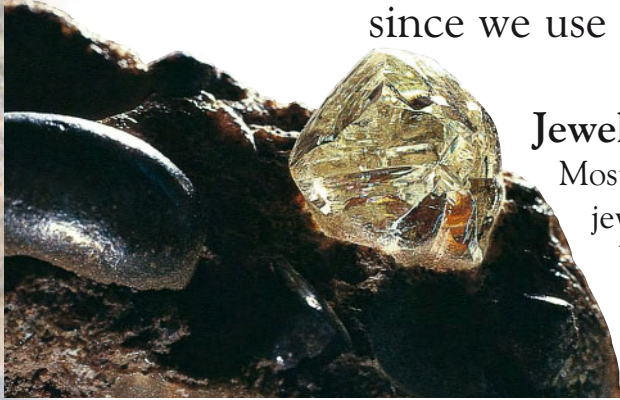
Volcanoes and earthquakes happen underwater, where the plates meet, just like they do on the land surface.

Ocean floor
7 miles
(11.5 km)



Earth's treasures

Hidden deep underground lies a priceless treasure trove of precious minerals, which includes rocks, metals, and crystals. We are constantly digging into the Earth to find these minerals since we use them all the time.



Jewel in the crown

Most gems that you find on valuable jewelry start their lives in rock. They begin as crystals but, after cutting and polishing, they end up as beautiful and expensive gems.

Gold diggers

In order to find precious metals and gems, we have to mine for them, and sometimes they are hard to get at. Tons of rock, for example, may only hold a few ounces of gold.



Gold and silver have been used to make coins and jewelry for thousands of years.



A dash of salt

I bet you wouldn't eat jewelry. Well, gems are crystals and so is the salt that you sprinkle on your food. Pools of sea water are left to evaporate, leaving the salt behind ready to be collected (right).



Mineral facts

- Diamonds are one of the hardest substances. They are used in drill bits, or to cut glass.
- Talcum powder is actually a mineral called talc. It is very soft and crumbles easily.
- Silicon, which is obtained from minerals like quartz, is essential in the making of computers and cell phones.



Earth's ingredients

Inside the Earth's crust are some essential ingredients called fossil fuels – coal, gas, and oil. We use these to provide energy that runs everything from cars to the electricity in our homes.

Treasure from the Earth

Believe it or not, coal that we use to burn in our fires used to be trees that lived 280-345 million years ago. Their remains didn't rot fully and over time became coal.



Mining for coal

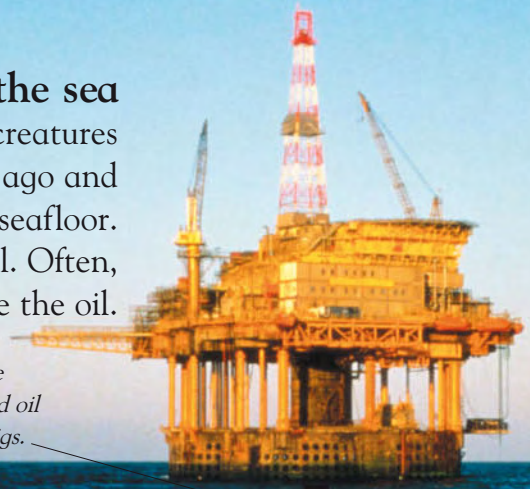
When coal was first discovered, it was quarried from the surface. Today, there are many very deep mines, as well as huge opencast (surface) mines.



Treasure from the sea

Oil and gas were tiny sea creatures that died millions of years ago and were buried under the seafloor. Eventually they became oil. Often, gas is found just above the oil.

Sometimes oil is piped straight to the mainland, but often huge ships called oil tankers take the oil away from the rigs.



Oil rigs

A lot of oil and gas are found in rocks below the seabed, so the only way to get them is to drill deep below the sea.

Oil rigs are platforms in the sea that are specially built so that we can drill for oil and gas from them.

Oil facts

- Oil is used for many things, such as gas for trains and planes, and power stations. Even the ink on this page is made from oil.
- Workers live on oil rigs for weeks at a time. Their supplies are flown in by helicopter.

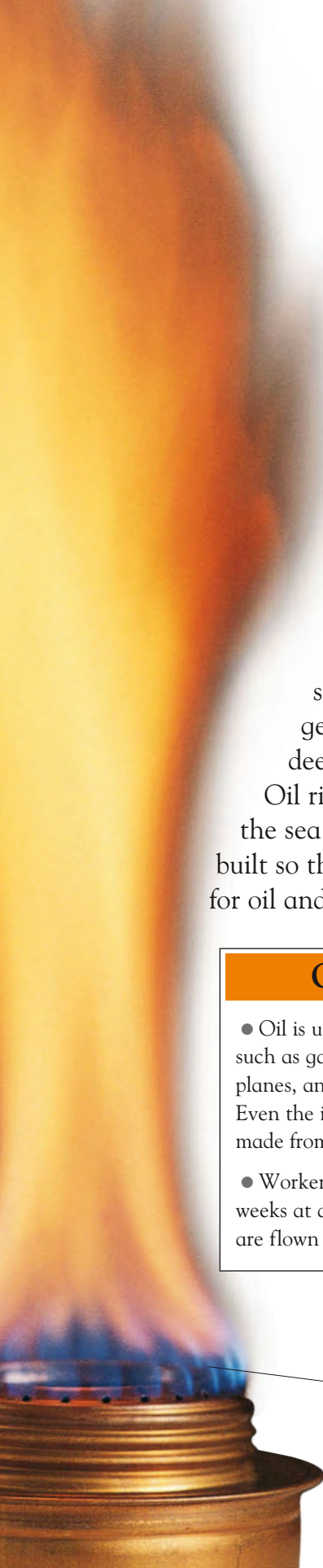
Sea creatures

We use fossil fuels all over our homes. Some stoves use gas.

Rock

Gas

Oil



Rock creatures

Fossils are the remains of plants or animals that have been preserved in rocks over millions of years.

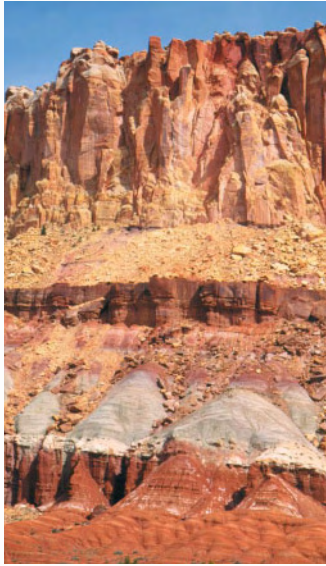


Fossil facts

- Fossils show that starfish lived more than 450 million years ago.
- Dinosaurs appeared about 240 million years ago.
- The oldest fossil is 3,000 million years old and is a microscopic bloblike creature.

Ground detectives

We know a lot about the Earth's history because, amazingly, the Earth tells us all about it. Fossils and layers of rock found deep underground help us to understand the mysteries of the past.

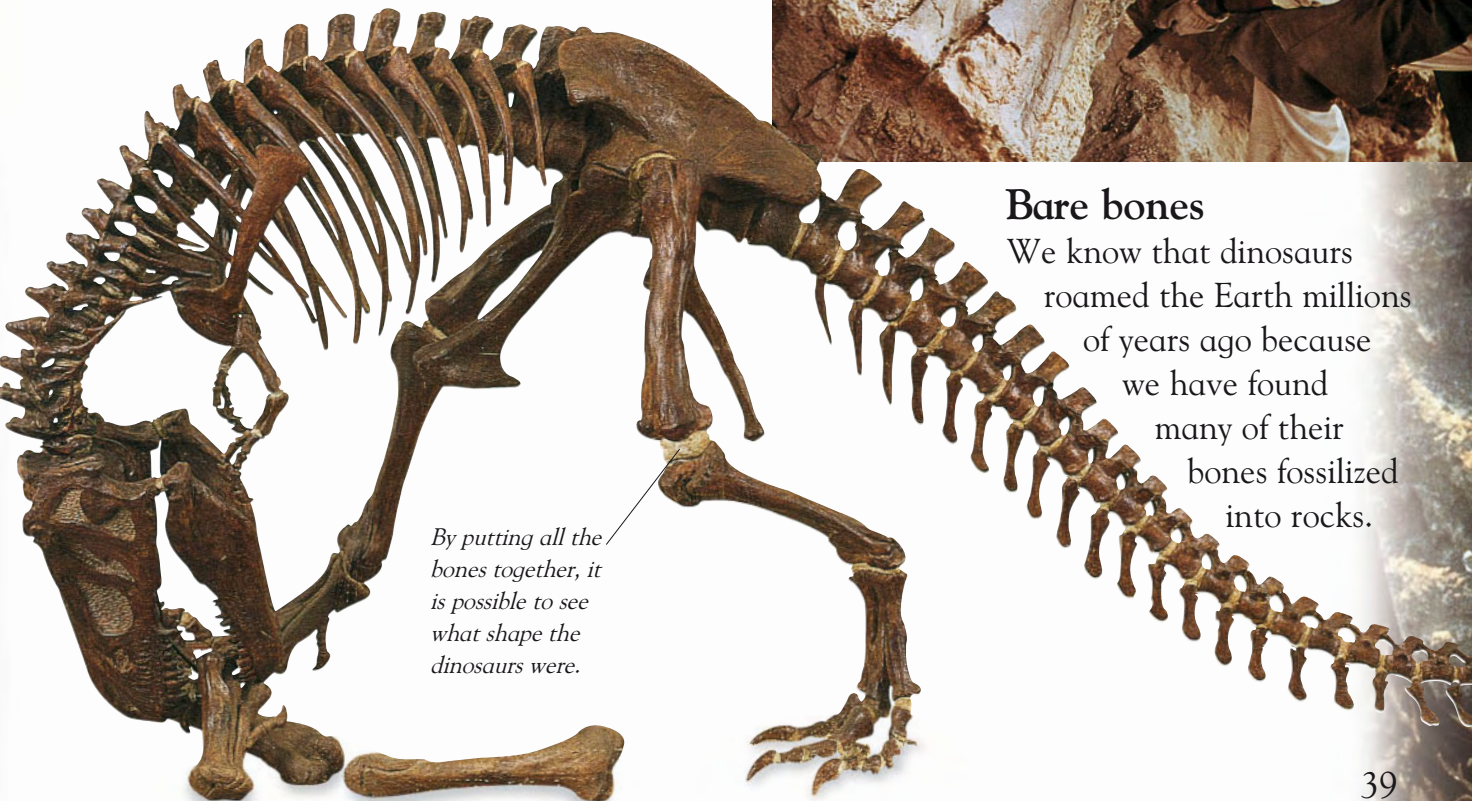


Rock strata

Each layer, or strata, in this cliff in Utah tells a different story. The top layers are 10 million years old, and the gray areas near the bottom are about 210 million years old. Dinosaur footprints have been found in this layer.

Trapped in time

Amber is fossilized tree resin or gum. Millions of years ago, insects were trapped in amber and remain to this day. Because of this, we have proof that spiders have existed for a long time.



By putting all the bones together, it is possible to see what shape the dinosaurs were.

Bare bones

We know that dinosaurs roamed the Earth millions of years ago because we have found many of their bones fossilized into rocks.

Planet pollution

The Earth is a special but fragile place. Some of the things we do to it, such as polluting it with chemicals, are destroying things that are valuable to its survival. We must learn to look after our home.



Growing deserts

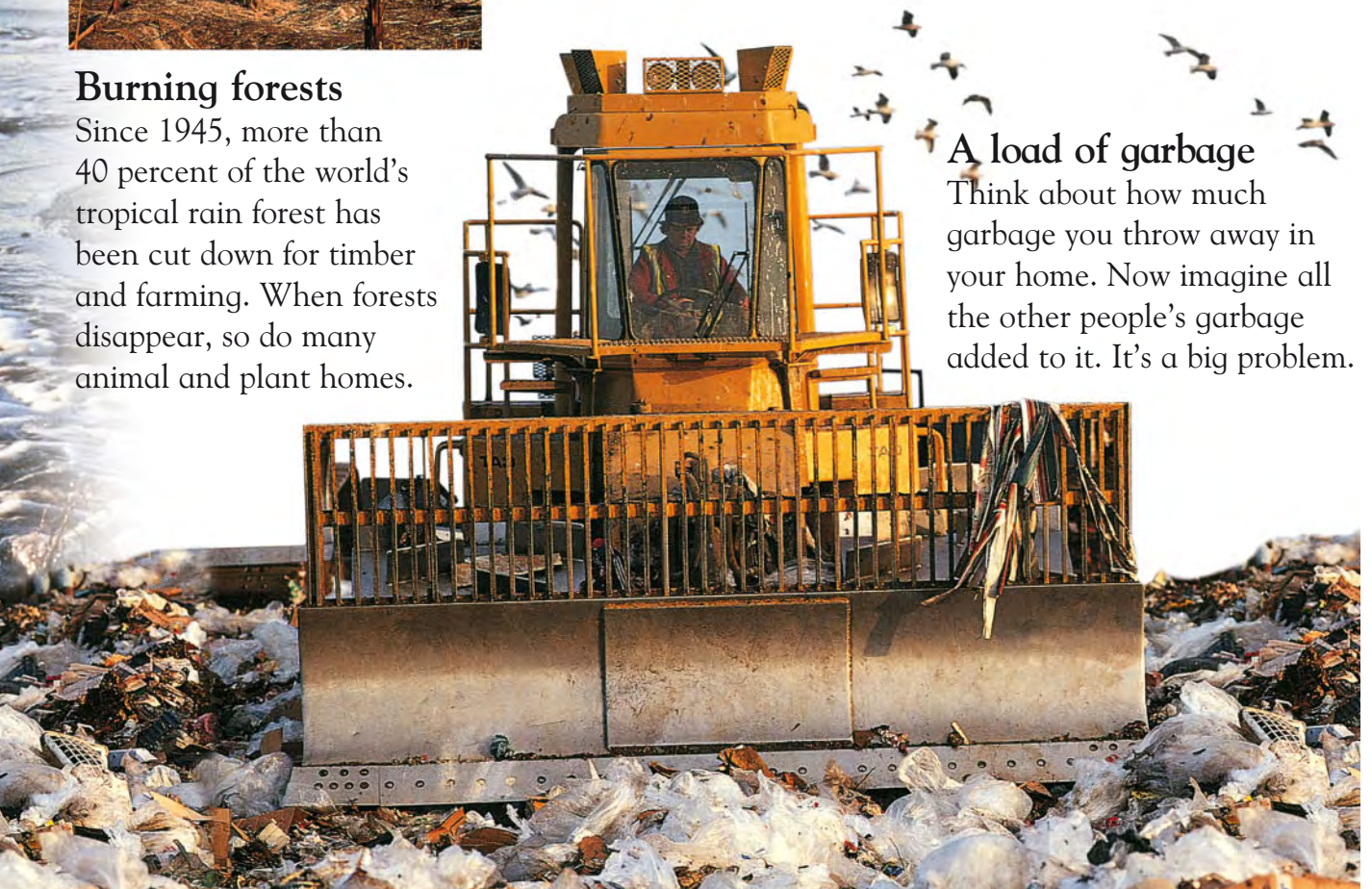
Deserts are expanding all the time. People living near them use up plants for food or fuel, and, once it becomes desert, it is difficult to make anything grow on it again.

Burning forests

Since 1945, more than 40 percent of the world's tropical rain forest has been cut down for timber and farming. When forests disappear, so do many animal and plant homes.

A load of garbage

Think about how much garbage you throw away in your home. Now imagine all the other people's garbage added to it. It's a big problem.



Polluted air

Factories, especially those that run on fossil fuels, pump out dangerous chemicals into the air that are bad for our lungs. They also make the rain acidic.

A big waste

Each day, a huge amount of sewage and chemical waste from factories is pumped into our rivers and seas. Dirty water can spread diseases and can kill fish and other water life.

OIL CRISIS

On March 24, 1989, a huge oil tanker called *Exxon Valdez* had an accident in Alaska. Within a few days, it had spilled almost 11 million gallons of oil into the sea. The oil polluted the shoreline and killed a huge amount of fish and birds. It took years to clean up.



Planet protection

How can we protect our planet?

Conservation means trying to keep things the same and not destroying habitats by dumping waste. When things get bad, here are some ways that we can help.



The wind makes the turbines spin around really fast, which creates energy.



Garbage clean up

To cure the garbage problem, we need to recycle more of our garbage. Bottles, paper, plastics, and all kinds of other materials can be used again and not buried in the ground.

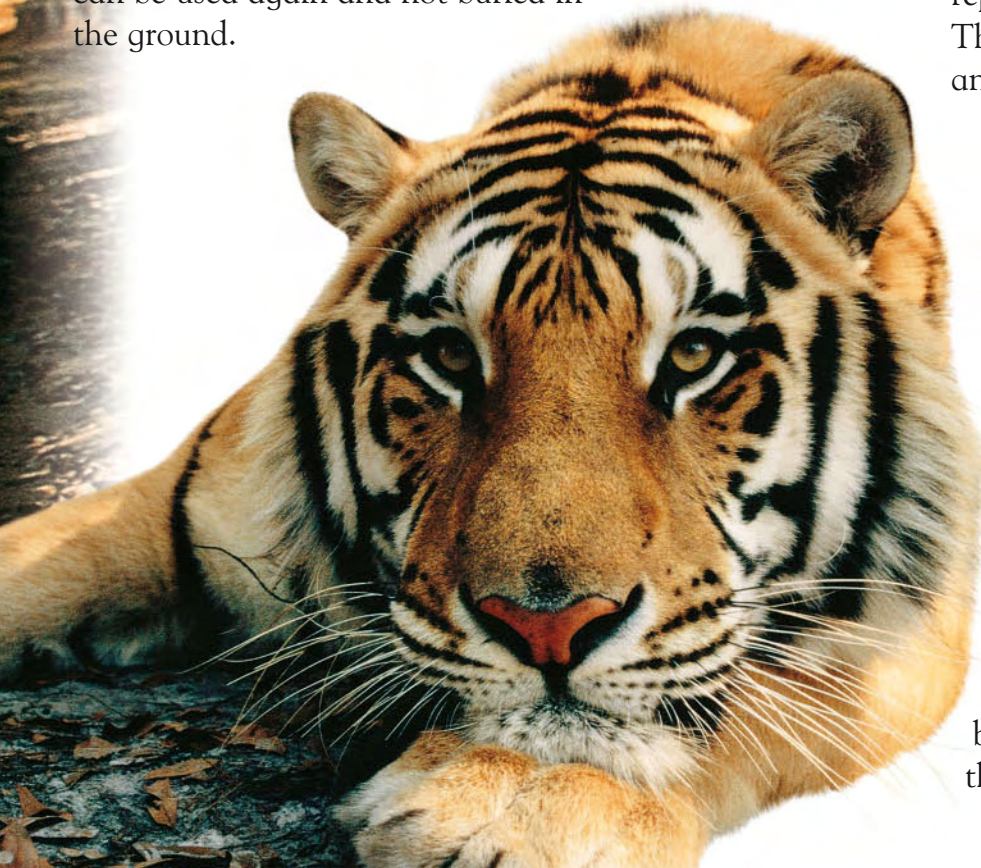
Wind power

Burning fossil fuels to make electricity puts poisonous gases into the air. Fossil fuels can be replaced with wind turbines. These wind farms are clean and safe for the Earth.

Only about 400 of these beautiful Siberian tigers still live in the wild.

Endangered species

There are many animals, such as this tiger, that have lost their homes. Others have been hunted to extinction. Zoos now breed animals and release them back into the wild.



A tree nursery

An excellent way to save the rain forests and to stop deserts from growing is to replant trees as we chop them down. We will always need wood, but if we plant new seeds, like these children in India are doing, we will never run out of trees.



Protection facts

- Car exhausts throw bad chemicals into the air. In the future, our cars may run on power from sunlight, called solar power.
- To help clean up rivers and seas, make sure you never drop any litter into them.



Glossary

Here are the meanings of some of the words that are useful to know when learning about the Earth.

Atmosphere the blanket around the Earth that holds in gases.

Bacteria miniature living things, invisible to the eye, that help to convert dead plants and animals back into soil matter.

Carbon dioxide an invisible gas in the air that animals breathe out.

Climate the average weather in a particular area.

Coastline the place where land and ocean meet.

Conservation to keep things the same and undamaged.

Continent one of seven huge areas of land on the Earth that are not broken up by sea.

Coral reef a mass of rocklike material that is formed by skeletons on the ocean floor near to the ocean's surface.

Core the hot, central part of the Earth.

Crust the hard outer coating of the Earth that is made from solid rock.

Desert a very dry place that has less than 10 inches (25 cm) of rain a year, which is very little.

Earthquake sudden movements in the Earth's crust that cause the ground to shake violently.

Equator the imaginary circle that passes around the center of the Earth, between the poles.

Erosion when rock or soil is loosened and transported by glaciers, rivers, wind, and waves.

Fault a break in rocks with movement on each side.

Fossil remains of living things that have been preserved in rocks.

Fossil fuel fuels that include natural gas, oil, or coal, all of which are natural and are formed by dead prehistoric animals or plants.

Glacier mass of ice and snow flowing slowly downhill under its own weight.

Gorge a deep narrow valley cut by a river.

Igneous rock the rock that starts as magma below the surface of the Earth but hardens either underground or on the surface.

Lava red, hot, melted rock that pours out of a volcano when it erupts, and then solidifies.

Limestone a sedimentary rock composed mainly of calcium carbonate.

Magma rock that has melted to a butterlike fluid beneath the Earth's surface.

Mantle the part of the Earth immediately beneath the crust.

Metamorphic rock rock that has been changed by underground heat or weight.

Mineral a simple substance that, either alone or mixed with other minerals, makes up rocks.

Ocean a huge, salty body of water. Also called a sea.

Oxygen an invisible gas in the air that animals breathe in in order to survive.

Planet a large, round object that orbits a star such as our Sun.

Plate a separate section of the Earth's crust that rides on the semi-liquid rock of the mantle.

Pollution materials and gases that are in the wrong place and spoil that environment for the plants and creatures that live there.

Rain forest a tropical forest that receives heavy rainfall and therefore where huge amounts of plants grow.

Rock a large, solid mass underground that is sometimes exposed at the surface of the Earth and is made up of one or more minerals.

Satellite an object in space that revolves around the Earth.

Sedimentary rock rocks formed in layers by the deposition of eroded grains.

Seismometer an instrument that measures the strength of earthquakes.

Sewage garbage or waste that is carried away in sewers.

Solar power energy that is gained by using the Sun.

Solar System our family of nine planets that revolve around our Sun.

Stack a rock pillar left standing in coastal waters when the top of an arch falls in.

Stalactite a hanging, icicle-shaped structure formed in caves by dripping water with traces of rock in it.

Stalagmite a rising candle-shaped structure formed when stalactites drip to the floor and leave traces of rock behind.

Strata layers of sedimentary rock.

Tsunami a huge, fast-traveling wave that is caused by an underground earthquake.

Volcano where hot magma breaks through the Earth's crust with great pressure.

Weathering the breaking up of rocks by wind, rain, or ice.



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