

Chapter 8 Earth's Mighty Mountains

THE BIG QUESTION: How do the movements and forces of tectonic plates build mountains?

In 1953, two climbers, Edmund Hillary and Tenzing Norgay, were on a snowy mountain. They were very happy, even though they were cold and had a hard time breathing.

Hillary and Norgay reached the top of Mount Everest, the highest point on Earth. Mountains are amazing! Scientists found out that big plates in the ground help make mountains. So cool!

Earth's tectonic plates move and change the Earth. The plates move the land and make big changes. They move the continents around, make new oceans, and create mountains.

Colliding Continents

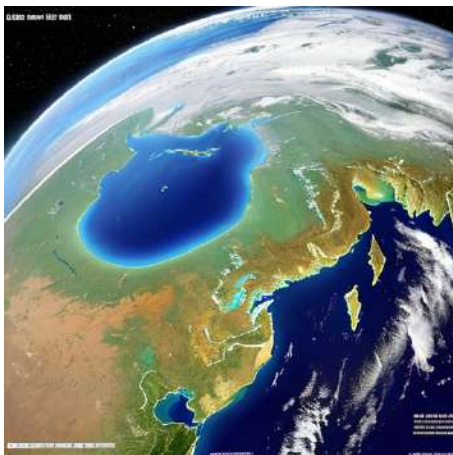
Some of the tallest mountains in the world were made when parts of the land crashed together over many years. Mount Everest is one of these. It is in the Himalayas, a huge mountain range between India and China. The Himalayas came to be when pieces of land on two big parts met directly.

India is a country in Asia. Long ago, it was an island in the ocean. But now, it's part of Asia.

The Indo-Australian Plate started moving north around 200 million years ago. It crashed into the Eurasian Plate because of hot rock below the ground. When the two plates met, one slid under the other.



As the big piece of Earth called the Indo-Australian Plate kept moving forward, India went along for the ride. It moved closer and closer to Asia. The big sea called the Tethys Sea started to go away. India finally crashed into Asia about 40 million years ago. India's hard ground pushed right against Asia's hard ground.



The big land pushed together hard. This made the rocky ground bend and rise. The huge mountains called the Himalayas started to form!

More and more big rocks were pushed up as the big plate in the ground moved. The big mountains got higher and higher.

Actually, they are still getting higher. They are growing taller at about the same speed that your fingernails grow!

Geologists group the Himalayas as fold mountains. The name talks about how rocks are pushed up into big folds by moving tectonic plates. The highest mountains in Europe, the Alps, are also fold mountains formed in a similar way to the Himalayas. In North America, the Appalachians, and in Russia, the Urals, are also made by the collision of continental crust.

The Himalayas have a lot of rock from the sea. A long time ago, the Tethys Sea was there. Rain and rivers carried rocks from Asia and an old island into the Tethys Sea. The rocks and remains of sea animals built up on the sea bottom. As time passed, the pressure and heat changed these rocks into different rocks.

As India and Asia moved closer together, some rocks from the sea floor were pushed up. A lot of heat and pressure from the moving plates changed some of these rocks into new kinds of rocks. Other rocks stayed the same. This is how really old sea animal fossils got to the top of Mount Everest.

Fossils at the Top of the World

Trilobites and crinoids are two kinds of fossils found on Mount Everest. Trilobites were sea animals with hard shells, similar to today's crabs and lobsters. They lived at the bottom of the ancient oceans, such as the Tethys Sea. Crinoids looked more like plants, but they were also animals. About 250 million years ago, most trilobites and crinoids became extinct, but a few types of crinoids still survive deep below the ocean's surface.



Folding at the Edges



The Andes Mountains are really tall mountains in South America. They were made by big pieces of rock sliding together for a very long time. They are the longest mountains on land.

In Chapter 4, we learned that a plate underneath the Earth can get super hot and melt. The hot melted stuff, called magma, can come up through cracks in the ground and make volcanoes. The edge of a plate called the Nazca Plate is melting as it goes

underneath another plate called the South American Plate. The melted stuff has made a lot of volcanoes in the Andes Mountain range.

Faults and Blocks

The biggest mountains on land are mostly fold mountains. But sometimes, mountains are built in other ways. Fault-block mountains happen when big blocks of rock move up and down along faults.



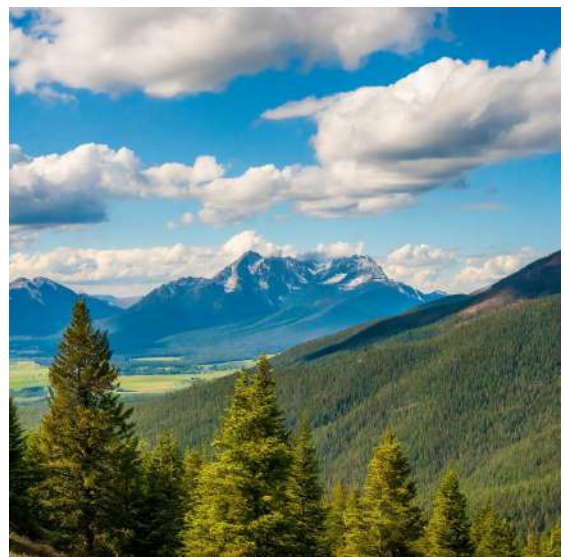
At some places, rocks move past each other. In other places, rocks move up or down because they slip. This can make tall hills and deep valleys, called fault-block mountain ranges.

Fault-block mountains can look different. They often have one side that is very steep and one side that is not so steep. The steep side makes a big, tall cliff. The Harz Mountains in Germany are fault-block mountains. Some other examples are the Grand Tetons in Wyoming and the **Basin and Range area in Utah, Nevada, and Arizona.**

Under the Dome

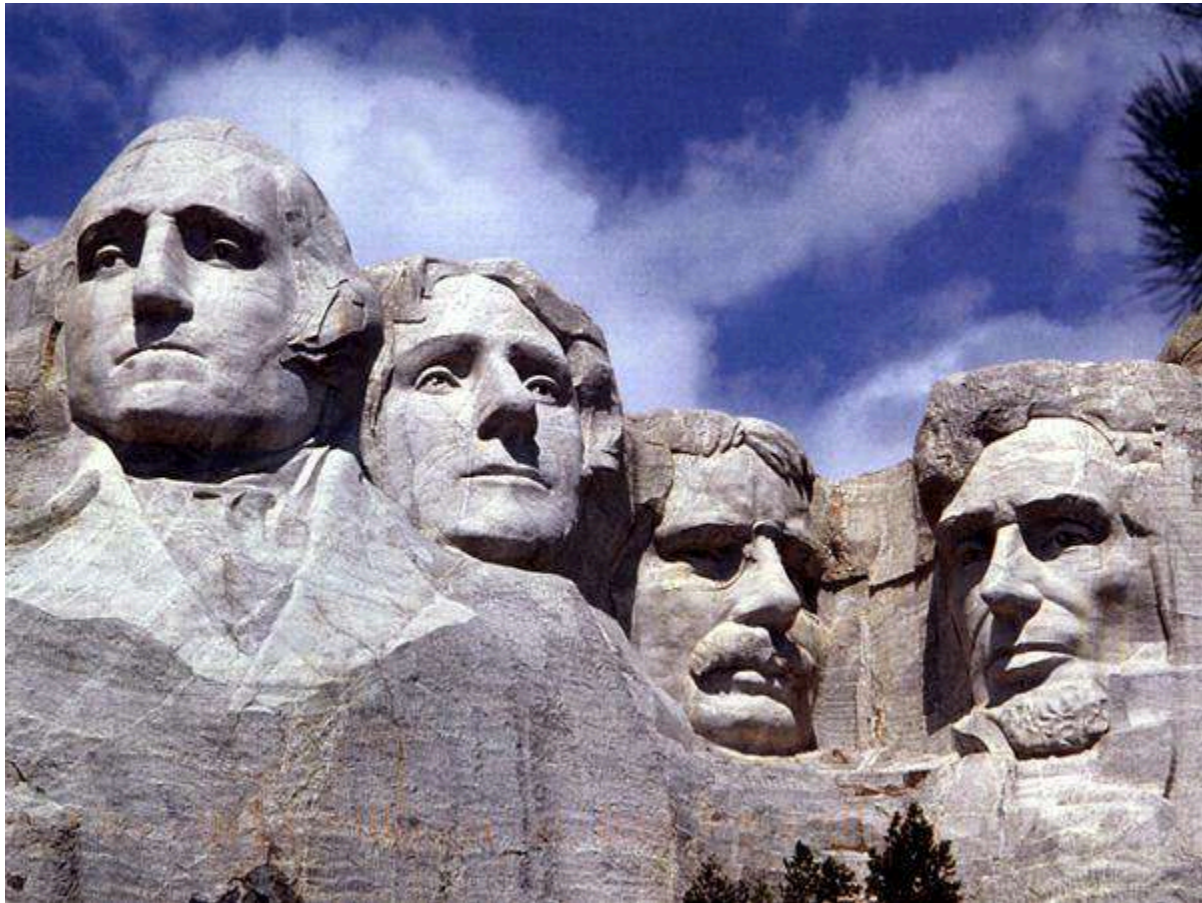
Dome mountains look different from regular mountains. They look like big bumps of rock with round tops. They are usually all by themselves in flat areas.

Some mountains are called dome mountains. They form when hot rock from inside the Earth pushes up. The rock cools and makes a big lump. This lump pushes up the ground and makes a mountain. Utah's Navajo Mountain is a dome mountain.



Mountains on the Prairie

You can see the Black Hills from a long way off. They are big mountains that look like hunched shapes on the grassy plains. The Black Hills are the highest mountains east of the Rocky Mountains. They are made of very old granite. The sculptor Gutzon Borglum made Mount Rushmore by carving faces into the rock. Another sculpture in the Black Hills is the Crazy Horse Memorial, which is the biggest sculpture in progress and honors the Native American leader Crazy Horse.



Sources:

<https://firefly.adobe.com/>

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