

Making the Way

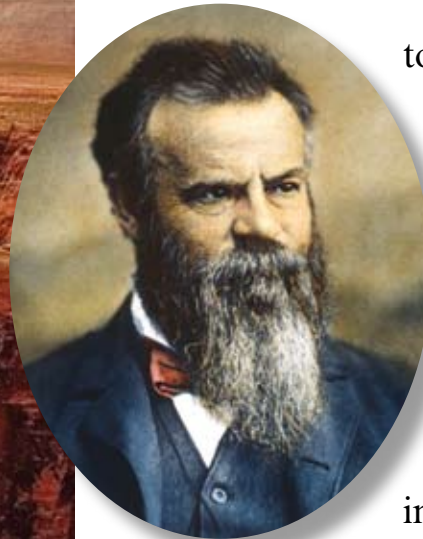
People have always wanted to explore the earth. Some of them want to learn about the earth, too. They want to know what it is made of and how it came to be. They are called **geologists**. They are scientists who study the earth and its history.

On the next pages, you will learn about some of the first geologists of modern times.

↑ the Grand Canyon



John Wesley Powell (1834–1902)



John Powell was born in New York. As a child, he liked to go on trips to explore and collect. When he was twenty, he spent four months walking across Wisconsin. He studied wildlife and landforms there. He rowed down the Mississippi and other rivers. He lost one of his arms when he was a soldier during the Civil War. Later, he became a geologist and an explorer of the American West.

Powell loved exploring. He wanted to explore the Grand Canyon. Everyone thought it was impossible. In 1869, Powell gathered nine men, four boats, and enough food for ten months. He didn't know how long the trip would take. They rode rough rapids. Some of their boats turned over. They lost food. Four men left the group. But Powell believed they could make it. And they did! They made it down the Colorado River and through the Grand Canyon. The trip took them three months.

Powell studied the Grand Canyon on the trip. He thought about what he saw. He believed erosion from the Colorado River formed the canyon. His trip proved him right. A couple of years later, he made the trip again. He produced a map of the area.

Powell helped set up the United States Geological Survey (USGS) in 1879. It is an important group of earth scientists. The scientists study land changes. They also study the link between people and the land. This study helps people make important decisions about the earth.

← Powell worked with the Paiute Indian tribe on his expedition.

Grove Karl Gilbert (1843—1918)

Grove Karl Gilbert did not plan to be a geologist. He studied Greek and math and became a teacher. He soon realized it wasn't the right job for him. He started to work at a science center. He studied fossils, rocks, and minerals. On one job, he dug up the bones of an ancient animal. He then learned something about himself. He was more interested in the hole that the bones came from than the bones themselves. He wanted to study how the land was formed and how it changed.

In 1899, Gilbert was picked to go on a trip along the coast of Alaska. A rich railroad builder took 126 scientists and artists on the trip. The trip was the largest and most well known that the world had ever seen. Gilbert went on the trip to study **glaciers** and **landforms**. He took many photographs and wrote a book about them. Many people thought it was the best book from the trip.

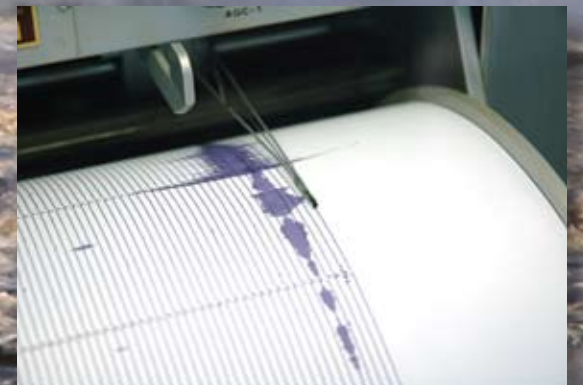
In 1905, Gilbert went to California to study gold mining. He always wanted to feel an **earthquake**, and in 1906 he got his wish. The great San Francisco earthquake hit. He felt its power, and he saw its destruction. Gilbert spent months studying the damage and causes of the disaster.

← Grove Karl Gilbert

A huge wave churning
the sand can do
great damage. →

Earthquakes Under the Ocean

A terrible 2004 earthquake in the Indian Ocean started deadly **tsunamis**. The waves killed more than 200,000 people. The size of the earthquake was between 9.1 and 9.3. It was the fourth-largest one ever recorded. It was large enough to vibrate the entire planet at least half an inch. It set off earthquakes in other places, too. Scientists are studying the data from many **seismographs** to learn more about this earthquake. They hope what they learn will help to predict future earthquakes.



↑ A seismograph shows and records the power of earthquakes.