

## Plate Tectonics • Section Summary

## Drifting Continents

### Key Concepts

- What was Alfred Wegener's hypothesis about the continents?
- What evidence supported Wegener's hypothesis?
- Why was Alfred Wegener's theory rejected by most scientists of his day?

In 1910, a young German scientist named Alfred Wegener became curious about why the coasts of several continents matched so well, like the pieces of a jigsaw puzzle. He formed a hypothesis that Earth's continents had moved! **Wegener's hypothesis was that all the continents had once been joined together in a single landmass and have since drifted apart.** He named this supercontinent Pangaea, meaning "all lands." According to Wegener, Pangaea existed about 300 million years ago. Over tens of millions of years, Pangaea began to break apart. The pieces of Pangaea slowly moved toward their present-day locations, becoming the continents of today. The idea that the continents slowly moved over Earth's surface became known as **continental drift**. In a book called *The Origin of Continents and Oceans*, Wegener presented his evidence. **Wegener gathered evidence from different scientific fields to support his ideas about continental drift. He studied land features, fossils, and evidence of climate change.**

Mountain ranges and other landforms provided evidence for continental drift. For example, Wegener noticed that when he pieced together maps of Africa and South America, a mountain range running from east to west in South Africa lines up with a range in Argentina. Also, European coal fields match up with coal fields in North America.

Fossils also provided evidence to support Wegener's theory. A **fossil** is any trace of an ancient organism preserved in rock. The fossils of the reptiles *Mesosaurus* and *Lystrosaurus* and a fernlike plant called *Glossopteris* have been found on widely separated landmasses. This convinced Wegener that the continents had once been united.

Wegener used evidence from climate change to further support his theory. For example, an island in the Arctic Ocean contains fossils of tropical plants. According to Wegener, the island once must have been located close to the equator. Wegener also pointed to scratches on rocks made by glaciers. These scratches show that places with mild climates today once had climates cold enough for glaciers to form. According to Wegener's theory, Earth's climate has not changed. Instead, the positions of the continents have changed.

Wegener also attempted to explain how the drift of continents took place. **Unfortunately, Wegener could not provide a satisfactory explanation for the force that pushes or pulls the continents.** Because he could not identify the cause of continental drift, most geologists rejected his theory. For nearly half a century, from the 1920s to the 1960s, most scientists paid little attention to the idea of continental drift. Then new evidence about Earth's structure led scientists to reconsider Wegener's bold theory.

**Plate Tectonics** ▪ *Review and Reinforce*

# Drifting Continents

## Understanding Main Ideas

*Fill in the blanks in the table below.*

Types of Evidence	Example of Evidence
Evidence from 1. _____	a. Mountain ranges in South America and 2. _____ line up b. European coal fields match with similar coal fields in North America
Evidence from Fossils	a. Fossils of the plant 3. _____ found in rocks on widely separated landmasses
Evidence from 4. _____	a. Fossils of tropical plants found near Arctic Ocean b. Scratches in rocks made by 5. _____ found in South Africa

*Answer the following questions on a separate sheet of paper.*

6. State the hypothesis of continental drift.
7. Why did most scientists reject Wegener's theory for nearly a half century?

## Building Vocabulary

*Fill in the blank to complete each statement.*

8. All the continents were once joined together in a supercontinent called \_\_\_\_\_, meaning "all lands."
9. A(n) \_\_\_\_\_ is any trace of an ancient organism preserved in rock.
10. Wegener's theory that the continents slowly moved over Earth's surface became known as \_\_\_\_\_.