Name _____ Date 4/17/19 Class _____

28a

Plate Tectonics ▪ *Section Summary*

Purpose for reading: Find evidence that supports Continental Drift theory.

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?

Plate Tectonics

edge boundary

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.**

All land Connected

(1) 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.

Types of dinosaurs

(2) 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.

Type of Plant

(3) 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.

warm humid moister

Cold dry

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.

how did they drift?

Potential Energy

Earthquakes

Volcanoes