

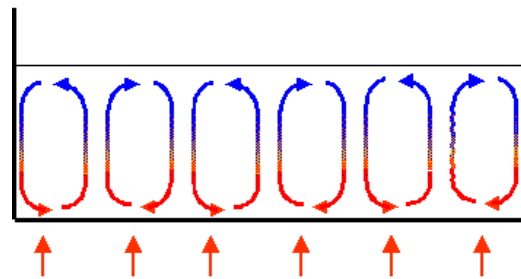
Continental Drift Part II

Wegener's Hypothesis

- Wegener was a scientist who published a book called *The Origins of Continents and Oceans* in 1915. This book contained the idea that all continents had once been joined together in a supercontinent called Pangaea. He said that the supercontinent had since broke apart and that the continents of the world had moved to their current positions. This theory was called **continental drift**.
- Many did not believe this theory since they found it difficult to see how continents could move through oceans.
- Wegener suggested that centrifugal and tidal forces moved the continents. Scientists proved this suggestion to be false.

Study Tip

Want to see convection cells for yourself? Get a glass pan and fill it up with water. Add some food coloring to the water. Next put a candle underneath the pan, right in the middle. You should see the food-coloring move around in a circle, a miniature convection cell.



An example of convection cells showing how heat creates a circular pattern that can work like a conveyor belt

Convection

- Wegener's colleague, Arthur Holmes came up with a new explanation for continental drift.
- **Convection cells** occur when material in the mantle of the earth is heated and rises up. As more material is heated, it pushes the old material out of the way. As the material cools, it sinks again. This process works like a conveyor belt in order to move the landmasses.



An example of a magnetite pointing in the direction of the magnetic

Magnetic Polarity Evidence for Continental Drift

- **Magnetite** crystals are shaped like miniature bar magnets and they align in such a way that they point to the magnetic north pole at the time they are formed.
 - Scientists can use **magnetometers** to analyze the magnetic properties of these rocks.
- Scientists have found that older rocks of different ages do not point to the same location, nor do they point to the current magnetic north pole.
 - This seems to suggest that the location of the magnetic north pole has moved over time, but this can also be attributed to movement of continents.

- If scientists look at rocks of the same age but on different continents, these magnetites point to different locations. This means that the continents have moved over time.
- **Apparent polar wander** is the phenomenon of how the magnetic north pole seems to have changed location over time, but rather the continents are the ones changing location.

Concept Check

- Be able to explain why continental drift happens.
- Be able to describe apparent polar wander.

