

# Plate Tectonics and Newfoundland

- How old is Newfoundland and Labrador? You might think about John Cabot and say “about 500 years.”

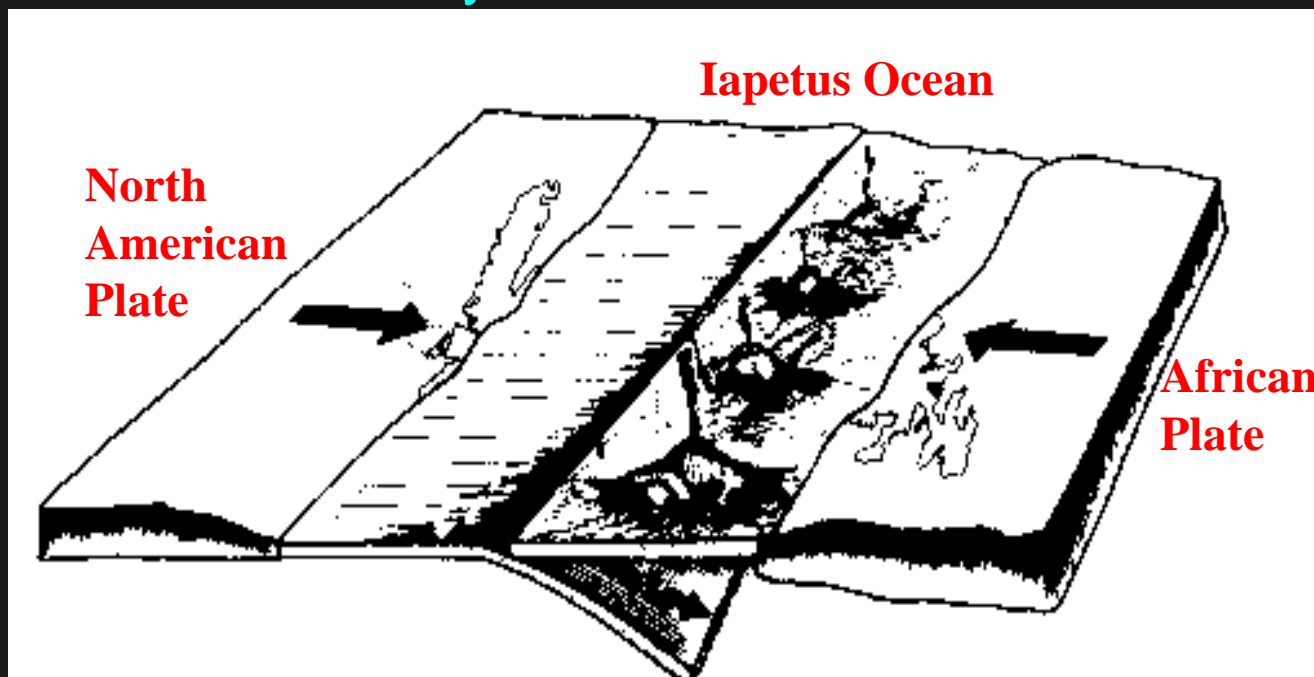
But, using geology we find that the answer is much older.

Remember: **geology** is the **scientific** study of Earth and its **land-forms**.

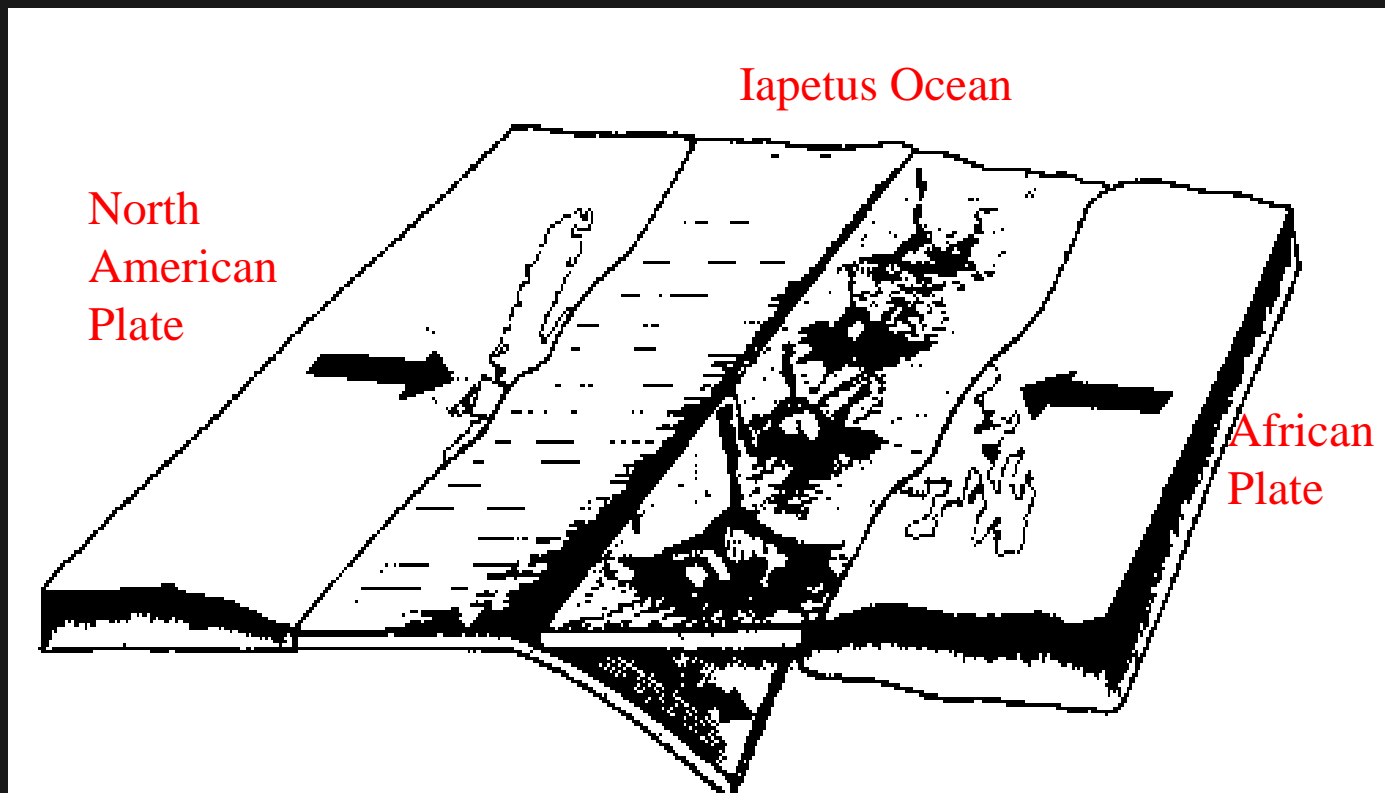
- NL has a rich geological history, hundreds of millions of years old.

## The Geological Formation of Newfoundland

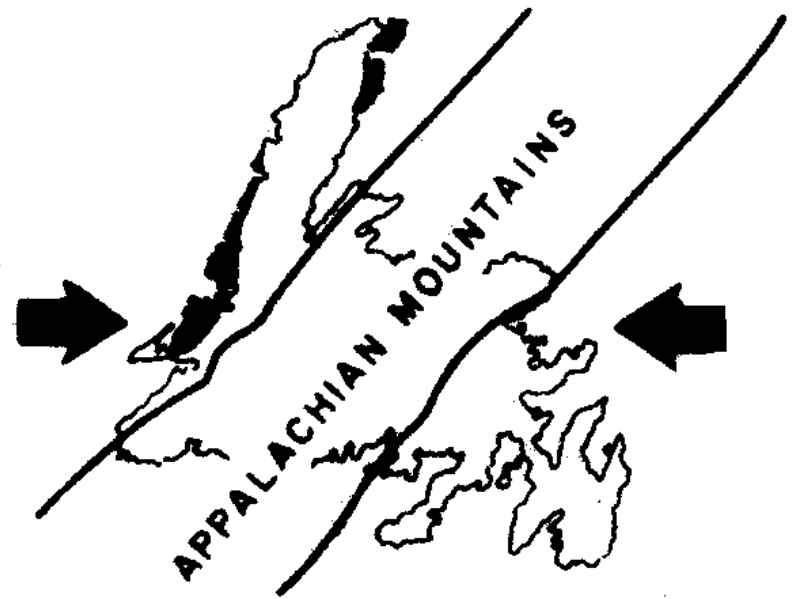
- ~ 500 hundred million years ago, the central portion of North America was under a warm tropical sea called the **Iapetus Ocean**. Europe, Africa and North America bordered this body of water.



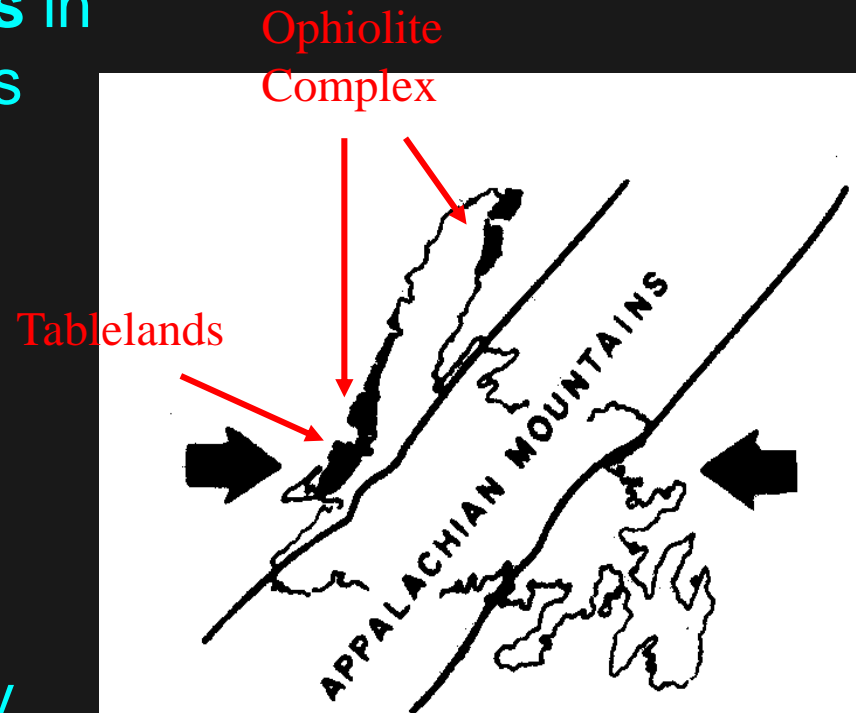
- Over the next 150 million years, forces within Earth's mantle slowly carried these continents on a collision course. As the continents drifted together, the ocean floor was squeezed and then pushed upward to form the **Appalachian Mountains**.



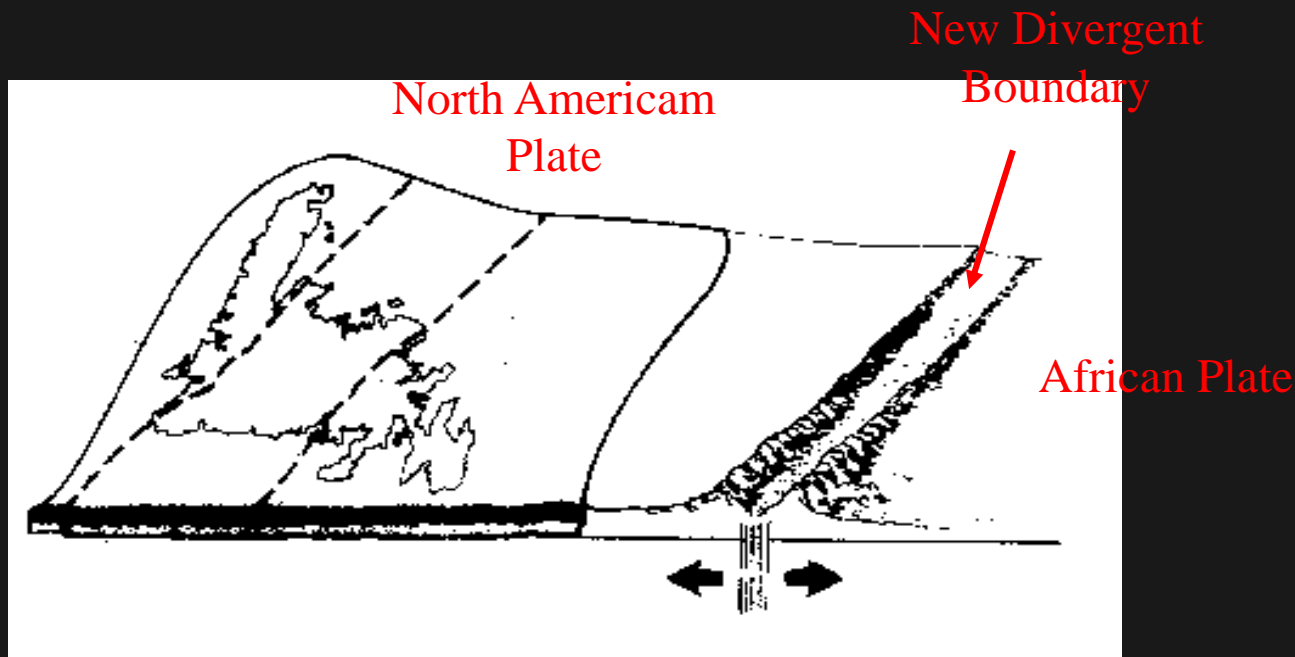
- This mountain range now exists throughout central and western Newfoundland and is the northernmost part of the Appalachians in North America. This range, continues through most of the British Isles and in to Norway.



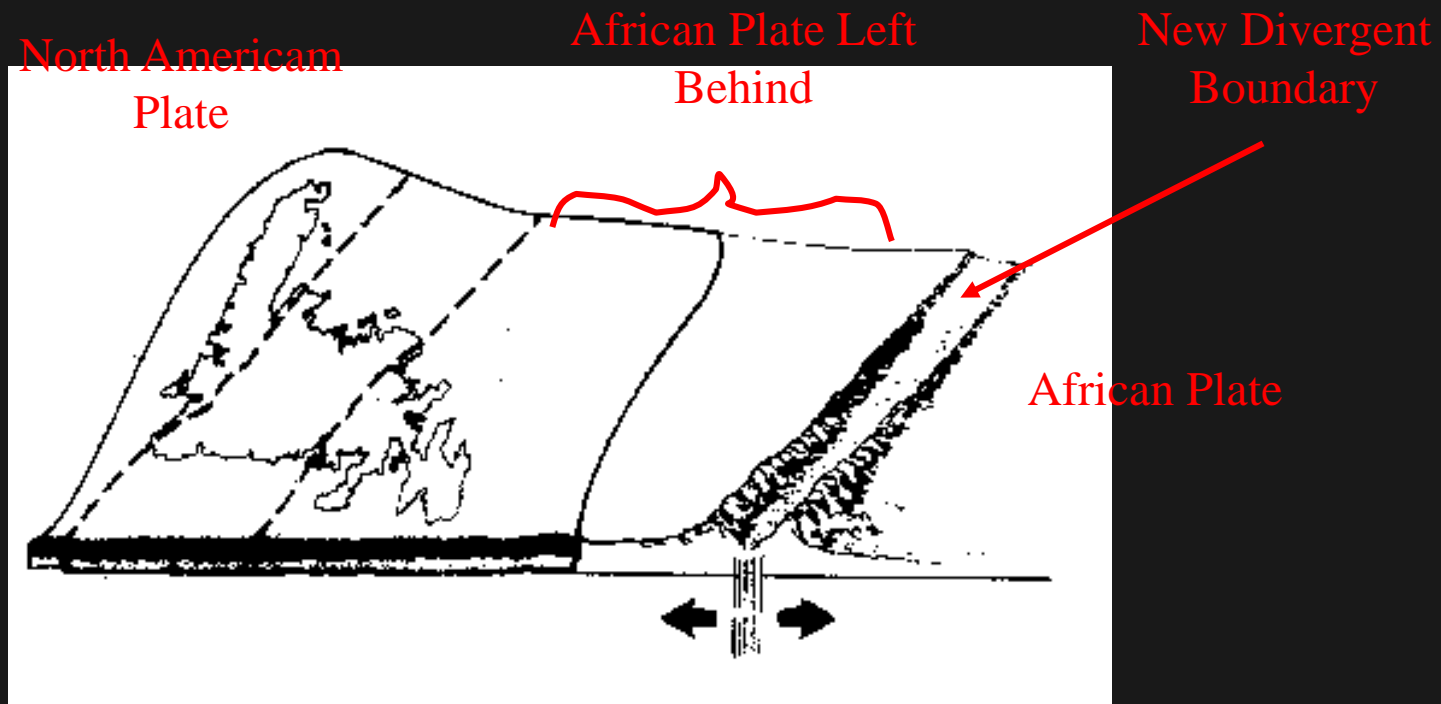
➤ An area called the **Tablelands** in Gros Morne National Park has rocks that were once part of Earth's mantle but were pushed on top of Earth's crust during the **collision** of the continents many millions of years ago. These sightings called **Ophiolite** complexes are rarely seen on Earth's surface.



- 225 million years ago, the forces in Earth's mantle that brought the continents together reversed and slowly began to pull them apart. The divergent boundary responsible for the shifting of the plate rifted within the African plate and caused the plates to drift apart.

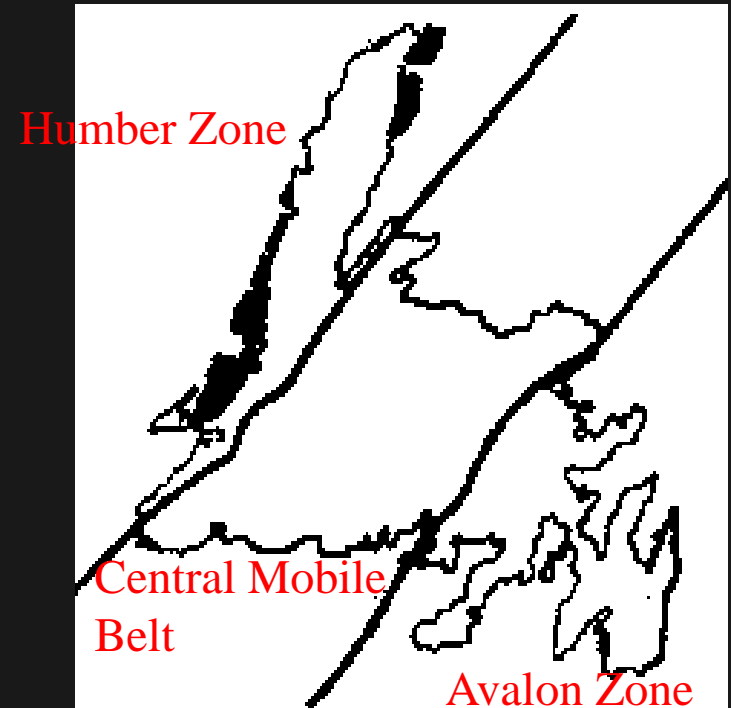


- During this process a small bit of **Africa** got left behind! When you stand on **Signal Hill** in St. John's, you are standing on rocks that are **identical** to ones in the country of Morocco in north Africa! The eastern part of Newfoundland was once a part of the African plate.



# The Geological Layout of Newfoundland

- **Humber (Western) Zone**  
Has been a part of the North American plate for at least the last billion years.
- **Central (Zone) Mobile Belt**  
Remnants of volcanic arcs and the ancient Iapetus ocean floor.
- **Avalon (Eastern) Zone**  
Once part of the African plate which remained attached as Pangaea split 200 million years ago.

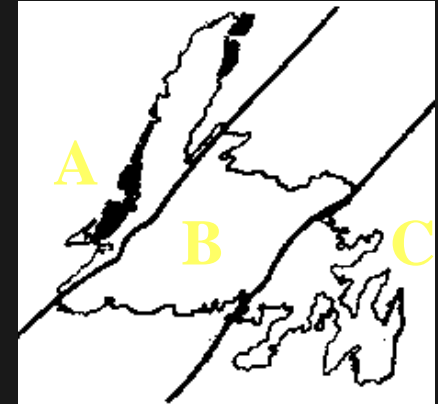




## Sample Problem

Use the diagram and your knowledge of the theory of Plate Tectonics to explain how the three geologic zones of the island portion of Newfoundland and Labrador were formed.

**Answer:**



It is thought that the geology of Island Newfoundland resulted long ago when the Iapetus Ocean was closing. The North American plate collided with the African plate and as a result a portion of the Iapetus Ocean floor was sandwiched in between. Zone “A” is referred to as the Humber Zone and was part of the North American plate. Zone “C” is referred to as the Avalon zone and is thought to be part of the African plate. Zone “B” is referred to as the Central Mobile Belt and is thought to be once part of the ancient Iapetus Ocean.