

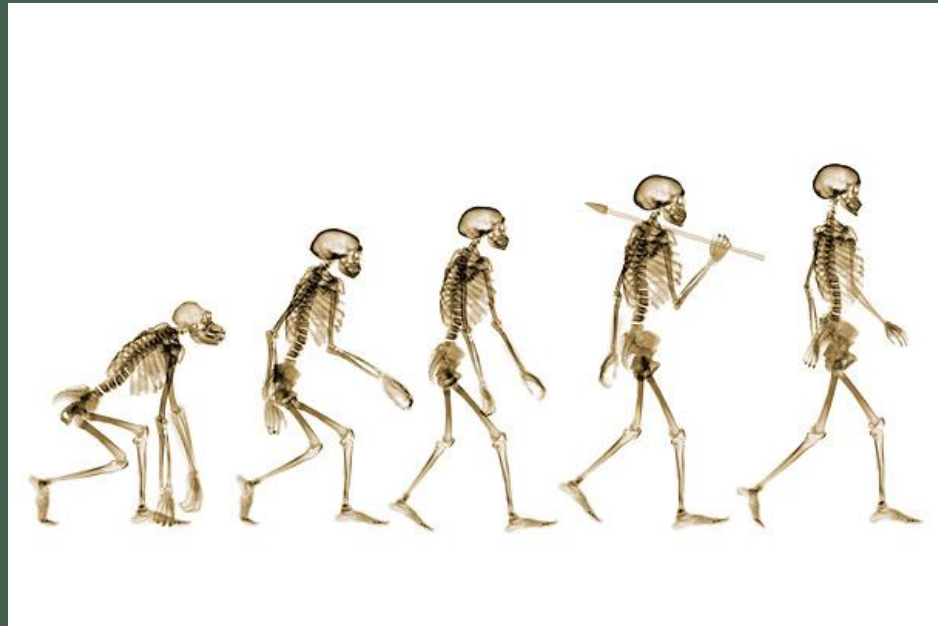


THE PUZZLE OF LIFE'S DIVERSITY

- The variety of living things is called **biological diversity**
 - How did all these organisms arise?
 - How are they related?
- What scientific explanation can account for the diversity of life?

What is a “Theory”?

- A collection of scientific facts, observations, and hypotheses.
- A well-supported, testable explanation of phenomena that have occurred in the natural world.



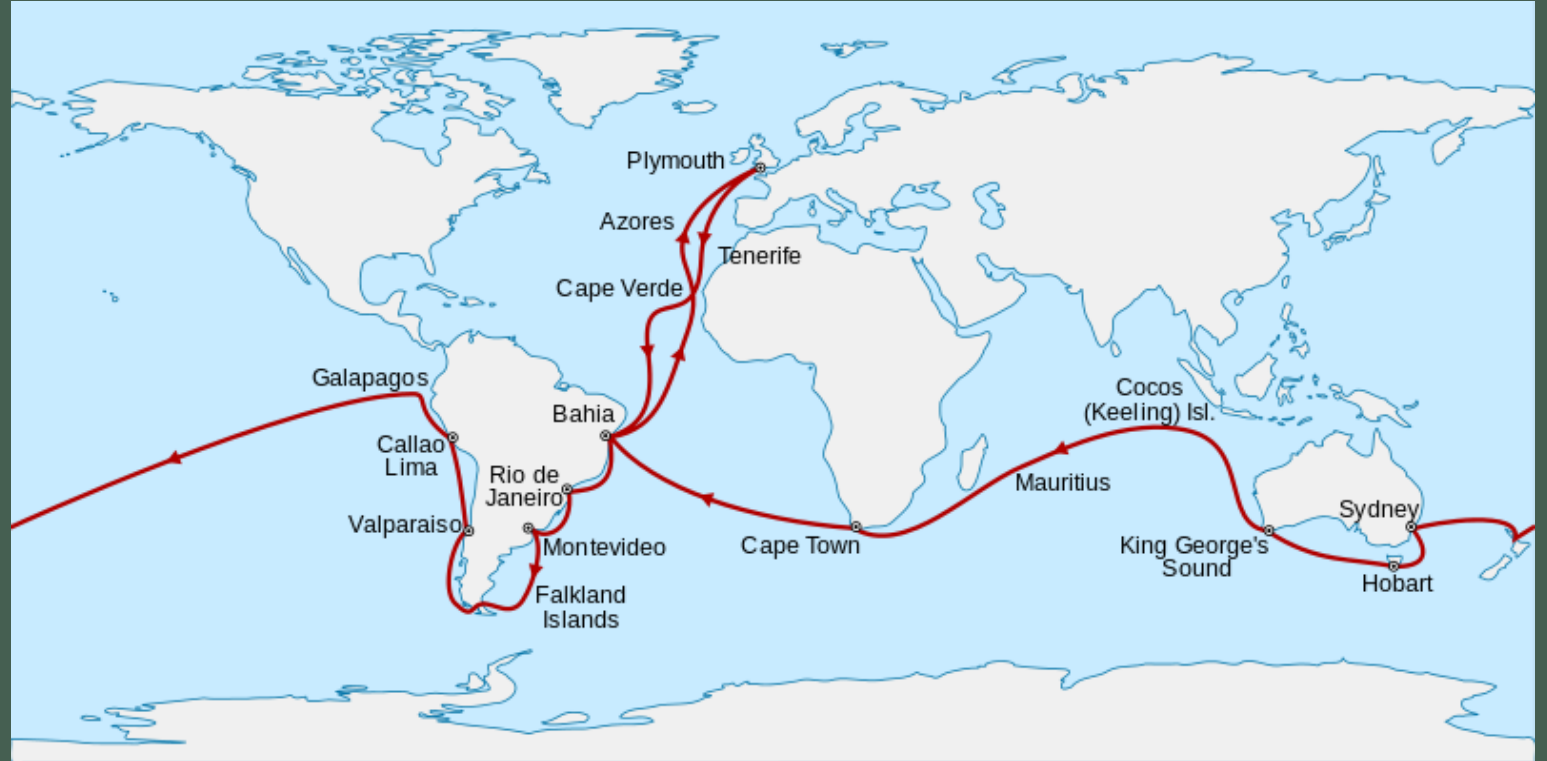
The individual who contributed to our understanding of evolution.....



Charles Darwin!

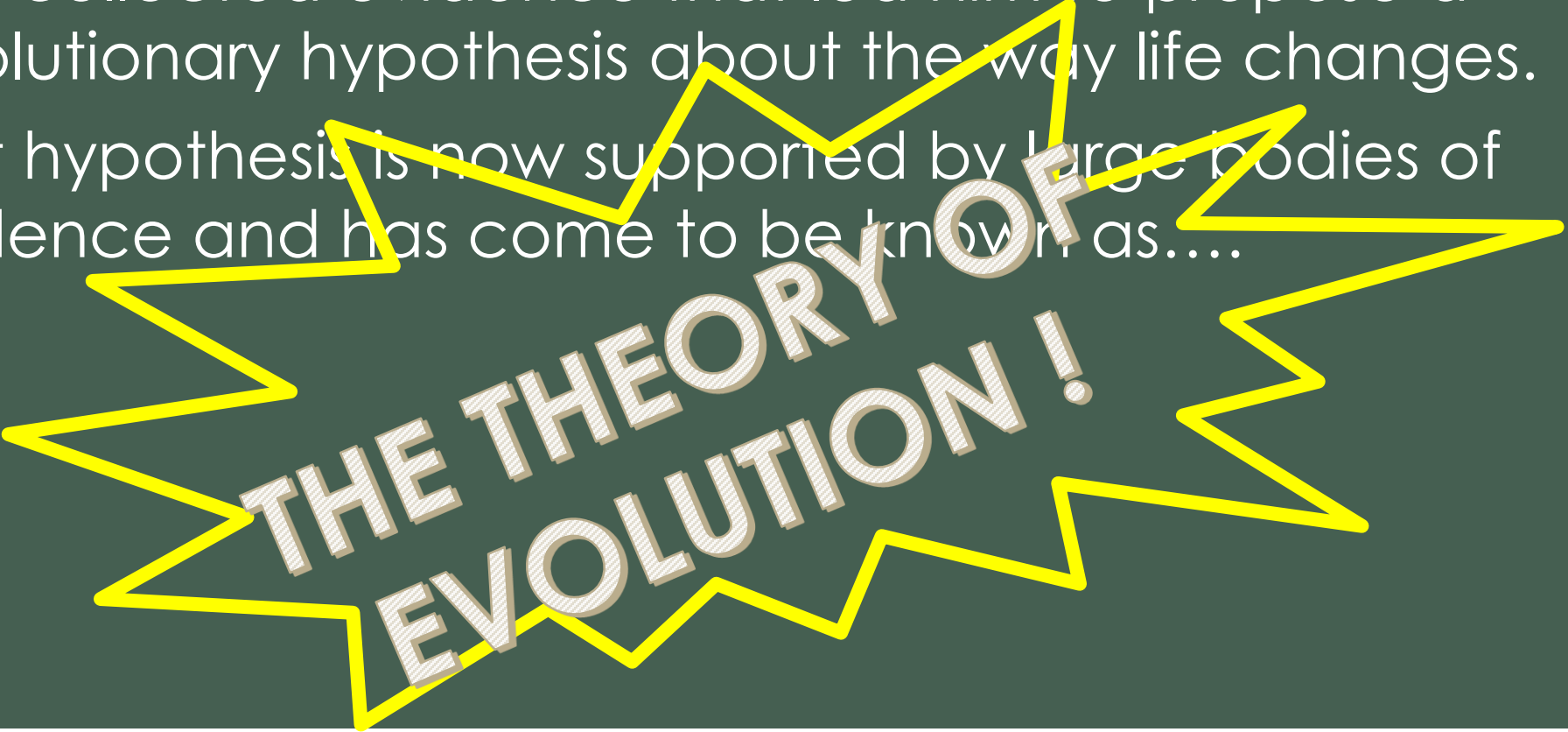
Who was Charles Darwin?

- Born on February 12, 1809
- At the age of 22 he went on a life changing voyage on a ship known as the “Beagle”.
- He set sail from England for a voyage around the world!



The Voyage

- During his travels, Darwin made numerous observations and collected evidence that led him to propose a revolutionary hypothesis about the way life changes.
- That hypothesis is now supported by large bodies of evidence and has come to be known as....

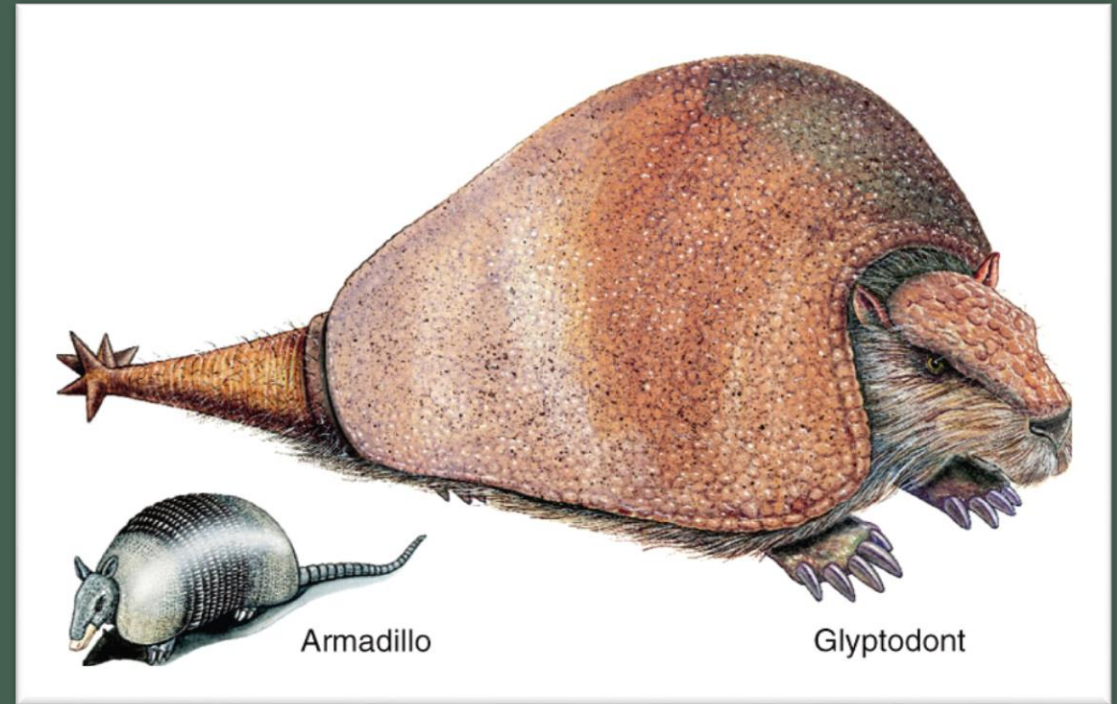


**THE THEORY OF
EVOLUTION!**

Darwin's Observations

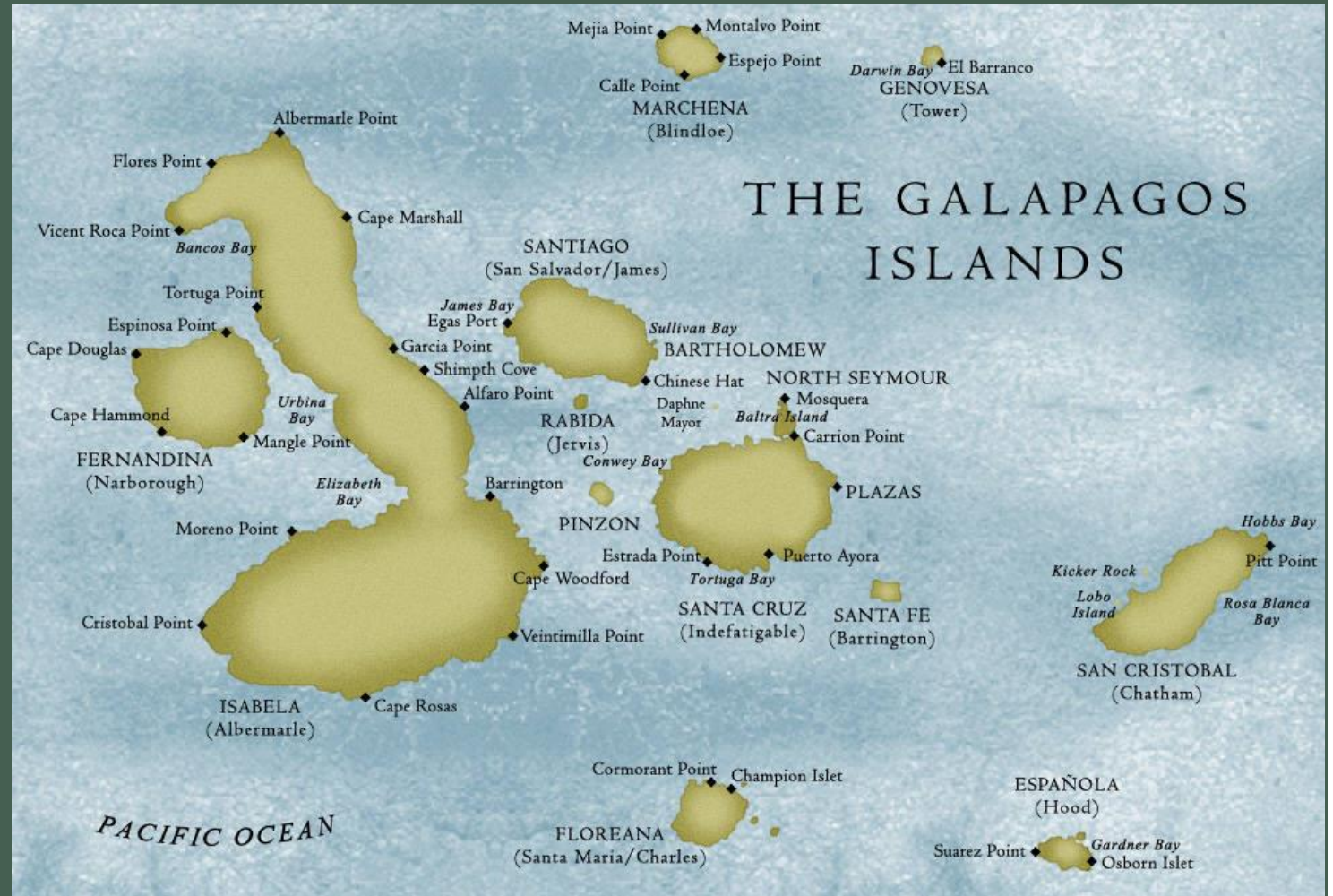
- Darwin was interested by the fact that so many plants and animals seemed so well suited to whichever environment they inhabited. He was impressed by the way organisms survived and reproduced offspring.
- Darwin was also puzzled by where species lived and did not live...
- Why were there no rabbits in Australia despite the presence of habitats that seemed perfect for them?
- Why were there no kangaroos in England?

- In many places Darwin collected the preserved remains of ancient organisms, called **fossils**.
- Some of the fossils resembled organisms that were still alive and others looked unlike any creature he had ever seen!
- He began thinking.....
 - Why had so many of these species disappeared?
 - How were they related to living species?



THE GALAPAGOS!

- ***The most influential port for Darwin***
- Although close together, each island had very different climates.
- Small islands were hot and dry and nearly barren
- Higher islands had greater rainfall and more vegetation.



Tortoises and Finches!



- On the Galapagos, Darwin learned that the shape of a tortoise's shell could be used to identify which island a particular tortoise inhabited.
- Darwin also saw birds hopping around and collected specimens not thinking anything of it....

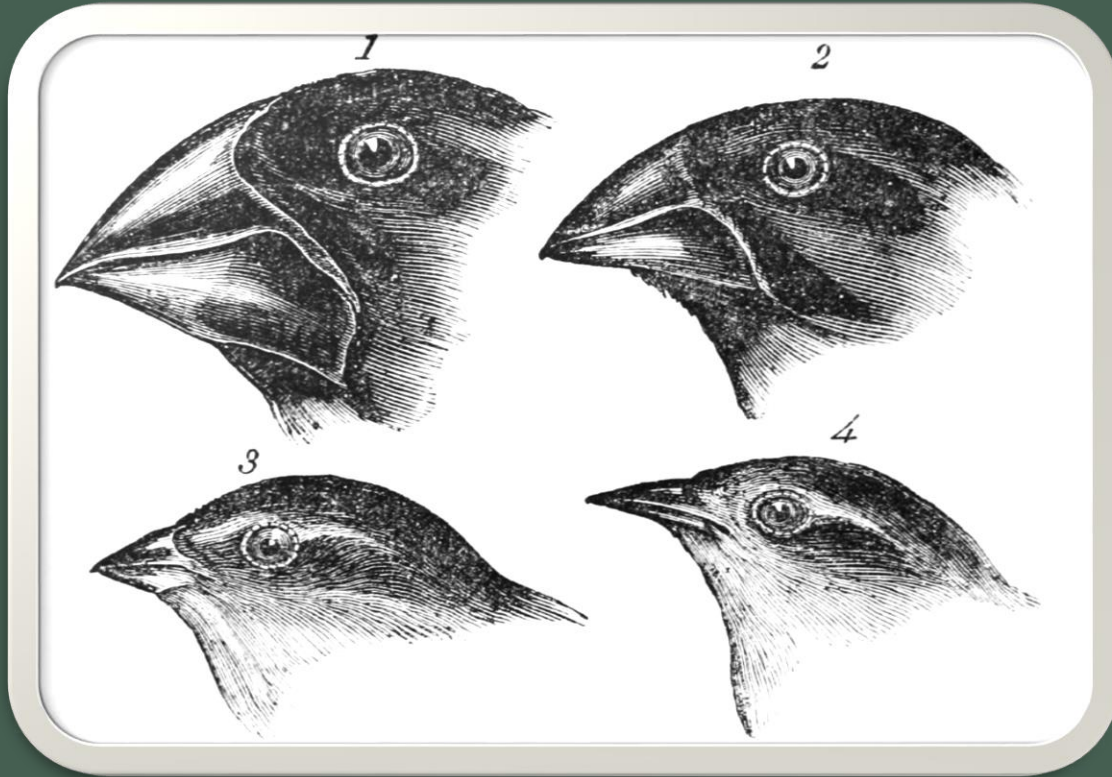


Tortoise with saddle-shaped shell



Tortoise with dome-shaped shell

Which would live on a “barren” island?
Which would live on an island with high
rainfall and vegetation?



It was not until his journey home that Darwin examined his findings. He looked at the birds collected from the islands and noticed something...

**That's called
"variation"!**

The characteristics of many animals varied noticeably among the different islands of the Galapagos!



- This led Darwin to wonder if animals living on different islands had once been members of the same species....
- That means the species must have evolved from an original ancestor...



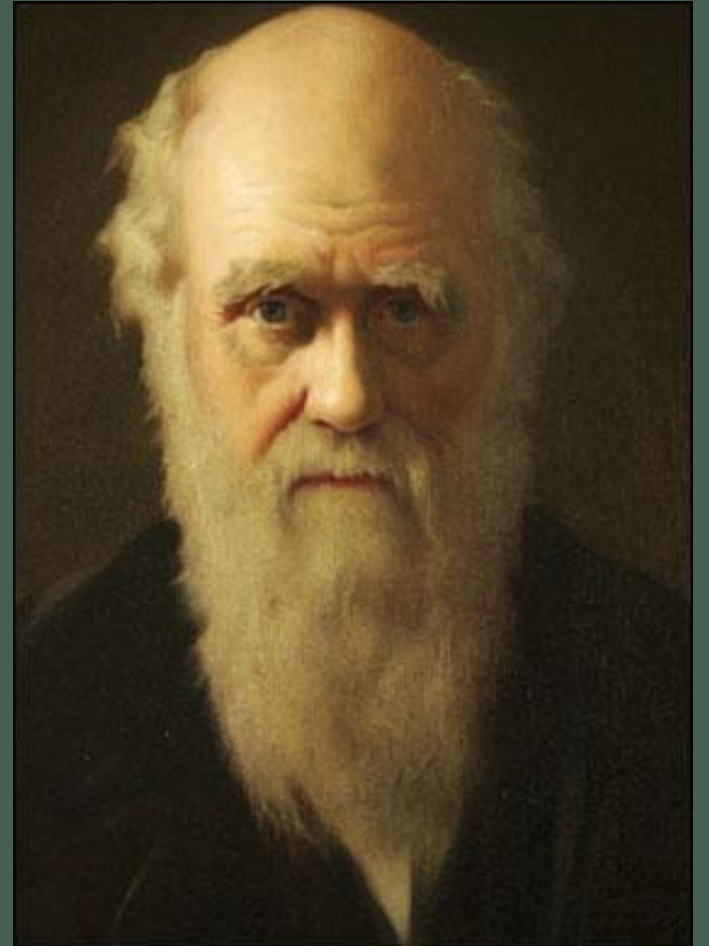
Why was this such a revolutionary idea?!

- Most Europeans in Darwin's day believed that the Earth and all of its forms of life had been created only a few thousand years ago.
- Since that original creation, they concluded that neither the planet, nor its living species had changed.
- Darwin's thinking, however, had begun to change...

- When Darwin had set sail, a fossil record was challenging that traditional view of life.
- Darwin read a geological book written by **Charles Lyell**.
- Lyell's work explained how awesome geological features could be built up or torn down over long periods of time.
- This understanding of geology influenced Darwin in two ways..

Shaping Darwin's Theory...

1. If the earth could change, might life as well?
2. He realized that it would have taken *many many* years for life to change in the way he suggested, that would only be possible if the earth was extremely old.



- When Darwin returned in 1836, he began filling out notebooks with his ideas about species diversity and the process that would later be called **EVOLUTION**.
- But he didn't rush to publish his thoughts...
- It wasn't until **ALFRED WALLACE** wrote an essay with Darwin's same ideas!
- Darwin then published his book in 1859!

In his book, he proposed a mechanism for evolution that he called...

**NATURAL
SELECTION!**