Chapter 15-1: The Puzzle of Life's Diversity

Essential Questions:

- What was Charles Darwin's contribution to science?

- What patterns did Darwin observe in the Galapagos Islands?
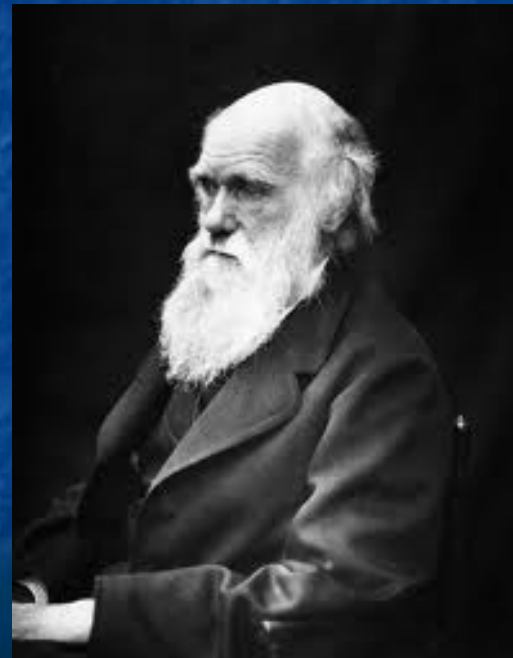
- What contemporary ideas shaped Darwin's thinking?

Voyage of the *HMS Beagle* – 1831 - 1836

- **Darwin's observations**
  - Patterns of diversity
    - Plants/animals seemed well-suited to their environment
    - Similar environments on different continents had diff. animals/plants

- Living organisms & fossils
  - Some fossils resembled animals alive today
  - Some fossils unlike anything alive today

- **The Galapogos Islands**
  - **Tortoises**
    - Low islands hot & dry, sparse vegetation: tortoises had long necks
    - High islands wetter, lush vegetation: tortoises had short necks
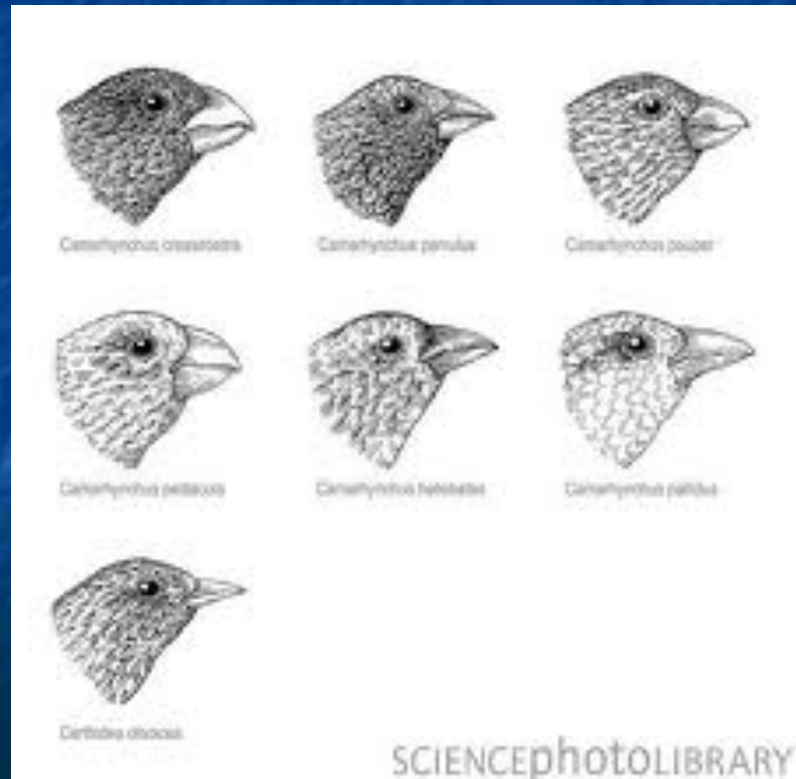   - Shells varied in particular ways from island to island

- **Finches**
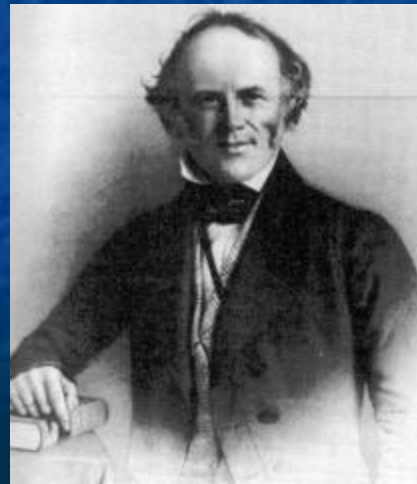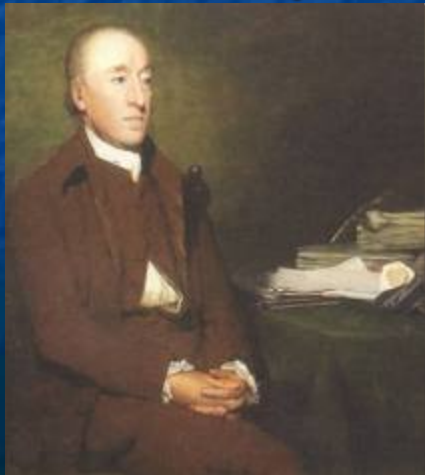 - Beak shape different on different islands
- **The journey home**
  - Darwin wondered if animals living on different islands were once members of the same species

Chapter 15-2: Ideas that shaped Darwin's thinking

- An ancient, changing Earth
  - Hutton: theory of geological change: uniformitarianism
  - Lyell: *Principles of Geology*: explain past in terms of present

- Lamarck's Theory of Evolution
  - Tendency toward perfection
  - Use and disuse: giraffe reaching for vegetation could stretch out neck
  - Inheritance of acquired traits
  - Evaluating Lamarck's theory
    - Behavior doesn't affect genes, so rejected
    - But, first theory attempting to explain how species might change over time

- Population growth
  - Thomas Malthus – 1798
    - If human pop. continued to grow unchecked, at some point not enough food/space available
    - War, famine, disease only things that have checked the pop.
  - Darwin:
    - This is true of all living things
    - Many more organisms are born than can possibly survive
    - Therefore, a *struggle for existence* goes on