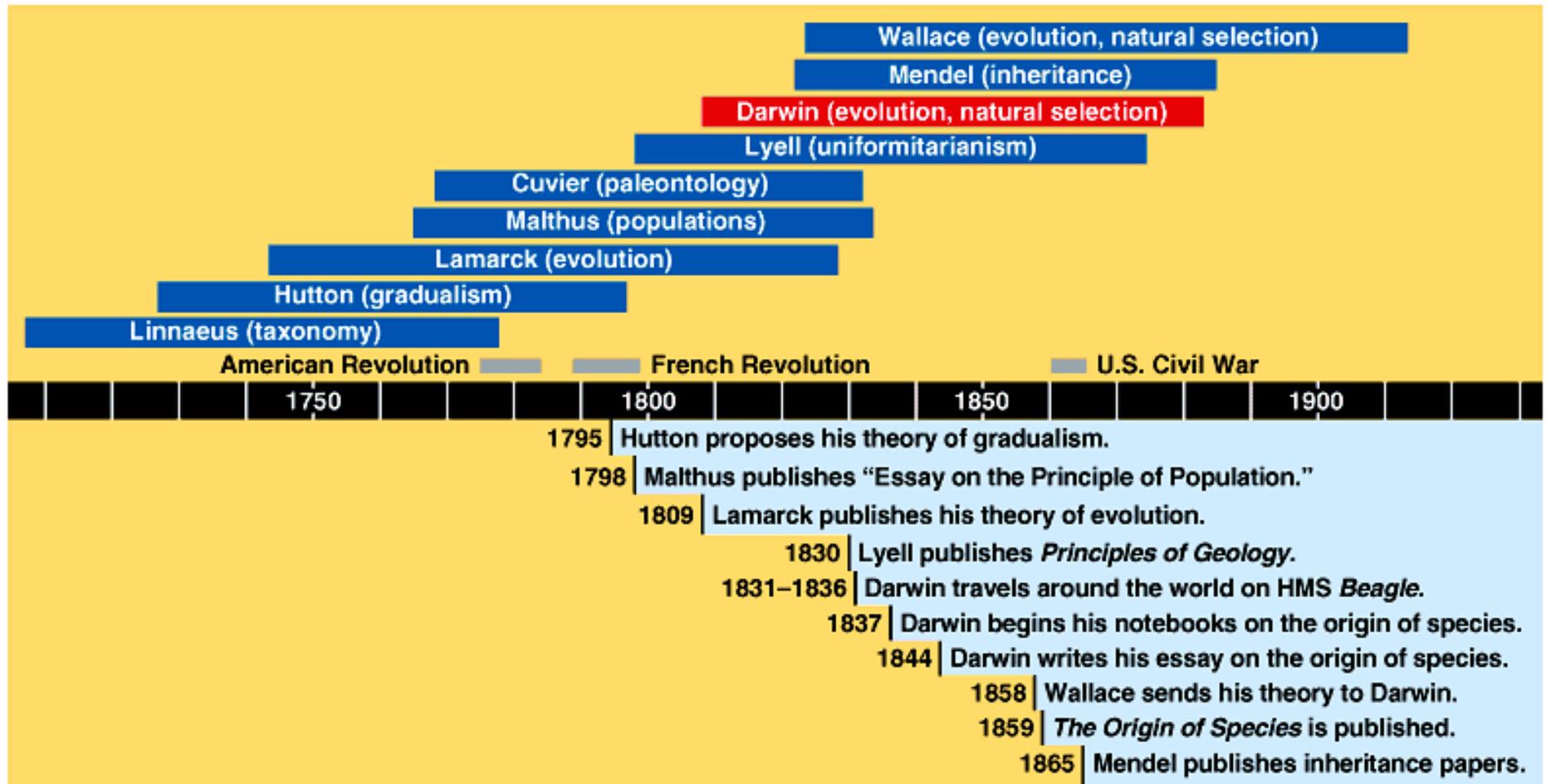


# Ideas that shaped Darwin's thinking



Chapter 15-2

# Evolutionary Timeline



# I. Thomas Malthus

- A. 1798, Proposes that the human population will continue to grow exponentially without the interference of outside forces.
- B. The only forces that could work against the growth were:
  - 1. War
  - 2. Famine
  - 3. Disease



# How Darwin was influenced by Malthus...

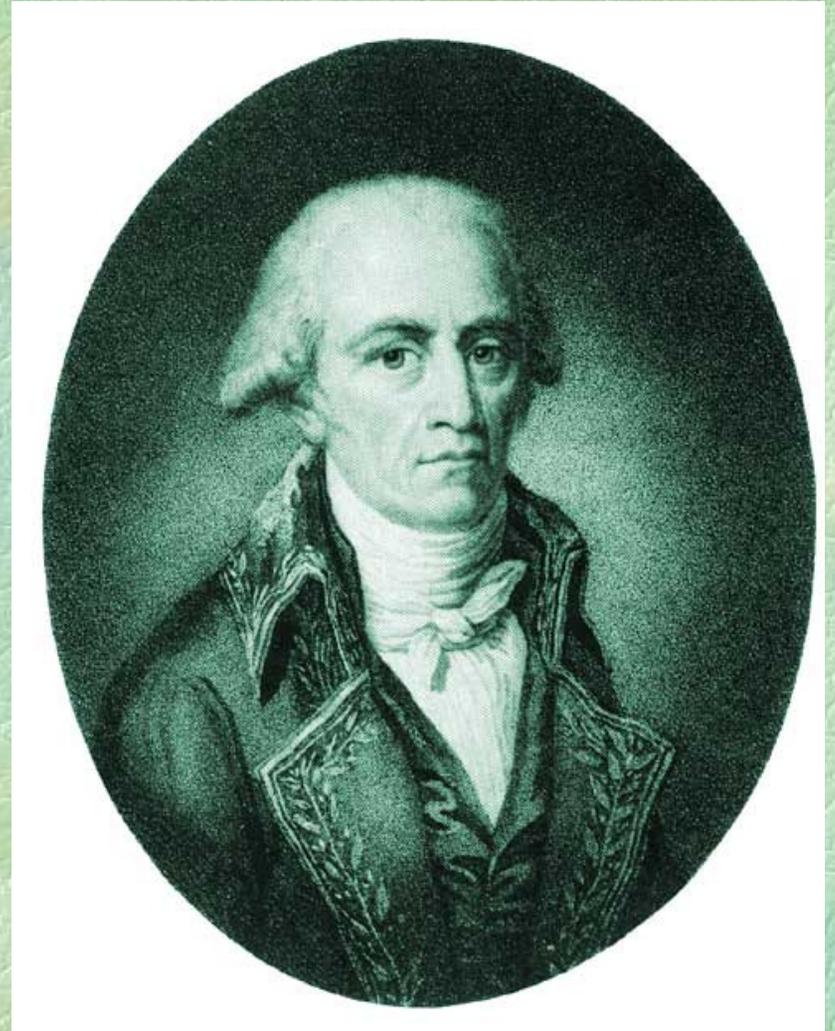
Darwin thought:

What factors determine which offspring will survive and reproduce?

## II. Jean-Baptiste Lamarck

A. Among the first scientists to recognize that living things have changed over time

B. Published his first hypothesis the year Darwin was born, 1809



## C. Like Darwin, Lamarck believed:

1. All species were descended from other species
2. Realized that somehow organisms were adapted to their environment



## D. Tendency Toward Perfection

1. Lamarck believed all organisms have tendency toward perfection and complexity
2. To do this they continually change and acquire features to help live more successfully.

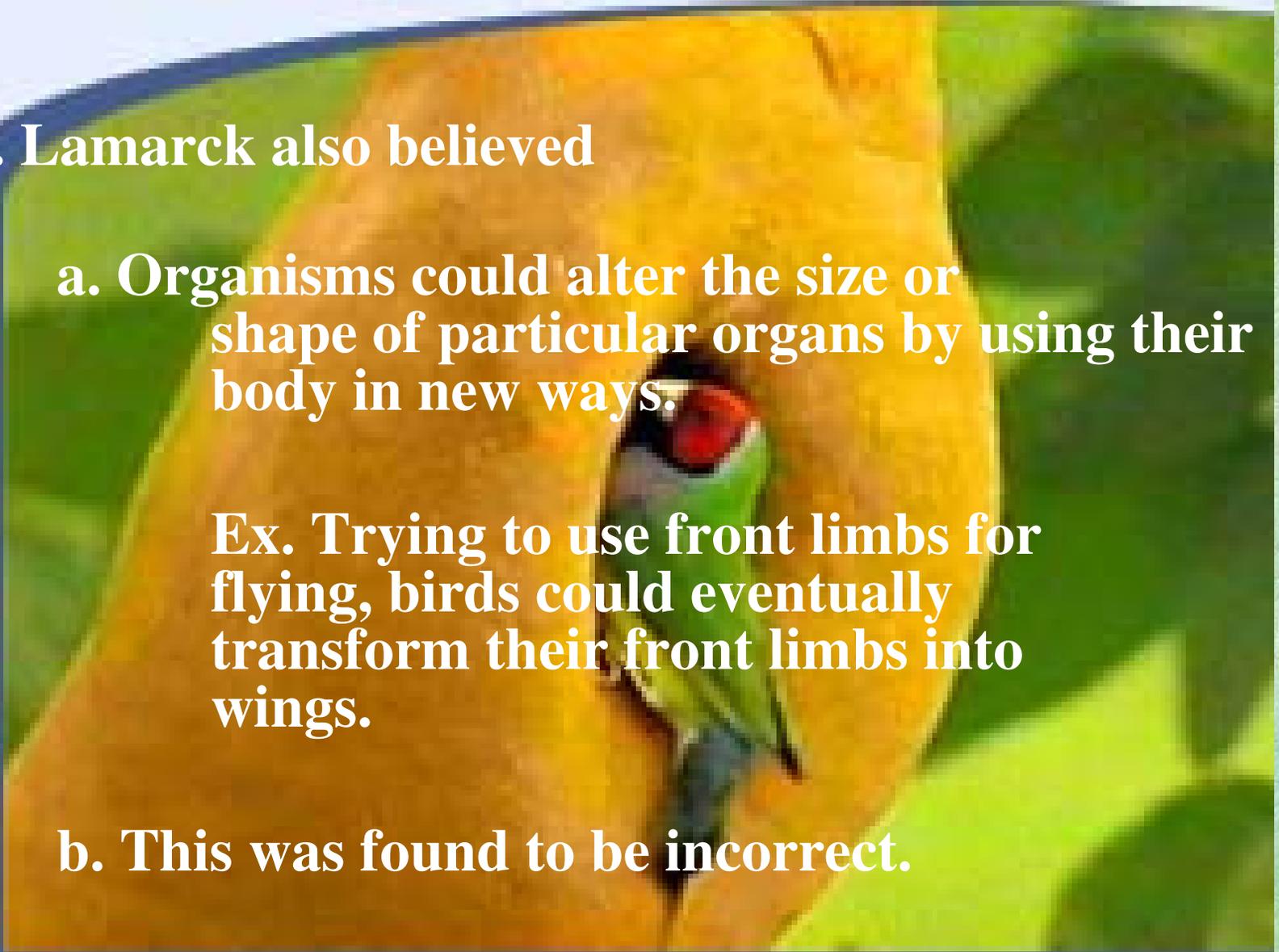
# E. Use and Disuse

## 1. Lamarck also believed

a. Organisms could alter the size or shape of particular organs by using their body in new ways.

Ex. Trying to use front limbs for flying, birds could eventually transform their front limbs into wings.

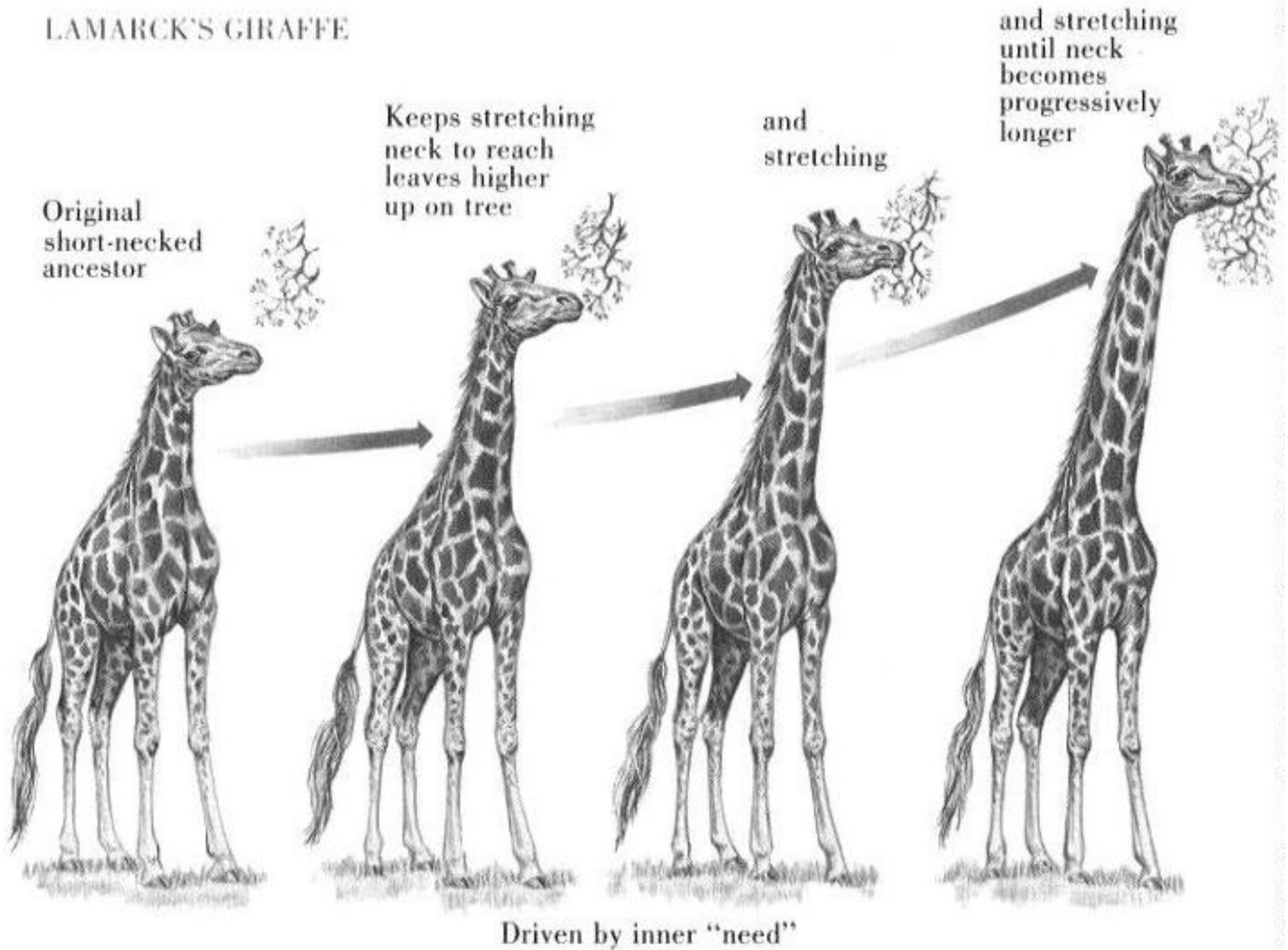
b. This was found to be incorrect.



## F. The Inheritance of Acquired Traits

1. Jean Baptiste de Lamarck proposes The Inheritance of Acquired Traits hypothesis
2. This hypothesis suggested that traits developed during a parent's lifetime are passed down to offspring.
  - a. Ex: Strong muscles built by hard work or exercise.
  - a. Ex: Over its lifetime, a giraffe stretches its neck to reach the leaves at the top of a tree.
3. This hypothesis is proved incorrect.

# LAMARCK'S GIRAFFE



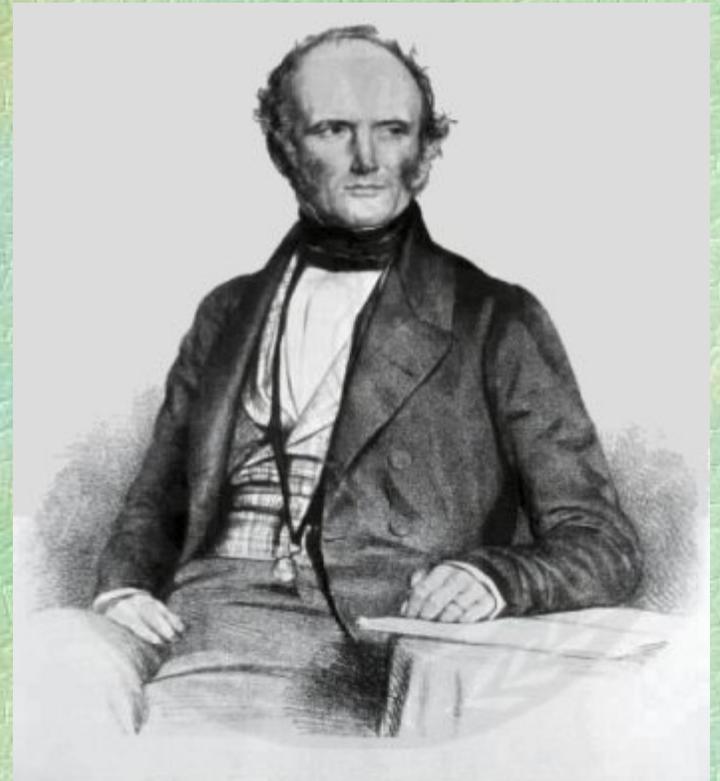
# How Darwin was influenced by Lamarck...

Darwin thought:

There must be some explanation for how organisms change over time.

# III. Charles Lyell

- A. A good friend of both Darwin and Wallace
- B. In 1830, came up with the idea that the earth is shaped by slow moving forces (still in operation today) and acts over a very long period of time.



# How Darwin was influenced by Lyell...

Darwin asked himself:

If the Earth could change over time, could life also change?

Darwin thought:

Life would have taken many, many years to change in the way Darwin suggested, so the Earth must be extremely old.

## IV. Alfred Wallace

- A. Another Naturalist who worked independently of Darwin.
- B. Also, comes up with a similar theory on natural selection based on his own studies.
- C. In 1858, writes to Darwin to tell him about his theory just one year before *Origin of Species* is published.



# How Darwin was “influenced” by Wallace...

Although Darwin published Origin of Species just one year after Wallace wrote to him... Darwin's ideas were written in his essays in 1844.

This was more coincidence than influence.