

# The Story of Evolution



*Scientific Contributions to a Theory of Evolution*

# Once Upon a Time.....

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- ❖ The world believed that all forms of life exist *unchanged* since their creation
- ❖ Most ideas on the origin of life were influenced by religion and philosophy
- ❖ People who criticized these views were often ridiculed and even prosecuted



*Until a man came along named...*

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**GEORGES-LOUIS LECLERC, COMTE  
DE BUFFON (1707-1788)**



# GEORGES-LOUIS LECLERC, COMTE DE BUFFON (1707-1788)

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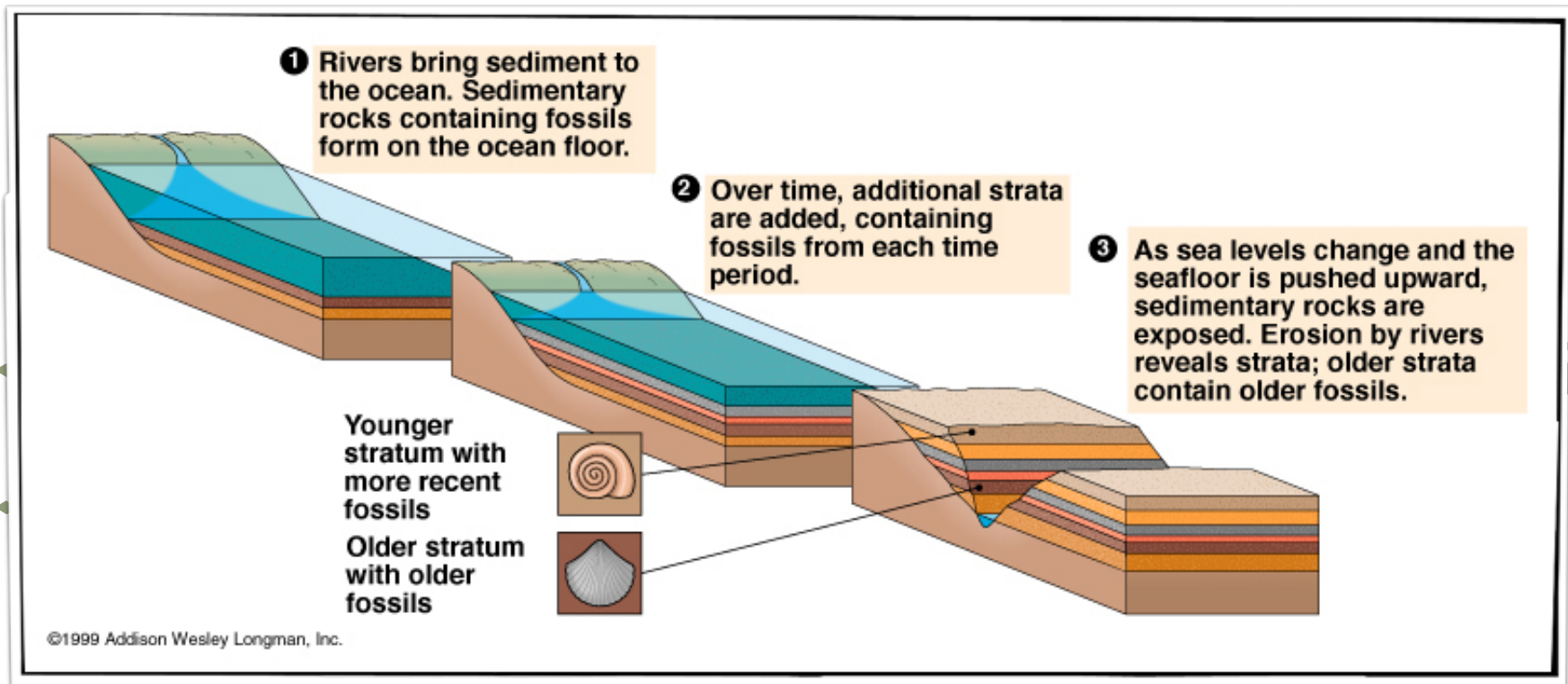
- ❖ Challenged that life forms were unchanging
- ❖ Human and apes have a common ancestor
- ❖ Therefore species changed over time
- ❖ Earth older than 6000 years
- ❖ By 1830, many other scholars were beginning to share their ideas on how life could change with the passage of time



*After George came another George...*

**GEORGES CUVIER (1769-1832)**





- ❖ Studied rock layers and found that the deeper (older) the stratum (rock layer), the more dissimilar the species are from modern life
- ❖ Found that new species appeared and some disappeared as time passed (extinction)

# GEORGES CUVIER (1769-1832)

- Proposed that Earth experiences destructive natural events that would have killed many species
- Now known as catastrophism
- These revolutions, or catastrophes, were limited to a geographical region
- Cuvier explained the reappearance of fossils of species that did not exist anymore because species from nearby regions would repopulate affected areas





*After the second George, there came a man named:*

**CHARLES LYELL (1797-1875)**





# CHARLES LYELL (1797-1875)

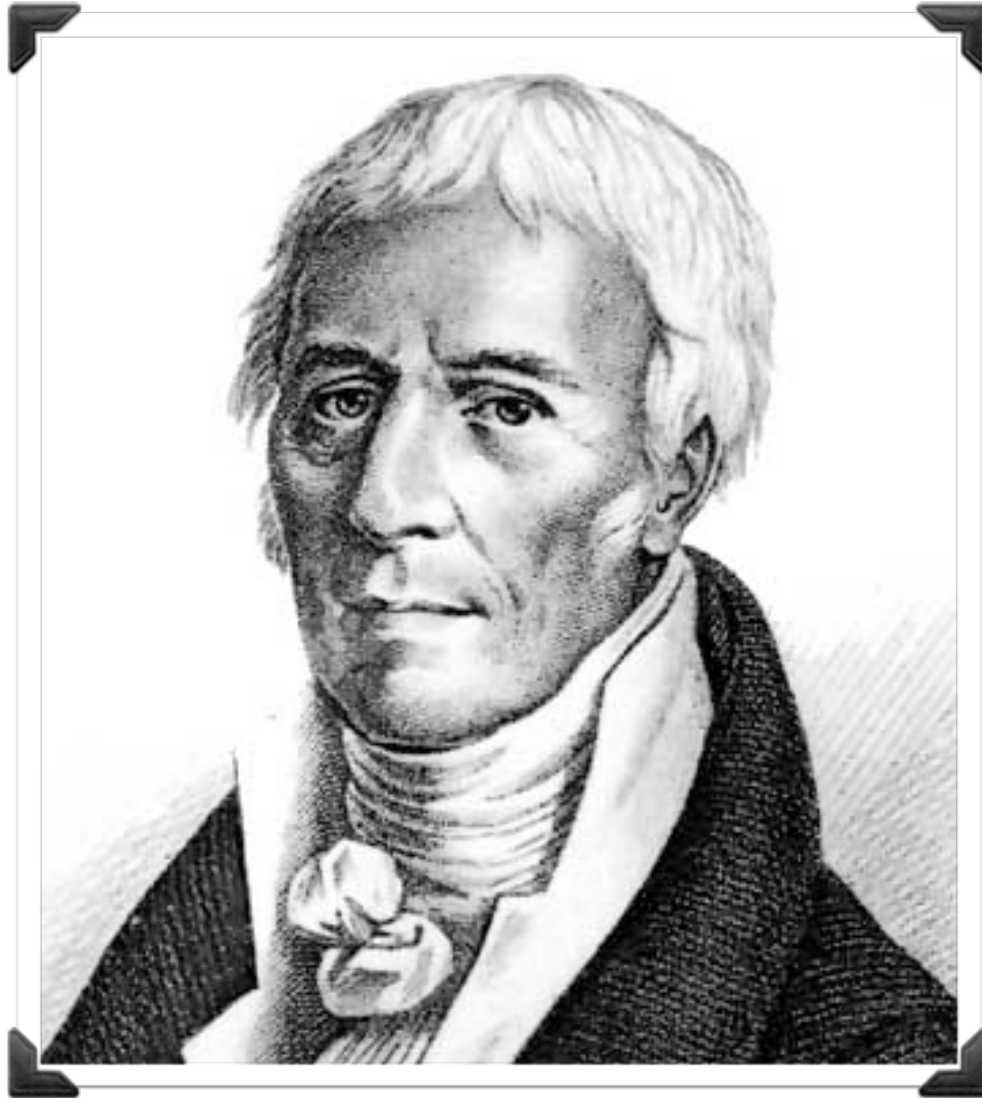


- ❖ Rejected catastrophism
- ❖ Proposed the idea of uniformitarianism: geological changes operated at the same rates in the past as they do today
- ❖ The Earth might be more than 6000 years old if changes are slow and continuous

*Following Charles was an Frenchman named...*

**JEAN-BAPTISTE LAMARCK (1744-1829)**

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# JEAN-BAPTISTE LAMARCK (1744-1829)

- ❖ “line of descent”: progression from older to more recent fossils
- ❖ Thought that organisms become better adapted to their environments
- ❖ Idea known as “inheritance of acquired characteristics”: any characteristic that an organism acquires during their lifetime can be passed onto its offspring
- ❖ Example: giraffes and their long necks
- ❖ Idea of “use and disuse”: body parts that were not used would disappear:



**CLIMAX OF  
THE STORY**



# *The World Famous*

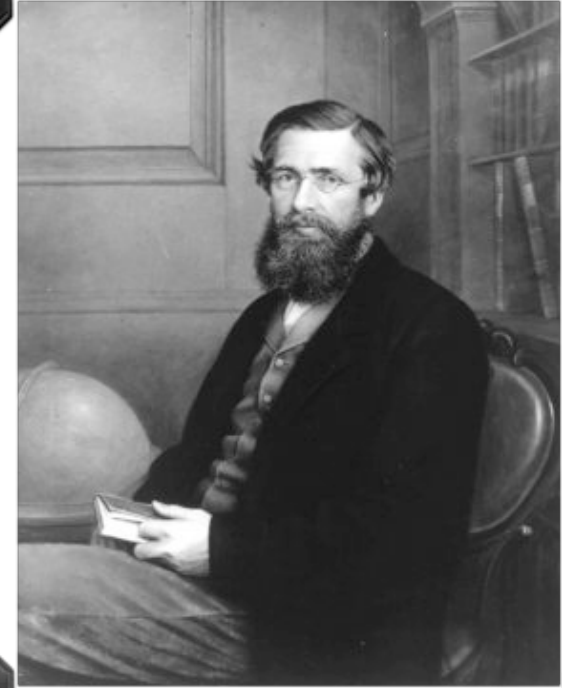
CHARLES DARWIN (1809 -1882)



# CHARLES DARWIN (1809 -1882)



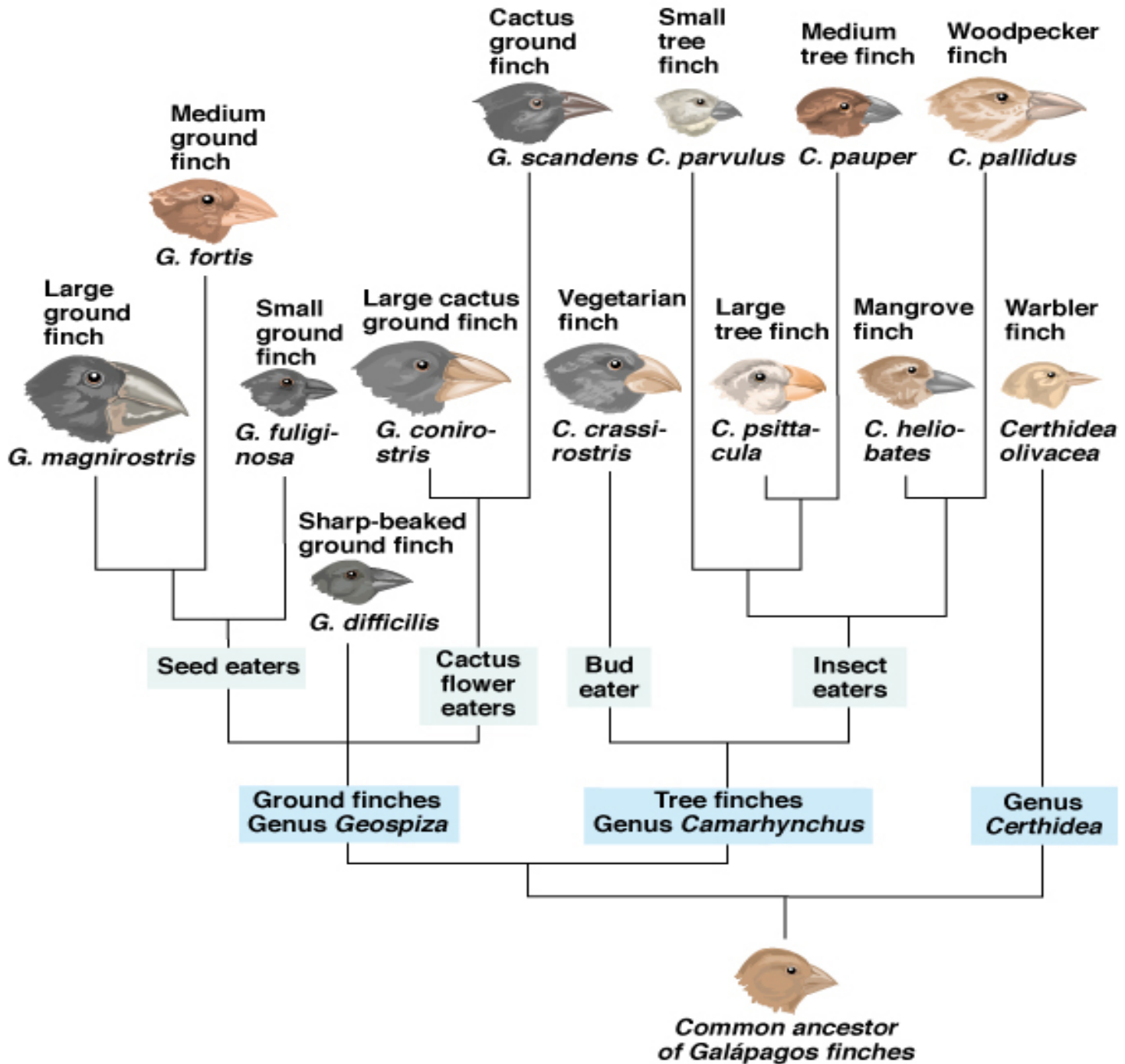
Alfred Russel  
Wallace



Thomas Malthus

# DARWIN

- In 1831, Darwin visited the Galápagos Islands in the Pacific Ocean.





# DARWIN, WALLACE AND MALTHUS

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- ❖ Darwin and Wallace proposed that traits that individuals possessed would help them survive, therefore their traits would be passed to their offspring
- ❖ Competition for resources would select for individuals with favourable traits that would increase their chance of survival in order to reproduce
- ❖ Idea known as “survival of the fittest”
- ❖ Darwin called this process **NATURAL SELECTION**

# Darwin's Ideas Summarized

- ❑ 1. Organisms produce more offspring that can survive so organisms must compete for limited resources
- ❑ 2. Individuals in a population vary from one another and this variation is heritable
- ❑ 3. Individuals that have traits that are better suited to the environment will survive and therefore reproduce
- ❑ 4. Change within populations is slow and gradual



Darwin finally published *The Origin of the Species* in 1859

All 1250 copies sold out on the first day.

# “decent with modification”

- used this idea instead of evolution in his book, “The Origin of Species”
- Thought the word evolution implied that there was progress and that each generation was improving in some way
- Natural selection has no direction and does not demonstrate progress