Chp 7: Darwin’s Theory of Evolution Summary

What is Evolution?

Charles Darwin is given credit for explaining how organisms change over time. He proposed the Theory of Evolution which states that a population gradually changes over geological time. He provided evidence of evolution by examining the fossil record of organisms. Fossils show gradual changes in the bone structure but many organisms have similarities that show they are related. Therefore, by studying fossils, Darwin realized that all organisms must have descended from a common ancestor.

Evidence in Evolution:

By examining the body structures of organisms, Darwin was able to see how organism adapted to new environments. Darwin placed organisms on a drawn out family tree which he called the “Tree of Life”. The stems showed which organisms are the direct ancestors and the branches showed where a mutation occurred and a new species evolved by an adaptation in their body structure. For example, whale fossils show that they are related to cows. Therefore, whales were once land creatures that migrated into the sea (pages 171-172). Comparing similar body structures in different organisms called homologous structures, Darwin could see how a bat wing, human hand and a dolphin flipper had similar bones but use those body parts in different ways such as flying, grasping, and swimming. Darwin understood that homologous structures proved that organisms had a common ancestor. Although Darwin pieced together a family tree based on the geological fossil record, some organisms were incorrectly labeled or have been shown to not be on that part of the tree. Yet today, scientists agree that evolution does occur. Modern scientist study embryos and compare DNA to determine how closely related organisms are to each other.

The Ideas that Shaped Darwin’s Thinking

Darwin’s principles of evolution were based off of other scientists’ work such as Lamarck’s idea of traits being inherited. Darwin disagreed with the idea that learned traits called “acquired traits” were passed down. Lamarck thought that a giraffe learned to stretch its neck to reach food and this learned trait was passed down. Darwin said that the giraffe had a trait for a longer neck and that this trait was passed from parent to the offspring...otherwise, short neck giraffes died. Other influential scientists were Lyell who studied rock layers and Malthus who said that over population in people lead to competition in limited resources such as food, water, and shelter.

The trip to the Galapagos Islands off South America was instrumental in confirming Darwin’s “Natural Selection”. He saw birds called finches with different beak shapes for gathering food and tortoises with different shell and neck sizes. Each of these species came from a common ancestor from the mainland but because they were separated or isolated from the original population, these species adapted to the environment, and reproduced. The offspring had traits that made them a better “fit” for the habitat. Successful breeding leads to “survival of the fittest.”
Chp 7: Darwin’s Theory of Evolution Student Summary

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Evidence in Evolution:

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