Chapter 22: Descent with Modification: A Darwinian View of Life

Part A:

- individuals do not adapt - it takes multiple generations
- helpful mutations are passed on

Descent with Modification

- passing changed traits from parent to offspring
- based on interactions between populations and their environment which results in adaptations (inherited characteristics) to increase fitness
- evolution = change over time in the genetic composition of a population
- population = group of organisms that interact, interbreed and produce fertile offspring
- fitness = the ability to survive

Historical Process of Science

- **Aristotle** - life forms arranged on a scale of increasing complexity (scala naturae)
- Old-Testament- Creationism- Earth is appx. [illegible] years old and individual species were designed by God and they are permanent
- Natural Theology - discovering Creator's plan by studying and classifying nature
- **Linnaeus** - [illegible] of taxonomy, binomial nomenclature
- Domain, Kingdom, Phylum, Class, Order, Family, Genus, Species
- Domains = Eubacteria, Archaea, Eukarya
- Classification based in anatomy and morphology
- **Cuvier** - paleontologist - studied fossils
- deeper strata (layers) have different fossils from current life
- opposed idea of current creationism
- Catastrophism - catastrophe destroyed many living species then repopulated by immigrant species
- **Hutton and Lyell**-
- gradualism - geologic change results from slow and gradual continual process
- uniformitarianism - Earth's processes are at the same rate now as they were in the past THEREFORE Earth is very very old
- slow and subtle changes in an organism in the end creates big changes
- **Lamarck** - use and disuse : parts of the body used become bigger and stronger
- Inheritance of Acquired Characteristics: modifications can be passed on
- IMPORTANT: recognized that species evolve although explanation was flawed. He believed organisms had an innate drive to become more complex
- **Malthus**:
- more babies born than deaths