

# Chapter 1: Variation Under Domestication

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**Species:** A group of organisms that can interbreed and produce fertile offspring.

**Varieties:** Subdivisions within species, showing minor differences.

**Natural Selection:** The process where organisms better adapted to their environment tend to survive and produce more offspring.

**Adaptation:** A trait shaped by natural selection, aiding survival.

**Domestication:** The process of taming and breeding animals or plants for human use.

**Heritable Traits:** Characteristics passed from parents to offspring through genes.

**Artificial Selection:** The intentional breeding of organisms to promote desirable traits.

**Struggle for Existence:** The competition among organisms for limited resources.

# Chapter 2: Variation Under Nature

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**Variation Under Nature:** Differences found among organisms of the same species in their natural environment.

**Organisms:** Individual living entities, including plants, animals, and microorganisms.

**Morphology:** The study of the form and structure of organisms.

**Taxonomy:** The science of classifying organisms into groups based on shared characteristics.

**Intermediate Forms:** Organisms that exhibit traits bridging gaps between distinct species.

**Speciation:** The evolutionary process by which new species arise.

**Geographic Distribution:** The natural arrangement of organisms across the planet.

**Ecological Niche:** The role and position a species occupies in its environment.

# Chapter 3: Struggle for Existence

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**Struggle for Existence:** The competition among organisms for limited resources necessary for survival.

**Population Pressure:** The effect of increasing population density on resource availability.

**Overproduction of Offspring:** The tendency of species to produce more offspring than can survive.

**Competition:** The rivalry between organisms for resources, mates, and space.

**Predation:** The act of one organism hunting and consuming another for sustenance.

**Environmental Constraints:** Natural limits placed on population growth and survival by ecological conditions.

**Extinction:** The complete disappearance of a species from the environment.

**Balance of Nature:** The dynamic equilibrium between species populations and resources.

# Chapter 4: Natural Selection

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**Natural Selection:** The process where organisms with advantageous traits survive and reproduce more successfully.

**Variation:** Differences among individuals within a species that may impact survival.

**Fitness:** The ability of an organism to survive and reproduce in its environment.

**Survival of the Fittest:** A phrase describing the outcome of natural selection, where the most adaptable organisms thrive.

**Selective Pressure:** Environmental factors that influence which traits are advantageous.

**Inheritance:** The transmission of traits from parents to offspring.

**Favorable Variations:** Traits that provide an advantage in survival or reproduction. **Speciation:** The formation of new and distinct species through evolutionary processes.

**Divergence of Character:** The tendency for populations to become more distinct over time due to selection pressures.

**Extinction:** The loss of species as they fail to adapt to changing conditions.

# Chapter 5: Laws of Variation

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**Laws of Variation:** The principles governing how traits change and develop in organisms.

**Correlation of Growth:** The interdependence of different traits within an organism during development.

**Use and Disuse:** The idea that frequently used traits become stronger, while unused traits diminish over generations.

**Inheritance:** The passing of traits from parents to offspring. **Environmental Influence:** The impact of external factors on the development and variation of traits.

**Spontaneous Variation:** Random, unpredictable changes in traits within a population.

**Adaptive Traits:** Characteristics that enhance survival and reproductive success in specific environments.

**Reversion:** The reappearance of ancestral traits in an organism.

**Homology:** Similarity in structure or genes due to shared ancestry.

**Atavism:** The re-emergence of ancestral traits that have been dormant for generations.

# Chapter 6: Difficulties on Theory

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**Difficulties of the Theory:** Challenges and objections to the theory of natural selection.

**Transitional Forms:** Intermediate species that exhibit traits bridging two distinct groups.

**Missing Links:** Hypothetical ancestral species that connect modern species with their evolutionary predecessors.

**Complex Structures:** Features of organisms that require multiple components to function.

**Eye Evolution:** A specific case often cited to question natural selection due to its complexity.

**Instinct:** Inherited behaviors that aid survival without requiring learning.

**Gradualism:** The idea that evolution occurs through small, incremental changes over long periods.

**Geological Record:** Fossil evidence preserved in rock layers over time.

**Imperfect Record:** The incomplete nature of fossil evidence, which limits understanding of evolution.

**Convergent Evolution:** Independent evolution of similar traits in different lineages due to similar selective pressures.

# Chapter 7: Instinct

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**Instinct:** Inherited behavior patterns that aid in survival and reproduction.

**Social Insects:** Insects, such as bees and ants, that live in complex, cooperative colonies.

**Sterile Workers:** Non-reproductive individuals in a colony that contribute to its survival.

**Behavioral Adaptation:** Modifications in behavior that improve survival or reproduction.

**Hive Construction:** The process by which social insects build intricate and functional living spaces.

**Altruism:** Behaviors that benefit others at a cost to the individual performing them.

**Natural Selection:** The process by which beneficial traits, including instinctual behaviors, become more common in populations.

**Mutual Aid:** Cooperative behavior between individuals that provides mutual benefits.

**Variation in Instincts:** Differences in behavioral patterns among individuals or species.

**Evolutionary Flexibility:** The capacity for instincts and behaviors to adapt over generations.

# Chapter 8: Hybridism

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**Hybridism:** The process of crossbreeding between individuals of different species or varieties.

**Fertility:** The ability of organisms to reproduce successfully.

**Sterility:** The inability of hybrids or species to produce offspring.

**Crossbreeding:** The mating of individuals from different species or populations.

**Species Barriers:** Biological mechanisms that prevent interbreeding between species.

**Reproductive Isolation:** The inability of different species to produce viable, fertile offspring.

**Hybrid Vigor:** The enhanced biological qualities observed in some hybrid organisms.

**Genetic Variation:** Differences in DNA sequences among individuals, populations, or species.

**Natural Selection:** The process by which advantageous traits become more common in a population.

**Speciation:** The formation of new and distinct species through evolutionary processes.



# Chapter 9: On the Imperfection of the Geological Record

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**Geological Record:** Historical layers of rock and fossils that provide evidence of Earth's past.

**Fossil Evidence:** Remains or impressions of organisms preserved in geological formations.

**Strata:** Layers of rock that represent different time periods in Earth's history.

**Extinction Events:** Periods when large numbers of species disappeared from the fossil record.

**Transitional Fossils:** Fossils showing intermediate traits between ancestral and descendant species.

**Imperfect Record:** The idea that the geological record is incomplete due to various natural processes.

**Erosion:** The wearing away of rock and fossil evidence by wind, water, or other natural forces.

**Sedimentation:** The process of depositing material that forms new rock layers.

**Geological Time:** The vast scale of Earth's history measured in millions or billions of years.

**Continuity of Life:** The concept that life has persisted and evolved over geological time.

# Chapter 10: On the Geological Succession of Organic Beings

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**Geographical Distribution:** The natural arrangement of species across different regions and environments.

**Endemic Species:** Organisms found only in specific geographic locations.

**Biogeography:** The study of the distribution of species and ecosystems across the planet.

**Islands:** Isolated landforms that often host unique species due to geographic separation.

**Continental Drift:** The movement of Earth's continents over geological time.

**Barriers to Dispersal:** Physical or environmental obstacles that limit the spread of species.

**Migration:** The movement of organisms from one location to another, often seasonally.

**Adaptation to Environment:** Changes in organisms that enhance survival in specific habitats.

**Convergent Evolution:** Independent evolution of similar traits in species from different regions.

**Dispersal Mechanisms:** Methods by which species spread to new locations, such as wind, water, or animal carriers.

# Chapter 11: Geographical Distribution

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**Affinities of Species:** The evolutionary relationships and connections between species.

**Geological Succession:** The chronological order of fossils and rock layers, reflecting Earth's history.

**Extinction:** The disappearance of species due to various natural and evolutionary factors.

**Survival of the Fittest:** The concept that organisms best suited to their environment are more likely to survive and reproduce.

**Morphological Continuity:** The gradual changes in form and structure among related species.

**Paleontology:** The scientific study of fossils to understand past life forms and evolutionary history.

**Ancestral Traits:** Characteristics inherited from distant ancestors that may appear in multiple species.

**Adaptive Radiation:** The diversification of a group of organisms into various forms filling different ecological niches.

**Transitional Fossils:** Fossils showing intermediary traits between ancestral and descendant species.

**Phylogenetic Tree:** A diagram representing the evolutionary relationships among species.

# Chapter 12: Geographical Distribution—Continued

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**Geographical Distribution:** The arrangement of species across different regions and habitats.

**Historical Biogeography:** The study of how historical events, such as continental drift, have shaped species distribution.

**Dispersal:** The movement of species to new regions or habitats.

**Barriers to Distribution:** Physical or ecological factors that limit species movement and spread.

**Endemic Species:** Species found exclusively in a specific geographic area.

**Isolated Ecosystems:** Unique environments, such as islands, that host distinct species due to geographic separation.

**Adaptive Traits:** Characteristics that enable species to thrive in specific environments.

**Environmental Pressures:** Factors like climate, food availability, and predation that influence species survival.

**Convergent Evolution:** Independent evolution of similar traits in species from different areas.

**Ecological Niches:** The specific roles or functions a species fulfills within its environment.

# Chapter 13: Mutual Affinities of Organic Beings: Morphology—Embryology—Rudimentary Organs

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**Classification:** The organization of species into groups based on shared characteristics.

**Taxonomy:** The science of naming, describing, and classifying organisms.

**Hierarchical Structure:** The arrangement of organisms in a ranked system, such as kingdom, phylum, and species.

**Homology:** Similar traits in different species due to shared ancestry.

**Analogy:** Similar traits in species due to similar functions, not common ancestry.

**Phylogenetic Tree:** A diagram showing evolutionary relationships among species.

**Morphology:** The study of the form and structure of organisms.

**Embryology:** The study of the development of embryos, providing insights into evolutionary relationships.

**Convergent Evolution:** Independent evolution of similar traits in unrelated species due to similar environmental pressures.

**Natural Classification:** Grouping organisms based on their evolutionary relationships rather than superficial similarities.

# Chapter 14: Recapitulation and Conclusion

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**Recapitulation:** A summary or restatement of the main points of the argument.

**Unity of Type:** The concept that organisms within a group share a fundamental structural framework due to common ancestry.

**Divergence of Character:** The process by which populations of the same species become increasingly different over time.

**Morphological Relationships:** Structural similarities among organisms that indicate evolutionary connections.

**Embryological Evidence:** Observations of developmental stages that provide clues about evolutionary relationships.

**Vestigial Structures:** Features that have lost their original function but are remnants of ancestral traits.

**Natural Selection:** The mechanism by which advantageous traits become more common in a population.

**Speciation:** The formation of new species through evolutionary processes.

**Fossil Record:** The preserved remains of organisms that provide evidence of evolution over time.

**Adaptation:** Traits that enhance survival and reproduction in specific environments.