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Darwin's Theory: (Natural Selection)

Chapter

Charles Darwin was a methodical painstaking English naturalist, and he was the first who founded the theory of organic evolution. He was born on Feb. 12, 1809 at Shrewsbury. He was educated at Shrewsbury. The career of Charles Darwin began with his voyage on H.M.S. Beagle (Dec. 27, 1831 to October-2 1836) as the ship's naturalist. He visited Cape Verde & other Atlantic islands, New Zealand, Australia, Tasmania & Brazil. He spent about 5 weeks among the Galapagos islands & about 5 (five) years in the voyage. He was very much impressed by remote animal life. Charles Darwin married his cousin Emma Wedgwood in 1839. He was blessed with two daughters & five sons. He was very kind to his family friends, fellow scientists. He was acknowledged as great (Great) before his death. He died on April 19, 1882 and buried in Westminster Abbey next to Sir Isaac Newton.

Darwin's Theory of Natural Selection can be summarized in the following way.

- Over production (Enormous fertility)
 - Struggle for existence
 - Survival of the fittest - or Natural Selection.
 - Variation & inheritance
 - Origin of new species.
- Over production: (Prodigality) All animals & plants have a over-reproducing tendency. If over production is not checked, it will lead to over population on the earth.

For example, an Oyster Lays about 60 millions eggs, If the entire progeny survives & multiplies it will be eight times the size of earth in a year. Darwin calculated the production of elephant which is the slowest breeder, mature at the age of 30 and lives for about one hundred years. A single female produces six young ones. In 450 yrs a single pair of elephant will give rise to 19,000,000 of descendents (progeny). Thus the organism divide in a Geometrical Ratio, but still their number is usually maintained at a constant level.

→ Struggle for existence:

As the food & the space are limited, the over production of organisms results in struggle for existence & the population remains constant because large number of individuals are eliminated by enemies, disease, elements, competitors. The struggle for existence is of three types:

- Intra-specific
- Inter-specific
- Extra-specific

Intra-specific struggle:

It occurs competition within the members of the same species. It is because the food, shelter, light & breeding place are the same. Sometimes the animals become cannibalistic. Sexual selection is one of the most potent forces.

Intra-specific - Struggle occurs between the individuals of different species. It plays an important role in checking the over production. For example the rat is preyed by cat, a cat by dog and a dog by the tiger. This predation

Extra-specific Struggle: occurs due to environmental factors such as disease, cold, temperature, rains, floods, storms, cyclones, avalanches, droughts, earthquakes, volcanic eruption etc. Large number of organisms die due to these natural calamities.

Survival of the fittest: Darwin regarded that in the struggle for existence only those individuals survive which are best-fitted (fitted) biologically to the new conditions. Such individuals possess advantageous variations. Those which are unfit perish. Spencer called it "Survival of the fittest" while Darwin termed it "Natural selection". Thus the fittest are automatically selected and the unfit are eliminated by nature.

Variations & Inheritance: The fittests which survive in struggle for existence possess advantageous variations. Variations occur commonly in the organisms. No two individuals are alike. Even real brothers & sisters are not alike. Darwin considered it genetic variation, though he did not know about chromosomes and genes. He observed that useful variations are inherited from the fittest to their descendants (heredity).

Origin of species: In the long course of time the fittest survived & adjusted to ~~the~~ the natural environment. Darwin considered that the adaptation of the survivors may result in the formation of new structures, the variations. These useful & favourable variations were transmitted to other generations & thus new species are formed. As natural selection continues for a long period, the descendants may be quite different from ancestors due to their adaptations under various environmental conditions.