

Topic: DARWINISM

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* Darwinism :

- Darwin (1809-1882)

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Darwin travel by H.M.S. Beagle for the Voyage of world exploration during (1831-1836). The ship visited some of islands of Atlantic Ocean, many points on the coast of South America, and some islands of south pacific.

- Later, Beagle sailed to 'Galapagos island'. Here Darwin found a living laboratory of Evolution. He observed great variations among the organisms that lived on these islands and exhibited radiation and modification in form.

* Darwinism:

- Charles Darwin (1809-1882) is known for origin of species by natural selection. He wrote a book entitled "The origin of species by Natural selection."

- As English Biologist Alfred Russel Wallace (1823-1913) also arrived on the same conclusion independently.

- Theory of natural Selection was announced on June 30, 1858 by Charles Darwin and A.R. Wallace.

* Postulates of Darwinism:

1. Over production:

- All living being have an inherent tendency to produce offspring of their own kind large number for the perpetuation of their race. This is called Geometric increases.

- Regardless of the rate of production of a species, its number remains roughly constant under a fairly stable environment.

2. Struggle for existence:

- According to Darwin individuals multiply in geometric ratio, whereas space and food remains almost constant. Thus there is an intense competition and three fold struggle to ensure living to obtain maximum amount of food and suitable shelter.

- The three fold struggles are-

(a) Intraspecific struggle:

- Competition among the individuals of same species or in closely related forms.

eg. Young trees in forests.

b) Interspecific struggle:

- It is struggle between the organism of different species living together.

- Individuals of one species compete with other species for similar requirements i.e. food, shelter and breeding spaces.

c) Struggle with environment or Inanimate nature:

- It is struggle of living form against extreme heat, cold, drought, Lightning, Storms, Earthquakes, shortage of food, water,

Oxygen, Lack of light etc.

3. Variation and Heredity:

- The everlasting competition among the organism compelled them to change according to the conditions so that they can utilise the natural resources and can survive successfully. Therefore, it is difficult to find any of two individual alike. Even the Progeny of the same parents are not exactly alike in all respects. These differences are called variations.

- Without variation changes could not occur, and there will be no (possibility) possibilities of evolution to occur.

- The variation which occurs in Progeny are called heritable variation, and it is raw material for evolution.

- The dual or biparental heritage, mechanism of cell division at the time of gamete formation (i.e. meiosis), effects of X-Rays or other radiation produces changes either in genes or chromosomes of germplasm are responsible for variation.

- variation may be harmful, neutral or useful.
- Useful variation will be more successful in the struggle for existence, and these are heritable.

4. Survival of the fittest or Natural Selection:

- During struggle for existence only those individuals survive which exhibit such variation and more beneficial in facing the hardship and changed environment.

- Darwin illustrated Survival of fittest by taking example of Lamarck's Giraffe.

5. Origin of Species:

- From above observations, Darwin made certain conclusions and summarised them under the heading, "Origin of Species" by natural selection.

- As a result of struggle for existence, variability and inheritance, the successive generation tend to become adapted to their environment.

These adaptations are preserved and

accumulated in the individuals of the species and ultimately lead to the origin of new species from the old ones.

- As a result two or more species may arise from a single ancestral species.