

Prof ANIL KUMAR Zoology

BSC HONS Part III Paper - VII

Topic:- Different theories of evolution.

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Q. 1. Describe the different theories of evolution.

Ans. The evolution of various organisms in this universe is a much complicated process, which has been explained since long and various theories have been put forward from time-to-time to explain this complex mechanism of evolution. Some of the important views are as follows :

1. Theory of special creation
2. Greek theories
3. Pre-modern theories
4. Modern theories.

Out of these four only modern theories have scientific significance. The various modern theories are as follows :

(1) Lamarck's theory of inheritance of acquired characters.

(2) Theory of catastrophism—This theory was given by Cuvier. He was also considered as the father of palaeontology and comparative anatomy. He believed in the fixity of species. The occurrence of fossils of different rock strata was accounted on the basis of catastrophes. A succession of catastrophes have periodically destroyed all living things followed each time by the successive creations of new and higher forms.

(3) Theory of Uniformitarianism—This theory was given by James Hutton and Charles Lyell. According to them "Slowly acting geological forces result in the formation of fossil bearing rock strata.

(4) Theory of Continuity of Germplasm—This theory was given by Weismann and he emphasized that only those changes which occur in the germ plasm are heritable; changes occurring in the body due to environmental effect are not inherited.

(5) de-Varies theory of Mutation—Variations which are important for evolution are sudden and large, which de-Varies called mutations of saltation.

(6) Recapitulation theory of Haeckel—Haeckel proposed that ontogeny recapitulates phylogeny, that is the development of the individual repeats the evolutionary history of the race. Condensing some stages and culuminating the others.

(7) Orthogenesis theory—The term orthogenesis was proposed by Haeckel in 1893. According to orthogenesis theory the variations occur along certain definite line guided by some underfined or inherent mystical force.

(8) Isolation theory—The role of isolation in evolution was first emphasised by M-wagner. He stated that any factor or mechanism which separates the individuals of a species into two groups so that these are unable to interminngle and inter breed, constitutes the isolating mechanism and is helpful in the progress of evolution.

(9) Modern synthetic theory—At present the modern synthetic theory of evolution recognizes five basic processes namely, gene mutations, changes in chromosome number, genetic recombination, natural selection and reproductive isolation. The three accessory processes also affect the working of process. These are migration, hybridization and chance in small population.