Date: 1/08/2020
MON TUE WED THR FRI SAT SUN

Dr. Rajesh Verma, Assistant professor and Head, U.G. Department of Zoology, D.K. College Dumraon (Buxar). Notes for B.Sc part 3rd, paper VII.

Q:- Write Notes on MEGA EVOLUTION ?

Ans:- Megaevolution, Mega evolution is a term which describes the most dramatic events in evolution. By that is not meant a different kind of evolution; rather, it means evolution which produces a tremendous effect. It is not suggested that the evolutionary processesses involved are special although, in some cases they might be.

Megaevolution :-

Megaevolution describes the most dramatic events in evolution. It is no longer suggested that the evolutionary processes involved

are necessarily special, although in some cases they might be. Whereas macroevolution can apply to relatively modest changes that produced diversification of species and genera and are readily compared to microevolution, "megaevolution" is used for great changes. Megaevolution has been extensively debated because it has been seen as a possible objection to charles Darwin's theory of gradual evolution by natural selection.

A list was prepared by John Maynard Smith and Eörs Szathmary which they called The major Transitions in evolution. On the 1999 edition of the list they included:

1. Replicating molecules: change to populations of molecules in protocells.

2. Independant replicators leading to chromosomes

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3. RNA as gene and enzyme change to DNA genes and protein enzymes

4. Bacterial cells (prokaryotes) leading to cells (eukaryotes) with nuclei and organelles.

5. Asexual clones leading to sexual populations

6. single-celled organisms leading to fungi-plants and animals.

7. solitary individuals leading to colonies with non-reproducing castes (termites, ants & bees)

8. Primate societies leading to human societies with language

some of these topics had been discussed before.

Numbers one to six on the list are events

which are of huge importance, but about which we know relatively little. All occurred before (and mostly very much before) the fossil record started, or at least before the Phanerozoic eon.

Numbers seven and eight on the list are of a different kind from the first six, and have generally not been considered by the other authors. Number four is of a type which is not covered by traditional evolutionary theory. the origin of eukaryotic cells is probably due to symbiosis between prokaryotes. This is a kind of evolution which must be a rare event.

The Cambrian radiation example :-

The Cambrian explosion or Cambrian radiation was the

relatively rapid appearance of most major animal phyla around 530 million ye ago (mya) in the fossil record, some of which are now extinct. It is the classic example of macroevolution. "The fossil reco documents two mutually exc -usive macroevolutionary modes separated by the transition Ediacaran period".

Before about 580 mya it seems that most orga -sms were simple. They were made of individual cells occasionally organized colonies. Over the following 70 or 80 million years the rate of evolution accelera -ted by an order of magnitude. Normally rates of evolution are measured by the extinction and origination of species, but here we can say that by the end of the Cambrian every phylum, or almost every phylum, existed.