

Explanation of the indicators: (Textbook page 126)

- **Primitive cell**
The first primitive cell was formed about 3800 million years ago.
- **Origin of prokaryotes**
About 3500 million years ago prokaryotes were formed from primitive cells.
- **Origin of eukaryotes**
It is about 1500 million years since the eukaryotes were formed. When membranes bound organelles were formed in prokaryotes they became eukaryotes.
- **Appearance of multicellular organisms**
About 1000 million years ago multicellular organisms evolved. It is believed that eukaryotes formed colonies and from it the multicellular organisms evolved.

Evolution - through theories

Lamarckism

5. **What was the explanation given by Lamarck regarding the history of evolution?**

The characters developed during the life time of organisms are called acquired characters. The accumulation of these acquired characters led to the formation of new species. In the beginning giraffes had short necks. As they faced scarcity of food, they stretched their necks to reach out to the tall trees. Thus their necks get elongated.

Darwinism

6. **Darwin's voyage?**

Charles Darwin began the voyage when he was just 22 in the ship HMS Beagle. The Theory of Natural Selection was put forward by him as a result of the voyage that started in the year 1831 which lasted till 1836. The epoch making book written by Charles Darwin is "Origin of Species by Means of Natural Selection."

7. **Which organism caught the attention of Charles Darwin during his voyage?**

The finches in Galapagos island.

Interpretation of the indicators (Textbook page 129)

- **Which peculiarity of the finches attracted Darwin?**
The differences in their beaks attracted Darwin.
- **How do these peculiarities help finches in their survival?**

There occurred an increase in the number of finches. This led to scarcity of food. To overcome this, changes occurred to the beaks. Thus the finches were able to feed on different types of food for their survival.

8. How did Malthusian ideas influence Charles Darwin?

Malthus pointed out that the rate of food production is not proportionate to the growth of human population. Scarcity of food will lead to diseases, starvation and struggle for existence. Darwin incorporated the ideas of Malthus and propounded the theory of Natural selection.