

What appeared to Darwin when he looked at the case of whales and fishes in Linné's classification?

Linné classified animals according to anatomical criteria. Darwin noted that this classification system was not coherent. In the first edition of the book, Linné classifies whales within the fish group...but by the 10th edition whales are classified with the mammals because they share more characteristics with this group of species (they suckle their young, breathe air at the surface...). He deduced that species can't be classified regarding only anatomical criteria.

What did Darwin deduce of the study of geological layers and fossils?

He discovered old species he did not recognize and that were apparently extinct. On the other hand, he saw that the majority of living species could not be found in the oldest layers. Darwin concluded that the appearance and disappearance of species in very different geological eras appears to indicate that species underwent transformations over the course of time.

Explain how new species may appear through time with the example of elephants used by Darwin in the video.

Only elephants with a characteristic which gives them an advantage such as getting food more easily can survive. These variations appear by chance and nature selects those which are favourable for the surroundings... thus through the generations and over long periods of time, a new species which is better adapted to its surroundings may appear. This mechanism is called natural selection.

Explain why Darwin lacked evidences to illustrate his theory.

Natural selection is an extremely slow process and the fossils bear witness to this fact. Unfortunately, the geological records are not as complete as Darwin would have liked. Yet fossilisation is an extremely rare natural process. Of all the individual beings which lived on the earth, only a minutely small number died in conditions suitable for fossilisation. As a result, Darwin lacked evidences.

Explain what Darwin realized thanks to the observation of peacock.

Survival is not the only thing that counts, the individual must manage to pass these characteristics on to the next generation. Apparently, for certain species this entails a real game of seduction and competition for reproduction. Thus, sexual selection can influence a species' transformation and can lead to characteristics which are not very advantageous to the individual's survival. For instance, the enormous plumage on the peacock's tail is surely not very practical for flying and it must represent a terrible handicap as a predator like the tiger will have no problem in seizing this prey, but it helps to seduce its female so it passed from individuals to their descendants through generations.

Explain what difficulties Darwin encountered when he wanted to publish his theory.

Darwin's thinking met quite a lot of hostility in his time, especially because his theory went against what was written in religious texts.

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