

## Charles Darwin - A short biography by Rob Brown

Darwin is amongst the most famous men of science, ranking with Isaac Newton and Albert Einstein. His best known work was *On the Origin of Species by Means of Natural Selection*, published in 1859.

*Origin of Species* was the first great episode in the battle between science and religion to explain the origins of man. In Darwin's time science did not hold the prominence of today. Sure, Newton had explained the mechanics of the solar system, and Copernicus and Kepler had shown that the Earth wasn't the centre of the universe, but to the church, and also to most of the established social order, man was an especially perfect creation. Man was created by the hand of God with a divine and eternal soul. Though science had established a rational explanation for nature, the night stars and the solar system, the idea that science could do the same for man was seen as pure blasphemy by the church.

*Origin of Species* did not address man in particular as a subject, (maybe this in itself was the greatest insult) but how nature creates and sustains its own order and that everything is subject to the principles of natural selection. Man was seen as just another animal. The theory was popularly understood under the idiom 'survival of the fittest.' (In Darwin's time, the term 'fittest' meant 'most suitable').

However Darwin himself deplored this description due to its great inaccuracy. 'Survival of the fittest' correctly points out how all living things receive greatest pressure for survival and reproduction from other individuals within their own species and from competition with other species, rather than from the impact of the changing seasons and changing climate. But a lion generally kills only one zebra, rather than the entire herd. Rather than 'survival of the fittest', the situation is much closer to 'the occasional lack of survival of the least fit'.

The idea of Natural Selection within species was only part of Darwin's theory. The part which caused more trouble was that all life was linked to a single common earthly origin. The theory was that the action of Natural Selection could cause existing species to evolve into new species. Over great expanses of time this evolution had developed simple primitive life forms into plants, trees, fish, reptiles, mammals, and humans. The particular area of battle between science and religion which was greatest was that apes, monkeys and Man all had the same common ancestor.

Considering the lack of acceptance of evolution by the Nineteenth Century church, it is ironic that some of the experimental basis for the theory was to be provided by a monk, Gregor Mendel. His meticulous experiments on peas showed that offspring could display inherited traits which were present, but not evident in the parents. Farmers, horticulturalists and domestic animal breeders already knew that occasionally, individuals were born with unexpected and unusual characteristics. New varieties were constantly being produced by selectively using these individuals in breeding programs. Therefore that it was possible that species in the wild over a very long period of time could evolve into entirely new forms.

Darwin's own origins were mild, and his early life gave no hint of the religious controversy he would later create. In 1830, at the age of 21 he was being groomed for a life in the clergy.

His parents and mentors thought that encouraging his interest in the natural world would be a useful adjunct to clerical studies. The Earth was God's primary creation, and therefore the study of nature

should be of primary interest to a theologian. They arranged for him to join Captain Fitzroy as a Naturalist on a five year voyage (1831-1836) around the world in the ship *HMS Beagle*.

The journal of Darwin's voyage not only shows his great dedication to collecting numerous samples and describing landscapes, climates, and cultures, but also a cavalier curiosity which led him to explore (armed with not much more than a geological hammer) the wilderness of uncharted regions where anything could have been lurking.

When Darwin commenced his voyage, there was already an established theory of species adaptation proposed by Jean Baptiste Lamarck, who held that an individual could change in response to its environment during its lifetime, passing this change to its progeny. Darwin's experiences during the voyage convinced him that Lamarckism was erroneous.

Darwin's time on the Beagle had left him with big questions he could not answer. After much reflection and studying the work of other scientists over the next five years, he managed to put the process of Natural Selection together with his new Theory of Evolution. Even at this early stage in the late 1830's Darwin had a strong sense of the controversy his theory of evolution would create, and so he was reluctant to publish.

After many years thought, in 1843, he produced a 200 page summary of the *Origin of Species* to be published only in the event of his death. He had realised the importance of his theory and wanted it preserved in case some accident should befall him. Many friends and colleagues urged him to publish, but Darwin abstained until 1857, when both he and Alfred Wallace presented papers expounding the same theory of evolution to the Royal (Linnean) Society. Wallace had also been on a round-the-world tour as a naturalist, only his voyage had focused on the Amazon where Darwin had focused on the Galapagos Islands. The scientists of the society agreed that Darwin had precedence (he had thought of it first) and so should get the right to publish first.

In the preface of *Origin of Species* Darwin highlighted the great and significant contributions so many scientists had already made to evolution, and told how he was far from being the first to have something significant to say on the subject. *Origin of Species* was instantly a very popular book, which was being read by a broad cross-section of the public. It was followed in 1872 with the *Descent of Man*, which dealt more specifically with human origins. This work provided more evidence for the Theory of Evolution and related a wonderful anecdote about monkeys and alcohol in the first three pages.

Though Darwin was now a very famous individual, he slowly withdrew from the public eye. He published one more major book in 1881, *The Expression of Emotions*, but continued to publish scientific papers on his greatest area of speciality - barnacles. Towards the very end of his life he changed his mind about *Origin of Species*, rejecting the most recent sixth edition in favour of the first edition. He died in 1882.

## Charles Darwin Biography: Questions

1. *What was the full title of Darwin's major book?*
2. *In what year was this book published?*
3. *Which fore-runner of Darwin explained the motions of the planets?*
4. *The religious community opposed Darwin because: (Choose the best answer)*
  - They did not like specimen collectors
  - He did not distinguish between man and animal in his Theory of Evolution
  - He didn't believe in God
5. *True or False: Charles Darwin was the Scientist who invented the phrase "Survival of the Fittest"*
6. *What was "The Beagle"?*
7. *Who owned "The Beagle"?*
8. *What was the Captain's name?*
9. *In what part of the world did Darwin focus his studies?*
10. *Why did Darwin not publish his Theory of Evolution for many years?*
11. *Why was Alfred Wallace important in convincing Darwin to publish "The Origin of Species"?*
12. *Which book of Darwin's dealt specifically with human evolution?*
13. *Which group of animals was Darwin's main field of study?*

Name: \_\_\_\_\_ Class