

Charles Darwin



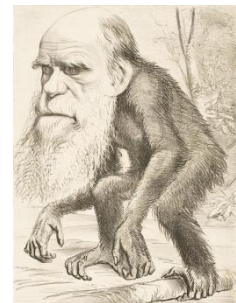
Charles Darwin was born on 12th February 1809 and died 19th April 1882. He was probably the greatest English naturalist. It was Darwin who told the world that all species of animal life descended over many millennia from one common ancestor. He showed us that life **EVOLVED** in a branching pattern, which happened because of **NATURAL SELECTION** or 'survival of the fittest'. This means that the fittest animals live to breed and, therefore, pass on their good quality genes to the next generation, thereby breeding fit and healthy descendants. (It is a bit like the artificial selection that we do to animals which we call 'selective breeding'. The greyhound and the dachshund have been



http://en.wikipedia.org/wiki/File:Charles_Darwin_by_G._Richmond.jpg



Darwin published his famous book, 'On the Origin of Species', in 1859, and many people laughed at him, and even drew cartoons of him as an ape, because he had laid out the theory that we were all descended from the same ancestor as the great apes, which we now know to be true. We share most of our DNA with the great apes. (It still took up to the 1950s before the great majority of people accepted the theory.)



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Darwin said that his theory explained the huge diversity of life on the planet, as animals evolved to fit into different environments, and how some species evolved in a similar way to gain the greatest advantage in life – convergent evolution. (You might consider the spots of the leopard and jaguar here. Each has evolved separately to allow the animals to blend into similar environments.)

Charles Darwin was always interested in nature. He began to study medicine at the University of Edinburgh, but his love of the natural world led him to neglect his studies. Instead of working at his medical studies, he helped to investigate marine invertebrates. He then studied at the University of Cambridge. On 27th December, 1831, Darwin set off on a voyage on HMS Beagle, where he was the voyage's naturalist. It lasted almost five years and during that time, Darwin spent his time studying the geology of places they visited and also the natural history. He built up large collections of plants and animals, whilst the Beagle surveyed the coasts.

Darwin was puzzled by the way that wildlife and fossils were distributed around the world. He began to investigate the problem and, in 1838, he formed his theory of natural selection.

A friend of Darwin – Alfred Russel Wallace – wrote to him to say that he had also come up with the same theory. Both men immediately published their theories. Darwin wrote a number of books, the last being a study of earthworms and their effect upon the soil.

Darwin's experiment – the worm-stone- still lies in his garden at his home, Down House in Kent. Darwin first noticed that the earth began to back up around large stones sitting on the surface, until the stones gradually sank into the ground. He decided that this was because of the work of earthworms, as they cast their waste at the side of the stones. He also thought that that was how ancient monuments eventually became buried in the

earth. He set up an experiment with a millstone to see if he could find out how the worms in the garden affected the soil.

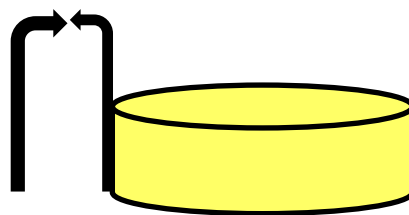


Darwin laid a millstone on the ground. Attached to the stone was a spike that pointed to another in the soil. The two spikes began level. However, as the stone began to sink, the spike on the stone began to drop and Darwin could measure the amount of fall.

From the measurements that Darwin made, he estimated that a 25cm thick stone might take up to 250 years to become level with the ground surface. This means that anywhere up to 16 tons of soil is moved in an acre of field every year! This soil can reach a thickness of 5cm in ten years and is the work of around 25,000 worms.

When Darwin died, he was very famous and he was given a state funeral and buried in Westminster Abbey. He was probably one of the most important scientists ever to have lived!

1. Why not set up your own worm-stone to see how it works for you?
 - Get a large stone and find somewhere in the garden or school field where it won't be a nuisance.
 - Ask someone to attach a spike to it
 - Fix a similar spike into the ground and mark the soil level on it, (so that you can ensure that it doesn't also sink into the ground.
 - Watch your worm-stone and measure how far apart the two pointers are each year. With a little maths on surface areas, you can work it out. (This would make a great long-term scientific experiment for a school!)



2. Run a search for EVOLUTION and NATURAL SELECTION.
3. What is DNA?
4. What was Darwin's ship called? Run a search for the story.
5. Research EARTHWORMS and finds out why they are so important to us.
6. Try to find out why EARTHWORMS are so important to BADGERS.