

## More on Charles Darwin...



### Darwin's Hand is Forced

On 18 June 1858, aged 49, Darwin opened his mail and got a terrible shock. He had been corresponding with [Alfred Russel Wallace](#), a young, self-trained naturalist who was on an expedition in the East Indies.

Wallace now asked for Darwin's opinion of a paper he had written. The paper described the theory of evolution by natural selection – the theory Darwin had spent decades gathering evidence for, but had never published. Darwin wrote back, offering his opinion that Wallace's paper could be published in any journal of Wallace's choosing.

Darwin also showed Wallace's paper to his scientific friends Charles Lyell (Wallace had requested this) and Joseph Dalton Hooker.

Darwin was in crisis at this time because his young son had been terribly sick, eventually dying of scarlet fever on June 28.

His friends were aware that Darwin actually arrived at the theory first. They decided the joint theories of Darwin and Wallace should be read to the Linnean Society on July 1. Darwin did not attend the reading. His place was at his son's funeral.

In the event, the reading of the Darwin-Wallace paper provoked little interest.

## The Origin of Species

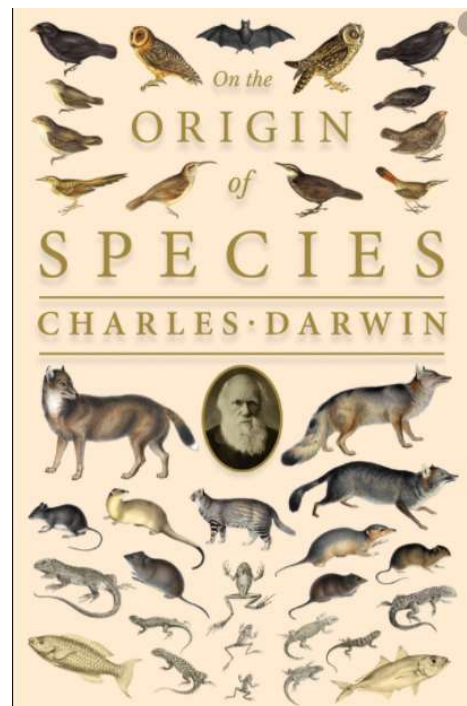
Darwin's game-changing book *On the Origin of Species* – often called the most important book in the history of biology – became available to the public on November 24, 1859; booksellers immediately sold all 1250 copies.

Trying to avoid controversy, Darwin avoided making any claims for the origin a particular species, such as *Homo sapiens*. He did however, in agreement with his grandfather's much earlier theory, write:

Over the following years Darwin updated the book regularly. He eventually authored six significantly different editions.

Some of the most familiar ideas of 'Darwinism' did not appear until the later editions: the famous phrase "survival of the fittest" appeared for the first time in the 1869 fifth edition. Remarkably, the word *evolution* made its first appearance in the sixth edition in 1872.

In support of his theory of common ancestry, Darwin was particularly taken by the similarity of the embryos of different species.



## Further Work

In 1868 Darwin wrote *The Variation of Animals and Plants under Domestication*. Feeling the need to offer **a mechanism for heredity**, and unaware that [Gregor Mendel](#) had already provided it, Darwin incorrectly proposed heredity resulted from a process called [pangenesis](#).

**Many people believed that Darwin's proposed descent of humans from apes was an attack on society's moral foundations.**

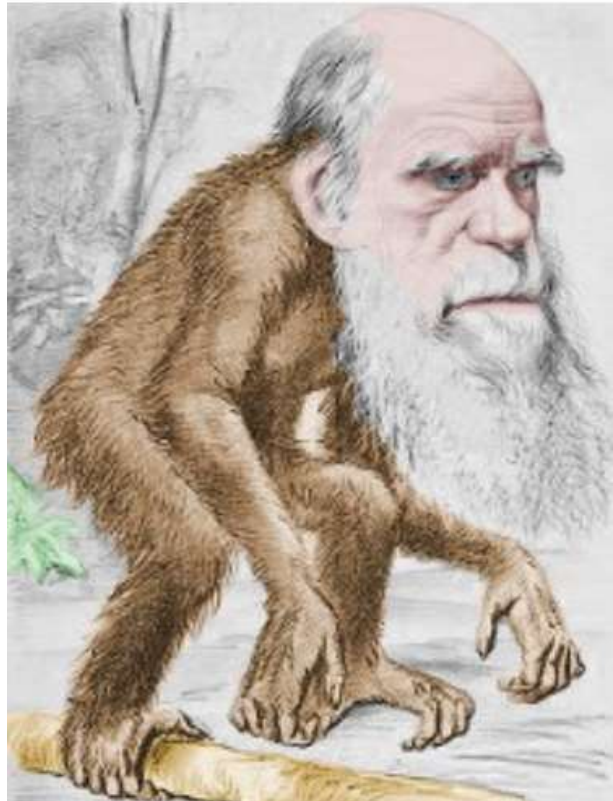
In 1871 Darwin's *The Descent of Man* presented evidence that humans are animals – we are members of the ape family, and are the descendants of apes.

**During Darwin's lifetime, there was fierce opposition to his theory.**

The great German pathologist [Rudolf Virchow](#), for example, opposed Darwin from the beginning and never relented in his opposition.

In fact, in 1877, Virchow said the idea that man had descended from apes was an attack on society's moral foundations. He voiced his opinion that teaching the theory of evolution should not be permitted in Germany's public schools.

In 1872 Darwin looked at the evolution of human psychology in his book *The Expression of the Emotions in Man and Animals*, showing there are similarities in human and animal psychology.



The idea that species evolve had become accepted by most mainstream scientists by about the time the sixth edition of *The Origin of Species* came out in 1872.

The concept of natural selection, however, was less accepted. In considering the rate at which natural selection pushed evolutionary change, Darwin was heavily influenced by his friend Charles Lyell's championing of gradualism.

It was only much later, after publication of the 1930 book *The Genetical Theory of Natural Selection* by [Ronald Fisher](#), that evolution by natural selection became widely accepted by mainstream scientists. Fisher unified the theory of natural selection with the heredity laws of [Gregor Mendel](#).

## Some Personal Details and the End

**Darwin's wife Emma two years after their marriage.**

Darwin married Emma Wedgwood on January 29 1839. He was aged 29 and she was 30. They were first cousins.

The couple had ten children; three died in childhood.

Three of their sons, George, Francis, and Horace, became notable scientists and were elected fellows of the Royal Society. George became an astronomer, Francis a botanist, and Horace an engineer.

Another son, Leonard, financially supported the publication of Ronald Fisher's earliest work.

In 1837, as he began to work hard on a multi-volume book of observations from the Beagle expedition, and simultaneously began seriously researching [the transmutation of species](#), Darwin fell ill. [He would be plagued by ill-health for the rest of his life.](#)

In 1842 he moved with his family to a country house outside London, away from the smoke and dirt. He lived a quiet life, not socializing much, concentrating on family life and writing books and scientific papers.

In 1864 Darwin was awarded the Copley Medal, then the greatest honor in science. The award was for:

"his important researches in geology, zoology, and botanical physiology."

Previous winners included [Benjamin Franklin](#), [Alessandro Volta](#), [Hans Christian Oersted](#), [Michael Faraday](#), Alexander von Humboldt, Charles Lyell, and [Robert Bunsen](#).

Charles Darwin died aged 73 on April 19, 1882, of heart failure at his country house. He was buried in Westminster Abbey, London, next to John Herschel whose work had inspired him at university, and near his best friend Charles Lyell, whose work had influenced him greatly. Other scientists buried in Darwin's vicinity at Westminster Abbey include Isaac Newton, Ernest Rutherford, J. J. Thomson, and Lord Kelvin.