

## Charles Darwin

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[1] Charles Robert Darwin (12 February 1809 – 19 April 1882) was an English naturalist. He was born in Shrewsbury, Shropshire. He is famous for his work on the theory of evolution. His book *On the Origin of Species* (1859) provided a great deal of evidence that evolution has taken place. Second, it proposed a theory to explain how evolution works. That theory is natural selection. Evolution by natural selection is the key to understanding biology, and the diversity of life on Earth.

### The Voyage of the HMS Beagle

[2] Darwin spent five years on board a Royal Navy exploring ship, the HMS Beagle. He was the guest naturalist, which meant that he was responsible for making collections and notes about the animals, plants, and the geology of the countries they visited. The ship's crew made charts<sup>1</sup> of all the coastal areas, which could be used by the navy<sup>2</sup> wherever it went in the world. At the time, Britain had by far the largest navy in the world, and an empire which was global.

[3] Darwin collected everywhere the ship weighed anchor. He found huge fossils of recently extinct mammals, experienced an earthquake in Chile, and noticed the land had been raised. He knew of raised beaches elsewhere, high in the Andes, with fossil seashells and trees which had once grown on a sandy beach. Obviously the earth was constantly changing, with land rising in some places, and sinking in others. He collected birds and insects, and sent shipments back to Cambridge for experts to identify.

Darwin was the first dedicated naturalist to visit the Galapagos Islands, off the west coast of Ecuador. He noticed that some of the birds were like mockingbirds<sup>3</sup> on the mainland, but different enough to be placed in separate species. He began to wonder how so many new species came to be on these islands.

[4] When Darwin got back to England, he edited a series of scientific reviews of the Voyage, and he wrote a personal journal which we know as *The Voyage of the Beagle*. It is one of the great natural history travel diaries.

Darwin, who already had two children with his wife Emma, bought Down House in the village of Downe, Kent in 1842. He lived there for the rest of his life, and today the house and contents are open to the public.

### Evolution

[5] While on H.M.S. Beagle, and later back home in London, Darwin had come across the ideas of the Rev. T.R. Malthus. Malthus had realised that, although humans could double

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<sup>1</sup> charts: Seekarten

<sup>2</sup> navy: die Marine

<sup>3</sup> mockingbird: die Spottdrossel

their population every 25 years, it did not happen in practice. He thought the reason was that a struggle for existence (or resources) limited their numbers. If numbers increased, then famine, wars and diseases caused more deaths. Darwin, who knew that all living things could, in principle, increase their numbers, began to think about why some survived, while others did not. His answer took years to develop.

[6] The theory of evolution says that all living things on Earth, including plants, animals and microbes, come from a common ancestor by slowly changing throughout the generations. Darwin suggested that the way living things changed over time is through natural selection. This is the better survival and reproduction of those that best fit their environment. Fitting into the place where you live is called adapting. Those who fit best into the place where they live, the best adapted, have the best chance to survive and breed. Those who are less well-adapted tend not to<sup>4</sup> survive. If they do not survive well enough to raise their young, this means they do not pass on their genes. In this way, the species gradually changes.

[7] The first chapter of the Origin deals with domesticated animals, such as cattle<sup>5</sup> and dogs. Darwin reminded readers of the huge changes mankind had made in its domestic animals, which were once wild species. The changes were brought about by selective breeding<sup>6</sup> – choosing animals with desirable characters to breed from. This had been done generation after generation, until our modern breeds were produced. Perhaps what man had done deliberately, might happen in nature, where some would leave more offspring<sup>7</sup> than others.

[8] Darwin noticed that although young plants or animals are very similar to their parents, no two are exactly the same and there is always a range of shape, size, colour, and so on. Some of these differences the plant or animal may have inherited from their own ancestors, but some are new and caused by mutations. When such differences made an organism more able to live in the wild, it would have a better chance to survive, and would pass on its genes to its offspring, and they to their offspring. Any difference that would cause the plant or animal to have less of a chance to live would be less likely to be passed on, and would eventually die out altogether. In this way groups of similar plants or animals (called species) slowly change in shape and form so that they can live more successfully and have more offspring who will survive them. So, natural selection had similarities to selective breeding, except that it would happen by itself, over a much longer time.

[9] He first started thinking about this in 1838, but it took a full twenty years before his ideas became public. By 1844 he was able to write a draft of the main ideas in his notebook. Historians think that he did not talk about his theory because he was afraid of public criticism. He knew that his theory, which did not discuss religion, raised questions about the literal truth of the Book of Genesis. Whatever the reason, he did not publish his theory in a book until 1859. In 1858 he had heard that another biologist, Alfred Russel Wallace, had the same ideas about natural selection. Darwin and Wallace's ideas were first published in the Journal of the Linnaean Society in London, 1858. Then, Darwin published his book the next year. The name of the book was *On the Origin of Species by means of Natural Selection, or the preservation of favoured races in the struggle for life*. It is usually called *The Origin of Species*.

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<sup>4</sup> tend to do sth.: dazu neigen, etwas zu tun

<sup>5</sup> cattle: Rinder

<sup>6</sup> to breed: züchten

<sup>7</sup> offspring: Nachkommen

**EXERCISE 1** Content. Match the paragraphs [1]-[9] with the headings.

- A look at domestic animals
- The publication of *The Origin of Species*
- Darwin's observations in South America
- Evolution: a quick explanation
- Darwin's life after the voyage of the HMS Beagle
- Who was Charles Darwin?
- Malthus' idea
- Mutations make evolution possible
- Exploring the world for the navy

**EXERCISE 2** Content. Are these statements true or wrong?

	T	W
a) Darwin's book <i>The Evolution of Species</i> proved that evolution has taken place.		
b) Darwin made charts of all the coastal areas which the Beagle passed.		
c) Today everybody can visit Darwin's house.		
d) Darwin was married.		
e) T.R. Malthus came up with a theory of evolution before Darwin.		
f) People have used natural selection to breed better domestic animals.		
g) Alfred Russell Wallace and Darwin had similar ideas.		

**EXERCISE 3** Content. Answer these questions in a written form. Use your own words.

- a) What observations did Darwin make in South America?
- b) Why does the first chapter of *The Origin of Species* deal with domestic animals?
- c) Why did it take him so long to publish his theory?

**EXERCISE 4** Vocabulary. Find the English translations of these expressions in the text!

- [1] Beweise liefern; vorschlagen
- [2] verantwortlich sein für; bei weitem
- [3] riesig; ausgestorben; anheben
- [5] zunehmen; sich entwickeln
- [6] mit eingeschlossen; behaupten
- [7] verursacht werden; absichtlich
- [9] in Frage stellen; veröffentlichen

## Answers

### EXERCISE 1

- [7] A look at domestic animals
- [8] The publication of *The Origin of Species*
- [3] Darwin's travel observations
- [6] Evolution: a quick explanation
- [4] Darwin's life after the voyage of the HMS Beagle
- [1] Who was Charles Darwin?
- [5] Malthus' idea
- [9] Mutations make evolution possible
- [2] Exploring the world for the navy

### EXERCISE 2 Content. Are these statements true or wrong?

	T	W
a) Darwin's book <i>The Evolution of Species</i> proved that evolution has taken place.		X
b) Darwin made charts of all the coastal areas which the Beagle passed.		X
c) Today everybody can visit Darwin's house.	X	
d) Darwin was married.	X	
e) T.R. Malthus came up with a theory of evolution before Darwin.		X
f) People have used natural selection to breed better domestic animals.		X
g) Alfred Russell Wallace and Darwin had similar ideas.	x	

### EXERCISE 3

- a) He found fossils of animals that had already died out, he saw that land can be raised and sink again, and he noticed that the birds on the Galapagos Island were slightly different from similar birds on the mainland.
- b) Darwin compares natural selection to breeding, an activity that people were familiar with and could understand more easily.
- c) We can't really know why Darwin waited so long to publish his findings, but some people think that he was scared of criticism because his book questioned the history of creation in the bible.

### EXERCISE 4

- [1] provide evidence; propose
- [2] be responsible for; by far
- [3] huge; extinct; raise
- [4] increase; develop
- [5] including; suggest
- [7] to be brought about; deliberately
- [9] raise questions about; publish

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