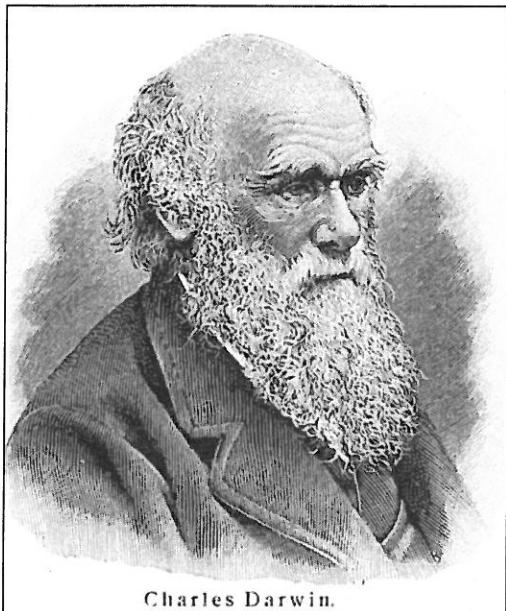


Charles Darwin

Name _____



Charles Darwin.

(1) When the amateur naturalist and geologist Charles Darwin (1809-1882) published *On the Origin of Species*, he did more than just overturn the biological beliefs of that time. The theory of evolution by natural selection had lasting effects on philosophy and religious thinking, and paved the way for the modern sciences of ecology, anthropology, and genetics.

(2) Darwin was born in Shrewsbury, England, the son of a doctor. His maternal grandfather was the well-known industrialist and potter, Josia Wedgwood, and his paternal grandfather was the great scientist and philosopher, Erasmus Darwin. Among leading men of science, however, Darwin was a very late developer. His school headmaster disciplined him for wasting time on such trivial

hobbies as collecting plants, birds' eggs, and minerals.

(3) His father's attempts to steer him first into medicine, and then into the priesthood, were likewise failures, but during his time at the Universities of Edinburgh and Cambridge he met teachers who stimulated his interest in natural history. Then, in 1831, Darwin accepted an invitation to be an honorary naturalist on a round-the-world expedition in the English government survey ship, the *Beagle*.

(4) The *Beagle* sailed first to the Cape Verde islands, then on toward South America. In Brazil, he walked in the rainforests. Near Bahia Blanca he found his first fossil, the skull of the extinct giant sloth called *megatherium*. For three years, the ship cruised back and forth along the coasts of South America gathering data, while Darwin made geological and biological observations and records, and collected specimens of every kind.

(5) In 1835 the *Beagle* landed in the Galapagos Islands. The four weeks spent there were the most significant and influential of Darwin's career. He noted that on the Galapagos there were around 14 species of finch, each species having adapted to a particular form of feeding. The seed eaters had powerful parrot-like beaks while the insect feeders had sharper, finer beaks, more suited to stabbing at their prey. These important differences between obviously related species seemed to indicate that one species had given rise to several others. There were comparable differences between the tortoises of each island.

(6) On his return to Britain in October, 1836, Darwin began to synthesize a theory to explain how one species could evolve into another. Theories of evolution had been put forward before, most notably by the French biologist Jean-Baptiste Lamarck. He believed that animals and plants acquired and passed on characteristics in response to conditions

they encountered. The dominant belief of the time, however, remained in the immutability of the species, with each species being the direct result of the Divine Creation of God.

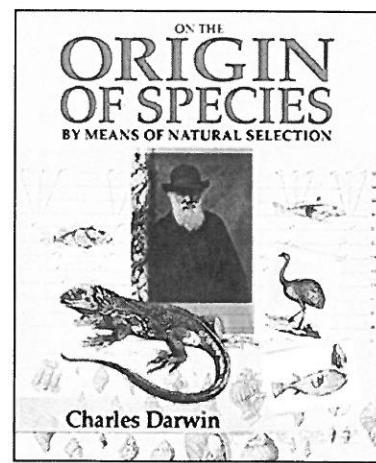
(7) Darwin began a series of notebooks called *The Transmutation of the Species*. He wrote that in areas separated by geographical or physical barriers, such as the Galapagos, there were related but different species. Meanwhile, animals in different geographical regions had adapted in similar ways. This was most striking in Australasia where the marsupials such as the Tasmanian wolf and spiny anteater had developed along similar lines to higher mammals elsewhere. In addition, the fossils which Darwin had collected resembled existing species.

(8) All this was strong evidence for the existence of a process of evolution, but it did not explain how it worked. Darwin solved the problem after reading Thomas Malthus' classic text *An Essay on the Principle of Population*, which predicted that the human population would outgrow its food supply unless birth was strictly controlled. The basic error of the book was that the human population had the intelligence to increase food supply according to needs. Plants and animals, on the other hand, could not. Their growth in number was subject to environmental conditions. Darwin reasoned that those plants and animals with the most favourable characteristics, for example, obtaining food, would have the best chance of surviving and reproducing. Their offspring would inherit the same survival ability. In other words, plants and animals were subject to natural selection.

(9) For the next twenty years, Darwin continued to accumulate evidence that species were indeed likely to change over periods of time. He remained cautious about publishing any of his findings. Then, in 1858, he suddenly received a paper written by the naturalist Alfred Russell Wallace. The writings outlined a version of Darwin's own theory with remarkable clarity. Mutual scientific friends arranged for a combined paper to be read to the Linnean Society. The next year Darwin brought out his great book, *On the Origin of Species by Means of Natural Selection*. The first printing sold out on the day of publication. Few books have caused such a storm. Eminent scientists, statesmen, and leading figures in the church engaged in furious debates. The controversy soon spread abroad. Darwin was fortunate in having supporters such as scientists and researchers who eventually insured that the theory of evolution by natural selection was accepted.

(10) Darwin continued his work on evolution, and he pursued the then unacceptable possibility of man's own evolution from ape-like primates. He studied the similarities in structure and behaviour between humans and other animals, and in 1871 published *The Descent of Man*. It was this aspect of evolution that many people found unpleasant, heretical, and simply distasteful.

(11) But Darwin's theory won the deserved recognition of the scientific establishment. Throughout the world he was venerated and it was fitting that on his death in 1882 he was buried in Westminster Abbey beside Sir Isaac Newton.



Exercise A: Underline the word or phrase that makes each statement true, according to the article you read on Charles Darwin. (RI.5.1)

- 1) Charles Darwin came from a (poor, middle class, privileged) family.
- 2) The greatest impact on Charles Darwin came from the observations he made in (Brazil, Cape Verde, the Galapagos Islands).
- 3) Evolution is the belief that (dinosaurs were on earth before humans, species change over periods of time, the orbit of the planet around the sun can change over time).
- 4) An Essay on the Principle of Population was shown to be wrong due to the (environment, birth rate, intelligence) of humans compared to other animals.
- 5) The most controversial of Darwin's books is probably (The Transmutation of the Species, The Descent of Man, On the Origin of Species by Means of Natural Selection).
- 6) The article fails to provide information on Charles Darwin's (travels, education, wife).
- 7) Darwin decided to publish his most important work, On the Origin of Species by Means of Natural Selection, upon learning of the paper written by (Alfred Russell Wallace, Jean-Baptiste Lamarck, Thomas Malthus).

Exercise B: In each paragraph indicated in parenthesis, find a fourth synonym for the group of words. Write the word on the line that follows. (L.4.5.C)

- 1) topple, reverse, invalidate (paragraph 1) _____
- 2) minor, insignificant, unimportant (para 2) _____
- 3) adjusted, modified, altered (para 5) _____
- 4) permanence, unchanging, durability (para 6) _____
- 5) obstructions, boundaries, obstacles (para 7) _____
- 6) children, babies, descendants (para 8) _____
- 7) high-ranking, famous, prominent (para 9) _____
- 8) unorthodox, atheistic, unreligious (para 10) _____
- 9) honored, idolized, respected (para 11) _____

Exercise C: Charles Darwin studied and wrote to support his beliefs about the existence of evolution and natural selection. Put an X by each statement below that Darwin would say strongly supported his theory. (RI.5.3)

- Charles Darwin's book, *On the Origin of Species by Means of Natural Selection*, sold out on the day of publication.
- He noticed there were many species of finch, and that each species had beaks adapted to whether they ate insects or seeds.
- He confirmed that in areas separated by geographical or physical barriers, such as the Galapagos, there were related but different species.
- Eminent scientists, statesmen, and leading figures in the church engaged in furious debates and found his ideas unpleasant.
- He recorded similarities in structure and behaviour between humans and other animals.
- Darwin studied at the Universities of Edinburgh and Cambridge, where he met teachers who stimulated his interest in natural history.
- Darwin concluded that plants and animals with the most favourable characteristics would have the best chance of surviving and reproducing.
- He walked in the rainforests, and near Bahia Blanca he found the skull of the extinct giant sloth called *megatherium*.
- Darwin learned that the fossils he collected on his voyages resembled existing modern species.

Exercise D: Read the text below and then answer the question to the right.

"Evolution is an idea, based on scientific evidence, that life developed because of changes in genetic material and the process of natural selection. Creationism, on the other hand, argues that life began due to the intervention of a supernatural creator or God. Every major scientific society has stated that all our knowledge of biological science supports evolution by natural selection as fact. At the same time, these societies have carefully avoided offending religious groups by assuring that evolution does not conflict with religious beliefs or views. This conflict between evolution and creationism is one that some people say cannot be solved."

Do you believe it is possible to have strong religious beliefs and also believe in evolution by natural selection? Give your thoughts below: