CHARLES DARWIN

Naturalist by Nature

Young Charles Darwin hated school, but he loved rocks, bugs, birds and animals. In the early 1800's, schools in England taught Latin, Greek, ancient history, and mathematics, but no science. Charles was poor at everything. His teachers and his father thought he was below average in intelligence.

Charles assumed that they were right. He was modest and easygoing, the younger son of a wealthy physician. His mother had died when he was only eight years old. As a youngster, Charles had no great ambition to prove his worth or to make a difference in the world. He had no idea that his passion for learning about nature would make him world famous and revolutionize nineteenth-century science.

From the time he was a small boy, Charles loved to take long walks and to collect insects, shells, rocks, plants, butterflies, and birds' eggs. He would label each specimen carefully and mount it in a display case. In dealing with nature, the scientific habits of neatness and accuracy came naturally to him.

When Charles was 16, his father sent him away to study medicine along with his older brother at Edinburgh University. Charles hated the dull lectures and was nauseated when he had to watch a child undergo surgery without any anesthetic. He was happy though to find that there were scientific societies in Edinburgh where he could listen to reports on the latest findings from all over the world. Charles found a taxidermist to teach him how to stuff birds. He also made friends with nearby oyster fishermen who taught him to cast fishing nets so he could collect specimens of sea life.

After two years in Edinburgh, Charles's father decided that medicine was not the field for him. He sent Charles to Cambridge University to study theology but Charles was more interested in collecting beetles. He thought he was just enjoying an interesting hobby, but events were drawing him toward his destiny.

A botany professor called John Stevens Henslow tried hard to persuade Charles to become a serious scientist. Charles could not imagine becoming serious about anything until he was suddenly hooked by the lure of adventure. He read a book by the great scientific explorer Alexander von Humboldt, about his explorations in the Canary Islands and the Americas, and his discoveries of unknown plants and animals. Charles began to study Spanish and to look for a way to travel to the tropical Canary Islands. He began learning about geology, studying the earth's history by examining its rocks and surfaces.

His great opportunity came when he was twenty-two, shortly after he graduated from Cambridge. Professor Henslow wrote to him, saying that a small Navy ship called the HMS Beagle would be sailing around the world for two years or more on a surveying and map-making mission. Captain Robert Fitzroy wanted a young naturalist to join the expedition. The conditions would be harsh and there would be no pay, but Charles would be able to explore and study nature beyond his wildest dreams.

Charles was ecstatic. He gathered his equipment, and the ship sailed in December 1831. For the first three weeks, Charles was miserably seasick. He could do nothing but lie in his hammock and read a revolutionary new geology book by Charles Lyell. It claimed that the earth had changed gradually over millions of years and would go on changing in the future.

When the ship finally anchored at the Cape Verde Islands, Charles began collecting plants, animals and insects. He looked at the layers of seashell fossils in rocks hundreds of feet above the sea level. Charles started asking himself questions about how that could have happened, and looking for answers.

Everywhere they stopped, Charles would take long trips inland and collect crates of specimens of rocks, plants, animals, insects and fossils. He would ship them back to England to be analyzed later. He took reams of notes on all that he found.

As they sailed around the tip of South America, Charles saw huge chunks of rock in icebergs. He could see that these icebergs, that had once been parts of glaciers, had picked up and carried these rocks. Charles realized that the earth was changing all the time just as Lyell's geology book said it was. Later when the ship reached Chile, Charles hired guides and mules for a trip high into the Andes Mountains. He found fossil seashells thousands of feet above sea level along with petrified pine trees, showing that the land had once sunk below the sea and then risen up again.

Most people in those days believed that the earth had been created in seven days and only changed when there was a catastrophe like Noah's flood. They believed that new creatures were created after every catastrophe and would not change until they were destroyed and new ones were created again.

Charles started thinking that perhaps most people were wrong about how the earth and its plants and animals were created. He had a feeling that he would find the answers if he collected enough facts and organized them in a way that would make sense. He realized that this was to be his life's work: to be a scientist.

The ship sailed to the Galapagos Islands, 600 miles west of the South American coast. He learned that each island had its own kinds of finches, which are a kind of bird. Each of the finches had a different kind of beak. Perhaps the first finches to arrive in the islands all had the same beaks, but Charles realized that as they settled on different islands, they had developed beaks over many generations that were better for the food they had available. Charles knew he had a clue to his mystery. As ever, he collected crates of specimens and wrote pages of notes.

At last, in October, 1836, the ship returned to England. Charles had been gone five years and collected a lifetime's worth of work.

He quickly set to work organizing his specimens and notes with the help of Professor Henslow, the geologist Charles Lyell, and other specialists. He published a book called *The Voyage of the Beagle*, which outlined his discoveries.

In 1839 two momentous events took place. Charles was invited to become a Fellow of the Royal Society, England's highest honor for scientists. That year he also got married to his lively cousin, Emma Wedgwood. They lived in London for a few years, but Charles began to have periods of illness that left him very weak. Doctors could not find a cure for him. It may have been Chaga's Disease, caused by an insect bite in South America, but doctors did not know about it at that time.

Charles and Emma moved to a pleasant country house and raised seven happy children. Even though he could only work for a few hours a day, Charles continued his scientific research. He studied all kinds of living beings, from barnacles to bumblebees, publishing his findings.

By 1858, Charles had finished ten chapters of a long and detailed book on his complicated theory that creatures had really evolved and changed over time, rather than new ones being created after major catastrophes. After his ideas were presented to a scientific group, the Linnean Society, he gave up the idea of a huge volume and wrote a straightforward book called *On the Origin of Species*, published in November of 1859. Many outstanding scientists said wonderful things about it, but others said it was totally false and shockingly immoral.