Charles Darwin, His Life and Times

Charles Darwin was born on February 12, 1809, in Shrewsbury, England, the same day and year that Abraham Lincoln was born in Kentucky. But while Lincoln was born to a poor family, Darwin was born to a wealthy family with a famous heritage. Charles' grandfather was Erasmus Darwin, noted author of *Zoonomia* and *The Botanic Garden,* and his father was Robert Waring Darwin, a widely respected physician with a reputation of being an excellent diagnostician.

As a child, Charles liked to collect insects, coins and rocks, At age 16, after seven years of attending a boarding school for boys, his father decided that Charles should study at Edinburgh to follow a family tradition and become a physician. But Charles found the lectures extremely dull and could not stomach the experience of the operating theater in the days before anesthetics. After two years he returned home to assess his future.

Charles decided to study at Christ College in Cambridge with the hopes of becoming a clergyman. Given what is known about his later accomplishment, this decision seen strange. But at that time, anyone with an interest in a career natural history would have to become a clergyman because they held the teaching posts at England's colleges.

While at Christ College, he met Professor John Henslow, a clergyman who also taught natural history. Henslow was an ideal mentor for Darwin. He was a respected clergyman with a small parish and his teaching career allowed him to continue his interests in natural history. Darwin and Henslow became close friends with the young Darwin often

having dinner at Henslow's home and being thought of like a member of the family. This acquaintance was important in shaping Darwin's future for it was Henslow who was invited to travel aboard the Beagle with Captain Robert Fitzroy as he mapped the coast of South America. But Henslow had a family and a parish to look after so recommended that young Darwin be interviewed for the opportunity.

Darwin's father was initially opposed to his interviewing for the voyage. But Darwin's uncle, Josiah Wedgewood, denied a similar opportunity to travel in his youth, convinced the senior Darwin that Charles should be permitted to interview for the voyage.

The captain of the Beagle, Robert Fitzroy, was only four years older than Darwin and the two at times were like brothers. Fitzroy's primary interest in taking Darwin on the voyage was to be his traveling companion. There had been a high number of suicides of captains in the Royal Navy and Fitzroy, whose family had a history of suicides, was worried that he might also be susceptible to deed. His solution was to take an educated man along on the voyage to share meals with him, discuss books, and provide the intellectual stimulation that Fitzroy felt would insulate him from the depression that sometimes affected captains. Fitzroy also wanted to take someone who could contribute to the scientific return of the voyage and therefore he wanted someone with an interest in natural history.

The Beagle left England on December 27, 1831 on what would be a nearly five-year voyage around the world. Before Darwin sailed, Henslow described him as an "unfinished naturalist," but Darwin did his homework well and he shipped back to England extensive collections which attracted the attention of the scientific community.

The voyage influenced Darwin's life. He described the voyage as the most "important event in my life." While on the voyage he experienced a rain forest, collected fossils of large extinct mammals, observed "savages," witnessed the horror of slavery, rode across the Andes, and visited the Galapagos.

The Galapagos were critical in the development of the concept of evolution. But many do not recognize why. When Darwin left England he was a creationist. And creationism holds that all life was created at one time and that species are fixed, reproducing after their own "kind." The Galapagos challenged that central point in creationism. By the time Darwin visited the Galapagos he had become a follower of Charles Lyell's theory of uniformitarianism: that the forces shaping the Earth today have been at work throughout all time; that rain, wind, glaciers, rivers, and earthquakes have been slowly carving the features of the Earth and therefore the Earth is much older than was widely believed.

When Darwin visited the Galapagos he saw volcanic islands with lava flows so fresh you could cut your feet on the rocks. This told Darwin that the Galapagos had to be younger than South America. Yet many of the animals and plants on the Galapagos were different from those in South America and, in many cases, different from island to island. For example, of the 29 species of land birds found on the Galapagos, 21 occurred nowhere else in the world! How could all of these species have been created, dispersed after the great flood, make their way to the Galapagos yet become extinct everywhere else? Moreover, these unique species could only have appeared after the Galapagos had come into existence, which must have been quite recently. This told Darwin that not all species were created at the same time but formed at different times. He called these

islands "centers of creation." This challenged the fixity of the species and started Darwin on his search for mechanism to account for these more recent creations.

Darwin returned to England in 1836 with a public reputation as a naturalist. It seems his letters to Henslow were published as a pamphlet due to the interest in his specimens he had sent back to England. His father told him that he had important scientific work to do and could delay his plans of becoming a clergyman. Now at age of 25, Darwin moved to London to supervise the analysis of the massive collection of rocks, fossils, birds, plants, and insects he had sent to England from his voyage. But like many men his age, his mind turned to companionship and after "critical analysis" he proposed to his cousin Emma Wedgewood and they were married on January 29, 1839. They lived in London for two and a half years until they moved to Downe in 1842. There, Darwin and Emma, and eventually their 10 children, three died in early in childhood, spent the rest of their lives.

Darwin was fortunate in that he never had to hold a paying job. In addition to his considerable allowance from his father, he received royalties from his best selling books. His annual income was over ten times greater than a common laborer. Darwin also inherited a considerable sum from the Wedgewood estate after Emma's father, Josiah Wedgewood, of the Wedgewood pottery fame, died.

It was during his residence in London and before his marriage to Emma that Darwin read Thomas Malthus' *Principle of Population* and hit upon the mechanism for the origin of new species. Malthus discussed problems of overpopulation, but pointed out that population growth would correct itself because there was not enough food to feed everyone and many would starve. This, coupled with Darwin's study of animal and plant

variation, provided him with the key for his major discovery - natural selection.

Popularly called evolution today, Darwin's thesis can be summed up in just a few simple points:

1. Individuals will try to produce as many offspring as possible.
2. There are limits to this population potential. There are only so many mates, so much food, etc.
3. No two individuals look exactly alike and much of this variation is inherited.
4. This variation, combined with the limits to population growth, create a "struggle for existence." Those individuals, who can compete for mates, food, etc., will be more successful in reproducing offspring and their variations will accumulate in the population. This is called natural selection.
5. Natural selection will force populations to adapt to local conditions producing distinct local populations. If differences accumulate to where the populations can no longer interbreed, then you have the formation of two new species.

Darwin likened this natural selection to the artificial selection that dog and pigeon breeders used to create new varieties. Natural selection, Darwin reasoned, is creative.

Darwin recorded his views in 1844 and gave the essay to Emma and told her to publish the essay if he died. He then spent the next ten years studying and writing about fossil and living barnacles. His barnacle studies were essential for him to study the separation between species. When he completed his work, he was convinced that the slight differences between species could only be explained by evolution.

In 1854, Darwin started writing his big book, which was to be called *Natural Selection*. He was plodding along until 1858 when he received a letter from Alfred Russell Wallace, containing a short paper on the origin of new species by natural selection. Darwin said it was as if Wallace had his 1844 essay for review. He was ready to give Wallace credit for the entire subject until his friends convinced him to write his own paper on the subject and have it read along with Wallace's paper at a session of the Linnaean Society. This historical session occurred July 1, 1858, but it did not create the stir that Darwin had feared. Instead, it was the publication of Darwin's *On the Origin of Species,* a year later that changed our view of the world and ourselves.

Why did Darwin delay the publication of his views? The answer is found in his private notes where he acknowledges the materialistic nature of his ideas. Indeed, he felt like he had confessed to having committed a "murder!"

Evolution by natural selection had a profound effect on religious philosophy. It challenged the natural philosophy of William Paley, who believed that the nature with its intricate "design" proved the existence of a "designer." But natural selection explained how the intricate structures evolved. Moreover, evolution as a fact of biology challenged the literal interpretation of Genesis and led to questions about the veracity of the entire Bible.

By the 1870's Darwin was a famous figure in the literate world. Novels and poems were written using evolution as a theme. Darwin's writings accelerated the decline of the romantic period replacing it with a more materialistic worldview. Darwin's writings were also being used as the basis of economic theory. Karl Marx felt that Darwin's natural selection provided the argument of socialism.

Darwin did not examine the role of natural selection on humans in the *Origin*. In fact, he only mentioned man once with the understatement, "Light will be thrown on the origin of man and his history." But the failure of other scientists to bring humans under the control of natural selection forced Darwin to publish *The Descent of Man*, which appeared in 1871.

Darwin complained about ill health throughout his life. He often had bouts of stomach problems and chronic illness for which he visited the fashionable spas of the day. He started having chest pains in 1881, which became frequent in 1882. He suffered a severe heart attack on April 18, 1882, and died the following day with his family at his bedside. His last words were, "I am not afraid to die." In recognition of his greatness, Darwin is buried in Westminster Abbey just a few feet from Isaac Newton. His outlook on the impact of his theories might be best summed up with the conclusion from the Descent of Man.

"Man may be excused for feeling some pride at having risen, though not through his own exertions, to the very summit of the organic scale:... instead of having been aboriginally placed there, for it may give him hope for a still higher destiny in the distant future."

C. Darwin

Suggested Readings

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