

reviews

BOOKS • CD ROMS • ART • WEBSITES • MEDIA • PERSONAL VIEWS • SOUNDINGS

Darwin

An exhibition at the American Museum of Natural History, Central Park West at 79th Street, New York, NY 10024, until 29 May 2006. Admission \$21 for adults.

www.amnh.org

Rating: ★★★☆

Charles Darwin took a Bible with him on HMS *Beagle* and planned to become a clergyman, but he came back a scientist. The young Darwin was mad about beetles and geology, but he was an indifferent student who thought entering the clergy would give him a quiet life in which he could pursue his study of the natural world.

His five year expedition to South America and the Galapagos islands would never have happened if his persuasive relative Josiah Wedgwood had not convinced his father that 22 year old Charles, a recent university graduate with no clear purpose in mind, should accept the job of scientist aboard HMS *Beagle*. The *Beagle's* assignment was to produce better maps for British ships.

Darwin went out carrying a pistol in addition to his Bible, and shared a small cabin with two other men. Both a good self promoter and a careful scientist, he sent back massive, carefully collected specimens of the new plants, birds, insects, and mammals he had seen, together with detailed descriptions, to his mentor J S Henslow. He must have held his breath before word came that his first shipment of specimens, sent two years earlier, had been received.

This exhibition includes some of the previously unknown species that Darwin



A test for intelligent design?

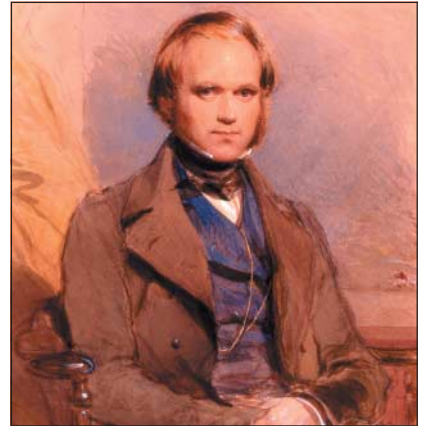
encountered—two large and lumbering Galapagos tortoises, four horned frogs, a sleepy green iguana, carnivorous plants, and orchids. There are also many of Darwin's own specimens and notes, including some original manuscript pages of *The Origin of Species*, short films, and computer interactions. A reconstruction of Darwin's study at Down House south east of London shows where he worked on his many published papers.

When Darwin began his studies, most people thought that animals and plants were unchanged from their creation a few thousand years before. This exhibition shows how he developed his theory of evolution—a theory he kept secret for 21 years—to explain the vast diversity of life on the planet and the way that changes evolve. He pursued geology, his early interest, while in South America. In rocks in Scotland he had seen layers that suggested a great upheaval. After an earthquake in Chile he saw a seabed of mussels that had been moved eight feet up out of water. He found fossilised trees high in the Andes and wondered if such a change might have happened slowly over the ages, just as the mussels had been pushed up.

His painstaking collection of specimens, especially from the Galapagos islands, showed that isolated populations differed from their parent mainland population and from related populations on other islands, differences that could only have occurred by species adapting to different situations. Birds in some areas showed no fear because they had no natural enemies, while the same birds elsewhere were wary. Also in the Galapagos islands, he collected what he thought were different species of finches from different islands. Only later did he realise that they were all the same species but had developed differently in response to the different conditions on the isolated islands.

He read the work of Malthus, who had noticed that species produce many more offspring than can survive. But not all offspring are identical. Those with some superior trait may have a survival advantage.

As Darwin returned from his five year voyage he was already thinking of his theory of evolution. But it was so revolutionary that although he wrote a draft of what became *The Origin of Species*, he never published it. Emma Wedgwood, whom he married soon after his return, was a religious woman who was distressed by his belief that natural selection over billions of years, not a divine creator operating in a few thousand years, had created the world.



DARWIN HEIRLOOMS TRUST

Darwin kept his theory secret for 21 years

Perhaps even more troubling was his fear of the reaction to his theory by fellow scientists and especially by the public. Only when Alfred Russel Wallace, a young naturalist, approached him and proposed a similar idea did he write his famous book. He and Wallace presented their ideas jointly.

This exhibition occurs at a time when some American parents and school boards are debating whether "intelligent design" should be taught alongside evolution. The final section of the show presents well known scientists talking about the importance of Darwin's theory and their personal feelings about whether scientists can hold religious beliefs. (Francis Collins, head of the human genome project, says yes.) This section also includes an explanation of why evolutionary theory can be tested but intelligent design cannot, since it assumes creation by a supernatural being.

Finally, the exhibition reveals evolution at work all around us—a video of *E coli* multiplying with inevitable genetic mutations and an explanation of how random mutations in a virus such as HIV lead to drug resistance.

The exhibition—which will travel to Boston, Chicago, Toronto, and the Natural History Museum in London—is exhaustive, careful, and logical. If it has a failing, it is that it makes the theory of evolution seem so simple and clear, rather than the utterly revolutionary, astounding thunderclap that it was.

Janice Hopkins Tanne *medical journalist*
New York
TanneJH@aol.com

Items reviewed are rated on a 4 star scale (4=excellent)