The 200th Anniversary
Overview

- A brief sketch of Darwin's life & work
- Darwin on science, religion & man's place
- Darwin as scientist and humanist
Birth & family: 1809

- **The Mount**, Shrewsbury, Shropshire, England

- **Robert Darwin** (physician)
- **Susannah Darwin** (Wedgwood)

- The 5th of 6 children
- Erasmus Darwin (grandfather)

Robert Darwin: “the largest man ... I ever saw”

- Unitarians, freethinkers
- Baptised as Anglican
**Childhood: 1809 - 1825**

- Collected animal shells, postal franks, bird's eggs, pebbles and minerals

- **1817**: local Unitarian school
- Telling “monstrous fable[s]”
- **July 1817**: his mother dies

- **1818**: joins Eras (older brother) as boarder at Shrewsbury School
- Chemistry in a garden shed
- “You care for nothing but shooting, dogs, and rat-catching, and you will be a disgrace to yourself and all your family.” (Robert to 15 years-old Charles)
Edinburgh: 1825 - 1827

- Study **medicine**, but hated it

- Freed black slave **John Edmonstone** – taxidermy

- Read Erasmus Darwin's **“Zoönomia”**

- **Nov 1826**: joins the “Plinian Society”
  - **Robert Edmund Grant**
  - **Lamarkian ideas**
  - **Work on marine invertebrates**
Cambridge: 1828 - 1831

- Bachelor of Arts to become Anglican parson
- Beetle collecting: the then current craze; he became obsessed & very good at it

- The Radicals Richard Carlile and Rvd. Robert Taylor ("the Devil's Chaplain"), imprisoned for blasphemy

- William Paley's "Evidences of Christianity"
- Botanist John Stevens Henslow ("the man who walks with Henslow")
- January 1831: final exam (10th out of 178)
- April 1831: plans to visit the Canary Islands
- Meets geologist Rvd. Adam Sedgwick
**HMS Beagle: 1831 - 1836**

- **Henslow** proposed Darwin as a self-funded companion to Captain Robert FitzRoy
- Planned for **2 years**
HMS Beagle: 1831 - 1836

• FixRoy gave him the 1st volume of Charles Lyell’s “Principles of Geology” (uniformitarianism)

• Geology: ground rising post earthquake (Concepción, Chile), coral reefs, etc;

• Fossils: *Megatherium, Mastodon*;

• Biological observations: Rheas, Galápagos Islands (“centers of creation” as opposed to “transmutation of species”), Australia
Becoming famous: 1836 - 1838

- **Already famous** for the specimens & notes he had sent back
- Meets **Charles Lyell** and anatomist **Richard Owen**
- **Jan 1837**: Geological Society of London, paper showing S. American landmass slowly rising
- **17 Feb 1837**: elected to the Council of the Geographical Society
- **March-July 1837**: first speculations about “species transmutation”, adaptation & evolutionary trees
Becoming famous: 1836 - 1838

- "Zoology of the Voyage of H.M.S. Beagle"
- "South American Geology"
- March 1838: Secretary of the Geological Society

- June 1838: first bout of illness

- Continued working on the transmutation
# Transmutation: 1839 - 1858

- **24 Jan 1839**: elected Fellow of the Royal Society
- **29 Jan**: marries Emma Wedgwood
- **May 1839**: "Journal and Remarks" (Beagle voyage)
- **May 1839**: "The Structure and Distribution of Coral Reefs"
- **Sept 1839**: move to Down House, Downe
- **Nov 1939**: “Vestiges of the Natural History of Creation” (anonymous)
- **April 1852**: Annie dies
- **Barnacles**: 8 years, evolution of sex: the Royal Society’s Royal Medal (1853)
The Origins: 1858 - 1860

• Steady accumulation of facts & experiments;
• 18 June 1858: Alfred Russel Wallace's paper describing natural selection
• 1 July 1858: joint paper “On the Tendency of Species to form Varieties; and on the Perpetuation of Varieties and Species by Natural Means of Selection” to the Linnean Society
• Prof Samuel Haughton: “all that was new in them was false, and what was true was old”

• 22 Nov 1859: “On the Origin of Species by Means of Natural Selection, or The Preservation of Favoured Races in the Struggle for Life”
The Origins: 1858 - 1860

- Church of England
- **1860 Oxford evolution debate** (Bishop Samuel Wilberforce vs Thomas Henry Huxley)
- Darwinism
Natural Selection: 1860 - 1871

- **1862**: “Fertilisation of Orchids” – co-evolution, complex relationships

- Studies of movement in climbing plants (“The Power of Movement in Plants”, 1880)

- **1864**: The X Club (pure science)
- **1868**: “The Variations of Animals and Plants under Domestication”

- **1869**: *Nature* is founded by The X Club
Sexual Selection, Human Evolution & Emotions: 1871 - 1872

• **1871:** “The Descent of Man, and Selection in Relation to Sex”:
  - **Human evolution**
  - Humans are one species
  - **Sexual selection**

• **1872:** “The Expression of the Emotions in Man and Animals”

![The Expression of the Emotions in Man and Animals, 1872](image)
Last years: 1872 - 1882

- **1880**: “The Power of Movement in Plants”
- **1881**: “The Formation of Vegetable Mould through the Action of Worms, with Observations on their Habits”

- **19 April 1882**: dies in Downe after a long & painful agony

- **Buried in Westminster Abbey**
Darwin and Science

- Darwin's ideas are **at the core of modern biology**

- The "**Modern Synthesis**" ('30s-'40s): genetics + evolution

- In every corner of biology
- "Nothing in biology makes sense except in the light of evolution" (Theodosius Dobzhansky, 1973)

- "**Generalized darwinism**"

- Evolutionary approaches to culture
Darwin and Religion

- During the Beagle he started to doubt
- Tried to share his doubts with Emma
- After Annie's death (1851) he stopped believing (and attending church)
- He described himself as an Agnostic (not an Atheist)

- The Lady Hope story (1915)

“I can indeed hardly see how anyone ought to wish Christianity to be true; for if so the plain language of the text seems to show that the men who do not believe, and this would include my Father, Brother and almost all my best friends, will be everlastingly punished. And this is a damnable doctrine” (The Autobiography of Charles Darwin 1809–1882, 87)
Man is not specially created, nor the top of an "evolutionary ladder" but just a branch of the tree of life.

- **Continuity** with the other forms of life
- **Man is not above the Laws of Nature**

Reactions: man is somehow special
- **Creationism/ID „vs“ Evolution**

The Universal Tree of Life. Humans are a branch of Animals, which are just a branch of one of the three Domains, Eukarya.
Darwin as Scientist and Humanist

- Despite his debilitating illness, he painstakingly collected data, experimented and thoroughly weighted hypotheses
- Not one but many exceptional contributions
- Extremely humane and aversive to conflict & suffering
- Very socially sensitive

Darwin, 1880
The End

Selected sources:

- *Charles Darwin in his own words*
- *Wikipedia*
- *Darwin Exhibition*, American Museum of Natural History
- *The Complete Works of Charles Darwin Online*
  [http://darwin-online.org.uk/contents.html](http://darwin-online.org.uk/contents.html)
- *The Darwin Correspondence Project*
  [http://www.darwinproject.ac.uk/index.php](http://www.darwinproject.ac.uk/index.php)
- *Darwin 200*, Natural History Museum
- *Good religion needs good science*

24 November 2009: 150 years since the publication of the *The Origins!*