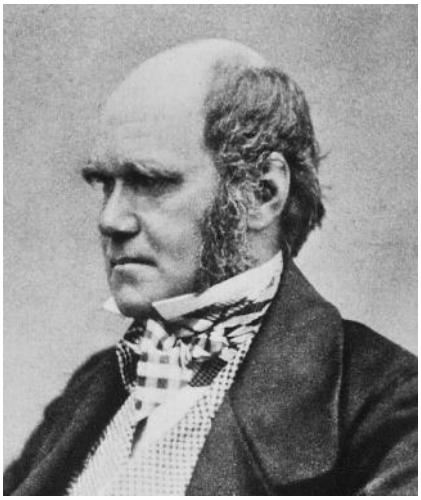
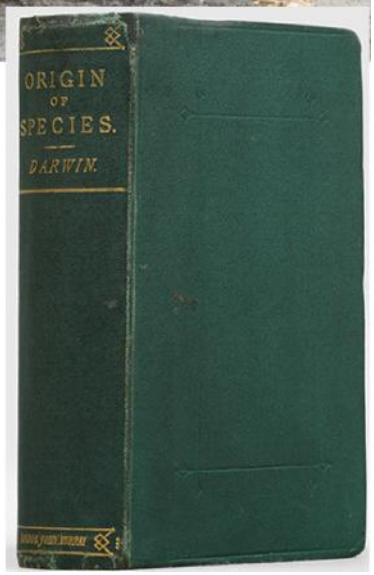


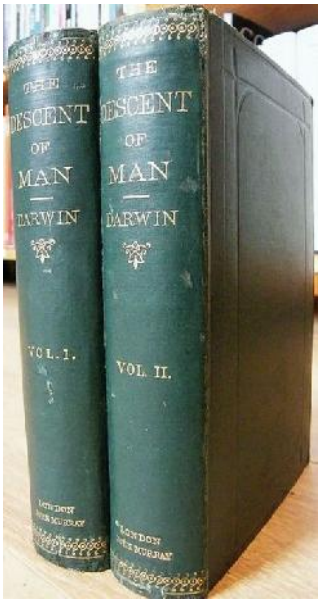
For today's 'On This Day' we go back to 24 November 1859, when CHARLES DARWIN published his book THE ORIGIN OF SPECIES. The book represented about 30 years' worth of work, going back to Darwin's five year voyage around the world on HMS BEAGLE (pronounced 'Bee - gul') when he was just 22 years old. That voyage took him to the GALAPAGOS (pronounced 'Gal - a - pah - goss') ISLANDS, in the Pacific Ocean, near South America, where he observed that tortoises and finches on the islands differed significantly from other tortoises and finches on other islands, but couldn't figure out why this was.

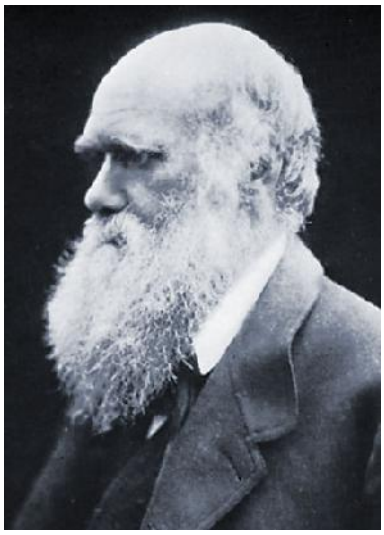
Over the next 30 years, Darwin worked on a THEORY OF EVOLUTION, which argued that different species (pronounced 'spee - chees', and meaning a distinct type of organism) acquired particular characteristics through a process of evolution, where a baby tortoise would be born with a new characteristic and if that characteristic helped the tortoise to survive and do well, then it would pass that characteristic on to its babies, and they would also survive and do well, and pass it on to their babies and so on. And Darwin argued that the theory of evolution might explain why we have tortoises in the first place - that tortoises might have started out as a completely different kind of reptile which had no shell. But just by accident one of those baby reptiles was born with a bit of a shell on its back - and that helped it survive and do well, and when it had babies they had a bit of a shell as well, and that helped them survive and do well. And gradually a new reptile comes into existence - one with a shell on its back. And so the tortoise comes into existence. That, Darwin claimed, was the origin of species - all species had evolved from other and earlier species by acquiring characteristics that helped them survive and do well.



Darwin worked on this theory for about 30 years, but then discovered that another scientist was just about to publish an article advancing the same theory of evolution that Darwin had been working on. That scientist was ALFRED RUSSEL WALLACE. Wallace was persuaded to hold off until Darwin could finish up his own work - and in 1858, Darwin and Wallace both published articles advancing the theory of evolution. Darwin then spent a year writing a big book of his findings - and that was 'The Origin of Species'. The book sold lots of copies, and the theory of evolution entered everyday language. But some people were very disturbed by Darwin's book. The Bible said that God created all the living creatures in

the world - so what was this nonsense about animals and birds evolving out of earlier kinds of animals and birds? Where was God in all of this? And what about Adam and Eve (who I told you about on June 28)? Was Darwin arguing that human beings evolved out of other animals? Was he saying that human beings started out as monkeys or apes, and those monkeys or apes accidentally acquired the characteristics that made them human beings? Was the existence of the human race the result of a simple accident of fate, and not God's will? Darwin dodged these questions for years because if he said 'Yes' to these questions, Victorian society would have been absolutely outraged. But towards the end of his life, in 1871 - when Darwin was 62 (he would die when he was 73), and 12 years after the publication of 'The Origin of Species' - Darwin published 'THE DESCENT OF MAN', arguing that the theory of evolution applied as much to human beings as it did to another living organism.





Darwin's theory of evolution has now been widely accepted, with scientists searching the Earth for evidence of the types of organisms which the the animals, birds and reptiles we are familiar with evolved out of. For example, these scientists think they have found the reptiles that modern tortoises come from lived on the Earth. Those reptiles lived on the Earth about 174 million years ago - that's a long time ago! So scientists argue that there is a huge amount of evidence to back up Darwin's theory of evolution, and Darwin's theory is the best explanation we have got where we and all living organisms on the Earth come from. As a result, Darwin is regarded as one of the greatest scientists of all time. But there is a dark side to Darwin's achievement.

People got the idea from Darwin's work that the world we live in is a result of the SURVIVAL OF THE FITTEST - the survival of the animals, birds and reptiles that have the characteristics that make it easiest for them to survive and do well. This made people think that they were giving nature a helping hand by killing or letting die people who were disabled - they were helping to make sure that the only people who got to grow up and have babies were people who were superfit and healthy, so those people's babies would be superfit and healthy as well. This is a really EVIL way of looking at the world and human beings - but it's one that became very popular because of Darwin's work. And it took over an entire country when the NAZI PARTY took over GERMANY in 1933 (something I told you about on August 11). And when everyone could see just how evil it was to kill people because you thought their disabilities or other characteristics made them 'unfit' to have babies, the idea that there was something good about the 'survival of the fittest' took a real beating. But Darwin remained popular because his theory of evolution provided a really powerful explanation of where all the living things around you ultimately come from - and you can see that theory at the start of a film like 2001: A SPACE ODYSSEY (which I told you about on November 11).

But some things remained really difficult for Darwin to explain. The first was language - How come human beings acquired the ability to talk? There seems to be no physical characteristic that human beings have, or could have acquired, that accounts for how they can

talk to each other. Second, about 540 million years ago, something happened which is now known as the CAMBRIAN (pronounced 'Cam - bree - an') EXPLOSION, where a huge number of species of animals and birds and reptiles suddenly appeared on the Earth. (We know this happened because the remains of these creatures got embedded into rocks and became FOSSILS - if we know how old the rocks are (and there are ways of telling), we know how old the creatures were.) Where did they come from? Did they all suddenly evolve out of other types of creature, all at the same time? Scientists will say 'Yes, they did' - but they really mean 'Yes, they must have' because if they didn't evolve out of other creatures, then Darwin's theory of evolution would be wrong, or wouldn't explain everything about where all the living things in the world today come from. But the idea that such a huge number of creatures should suddenly all appear out of basically nothing is hard to explain on Darwin's theory - not impossible, but hard.