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The origin of theories

By Andrew Robinson

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O *n the Origin of Species* shook Victorian Britain in 1859 - and has today made Darwin more famous than even Newton and Einstein. But it has never been a work of popular science: long, difficult and poorly illustrated, it reached a mere 10,000 copies with its fifth edition in 1869. The book that really explained Darwinism to the world was a bestselling, provocatively illustrated book in German. Published in Berlin in 1868, translated into English as *The History of Creation* in 1876, it was frequently reprinted until 1926.

Its author was the controversial Ernst Haeckel, professor of comparative anatomy at the University of Jena, a fanatical convert to Darwinism. In 1866, aged 32, he made a pilgrimage to see Darwin at Down House in Kent. Much later, Haeckel remembered an impression of "the kind of noble worldly wisdom of the Greek ancients, that of a Socrates or an Aristotle". Darwin was happy to reciprocate; he added lines to Haeckel's fifth edition about the German's "great knowledge and abilities". So began a lasting friendship.

But, as biologist Michael Boulter reports in *Darwin's Garden* , he gave a gentle warning to his guest: "Your boldness sometimes makes me tremble." Unlike Haeckel, or their pugnacious mutual friend Thomas Huxley, Darwin was never polemical about his revolutionary ideas.

The Tragic Sense of Life , Robert Richards' excellent, well-illustrated and scholarly biography of Haeckel, draws out some striking similarities in the two men. Both were encouraged by their fathers to study medicine, then abandoned it in disgust. Both had an overwhelming urge to botanise in exotic foreign parts in their early twenties. Both married their first cousins. And both rejected their religious faith after a death through illness - Haeckel's wife Anna died in 1864, while Darwin lost his 10-year-old daughter Annie.

But the scientists were also very different. Haeckel's scientific expeditions continued into his late sixties, while Darwin scarcely stirred from Kent after his early thirties. Haeckel was a brilliant illustrator whose natural history drawings are still admired, whereas Darwin had no artistic skills. And while Haeckel was immersed in German high culture, Darwin's love for the arts slowly evaporated. Most obvious of all is Haeckel's extremism versus Darwin's moderation.

Haeckel continues to provoke more attacks than Darwin - from biologists such as the implacable Stephen Jay Gould, creationists who vilify his monistic beliefs, or historians who accuse him of scientific fraud and proto-Nazi racial theories. This sustained hostile reaction stems, Richards argues, "from his passionately driven personality and the reckless abandon with which he pursued his Darwinian modernist convictions".

Richards generally succeeds in rescuing Haeckel from his more malign detractors. Since the 1860s there have been allegations that Haeckel doctored other peoples' drawings of embryos to support his famous theory that "ontogeny recapitulates phylogeny" - in other words, that a developing embryo goes through the same morphological changes as its ancestors did in their evolutionary descent. Richards acquits Haeckel of fraud and convicts him instead of mere poor judgement.

As for his supposed Nazi proclivities, Richards uncovers no evidence of anti-Semitism, and adds that in 1937 party officials rejected earlier Nazi efforts to endorse Haeckel's ideas. Since Haeckel died in 1919, we can't know his view of Nazism. He was, however, a myopic believer in the superiority of German culture during the first world war, and was a signatory, in spite of his lifelong veneration of Darwin, of the notorious "Manifesto of the 93" in October 1914, when 93 intellectuals pronounced their unequivocal support for Germany's military actions in the first world war.

Boulter's book, *Darwin's Garden* , begins with an attractive and relatively unploughed idea: it focuses on Darwin's ingenious experiments with seeds, orchids, primulas, pigeons and insects in his "laboratory" garden at Down House. He then shows how biology has since developed some of those results, while discarding others.

But after a promising start, the book veers between being a history of the house, a potted biography of Darwin, and an introduction to molecular and population biology. There are also significant mistakes, notably historical. For example, Darwin fell off his horse Tommy in 1869, not in the anxious run-up to publishing the *Origin* ; and Bishop "Soapy Sam" Wilberforce was a protagonist, not the chairman, of the celebrated Oxford debate with Huxley about apes and men in 1860. Nevertheless, the book made me want to visit Darwin's house and garden, which have been kept largely unchanged since his family moved to Cambridge on the death of his wife in 1896.

Andrew Robinson is the author of 'The Last Man Who Knew Everything' (Oneworld)