Editorial

In scientific circles it is easy to think of 2009 as the Year of Darwin. The 200th anniversary of his birth occurred on 12 February, and the sesquicentennial of the publication of the *Origin of Species** will take place on 24 November.

Darwin's place in history is assured. At his death he was interred in Westminster Abbey as a scientific luminary, his visage adorns the English ten-pound banknote (replacing that of Charles Dickens in 2000); geographical features and living creatures bear his name, as do an Australian capital city and university, and few, if any, scientifically literate people have not heard of him. The one thing that Darwin's name is inevitably and irrevocably associated with, of course, is evolution by natural selection – and the ensuing theological controversy attributed to his theory. In September 2008 the Church of England issued an article saying that the 200th anniversary of his birth was a fitting time to apologise to Darwin for 'misunderstanding you and, by getting our first reaction wrong, encouraging others to misunderstand you still'.

Darwin's central achievement so far as modern biologists are concerned was not so much the novelty of his ideas (theories of evolution and even of natural selection preceded Darwin) as the comprehensive presentation of all available evidence for them. Importantly, as one of the articles in this issue points out, Darwin used a hypothetico-deductive approach in his science and sought for mechanisms to explain past events. Contemporaries who held similar tentative ideas were convinced by his arguments and he was much respected by his peers.

In short, Darwin was the man for the time, thanks to his exceptional abilities of observation, experimentation, and theorisation.

It is interesting to speculate, however, that, had Darwin not lived, the modern evolutionary-biologist community might arguably be pretty much where it is today, owing to the similar, though less well-articulated, ideas of contemporaries like Alfred Russell Wallace, the subsequent discovery of principles of inheritance, the formulation of mathematical models concerning speciation, and resolution of the molecular structure and function of the nucleic acids DNA and RNA. Two colleagues were asked what they thought about this possibility. Hamish Spencer (University of Otago) replied: 'I am never sure just how much individuals matter in framing debates … I do think having an articulate proponent helps enormously. I doubt Wallace would have been able to engender the same sort of science that resulted. But I do agree that Darwin built far more on what was already established and that he needed to be there at that time for his work to have the effect that it did. And also, that evolutionary biology would have arisen even without him. To me, his emphasis on heritable variation was the crucial novel element, but I suspect that everyone has their favourite aspects!' David Penny (Massey University, Palmerston North) replied: 'Yes, it is very interesting what we would have had without Darwin. Wallace would still have produced his theory, and I suspect that the acknowledgement that evolution had occurred would be accepted reasonably early. But Wallace would not go the whole way with human mental states – he accepted virtually everything about normal evolution but seemed to be a spiritualist. It is hard to know whether the few people that wanted to apply Darwin to humans would have acted differently without him. Would they have worked on regardless, even if it was an unpopular minority opinion?' The one outstanding question that evolutionary biologists ask today is: Is there anything in nature that cannot be explained by normal micro-evolutionary processes?

In the opinion of many, Darwin introduced a scientific revolution as great as that of Copernicus. A website (darwin-online.org.uk) devoted to his publications, private papers, and other Darwiniana has had over 100 million hits since October 2006 (it started in 2002). His life and work are being commemorated by events around the world. Among the foremost of these, run under the auspices of the International Union of Biological Sciences (IUBS) and the United Nations Educational, Scientific and Cultural Organization (UNESCO), are six coordinated 'Darwin 200 Symposia' and satellite meetings, held in five areas of the world. The first of them took place in Christchurch in February.

This issue of *New Zealand Science Review* acknowledges Darwin's signal contribution to science. The papers presented here are wide-ranging in content and we hope you will find them stimulating.

Dennis Gordon
for NZAS Council

* Darwin, C.R. 1859. *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*. London, John Murray. 1st edn. 502 p.