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Editorial: Darwin and Kew anniversaries

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Charles Darwin aged 31, watercolour painted by George Richmond in 1840.

“It is interesting to contemplate a tangled bank, clothed with many plants of many kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect that these elaborately constructed forms, so different from each other, and dependent upon each other in so complex a manner, have all been produced by laws acting around us. These laws, taken in the largest sense, being Growth and Reproduction; Inheritance which is almost implied by reproduction; Variability from the indirect and direct action of the conditions of life, and from use and disuse; a Ratio of Increase so high as to lead to a Struggle for Life, and as a consequence to Natural Selection, entailing Divergence of Character and the Extinction of less-improved forms. Thus, from the war of nature, from famine and death, the most exalted object which we are capable of conceiving, namely, the production of the higher animals, directly follows. There is grandeur in this view of life whilst this planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being evolved.”

So wrote Charles Darwin in the conclusion to his *On the Origin of Species* in 1859, hence this year is the 150th anniversary of the publication of this monumental work. Darwin was born on February 12th 1809, so fortuitously this year is also the bicentenary of his birth. This juxtaposition of dates has produced a Darwin celebratory fest across the world of biology and the broader media that must have been observed by all readers of *Bradleya*. This issue is the first one with a theme in celebration of the Darwin year, as 2009 has become known.

Darwin was particularly interested in plants, in part no doubt resulting from his forty year-long friendship with Joseph Hooker, second Director at Kew. However, he considered the origin of the vast group of flowering plants as an “abominable mystery”. He wrote widely on plants in four notable books: *The Movements and Habits of Climbing Plants* (1865), *Insectivorous Plants* (1875), *The Different Forms of Flowers on Plants*

of the Same Species (1879) and *The Power of Movement in Plants* (1880). Here (p.3), in “Charles Darwin’s succulent plants”, Gordon Rowley reviews what Darwin wrote about these particular plants. Urs Eggli and Reto Nyffeler (p.13) in “Living under temporarily arid conditions – succulence as an adaptive strategy” review the concept of succulence as a diverse product of evolution. Natural selection as the driving force for evolution was Darwin’s big idea, but an alternative evolutionary mechanism is considered by Root Gorelick (p.37) in “Evolution of cacti is largely driven by genetic drift, not selection”. Patrick Griffith presents a case study of the evolution of one group of cacti (p.49) in “Evolution of leaf and habit characters in Opuntioideae (Cactaceae): reconstruction of ancestral form”. The interaction between plants and their pollinators was a major research interest of Darwin, and although there is no evidence that pollination of succulent plants was studied by him, this theme is followed here by Zlatko Janeba (p.59) in “Insect flower visitors and pollinators of cacti from the southwest USA”. On a similar theme, nectar is one reward for pollinators and the structures that produce this in the mesems are considered by Heidi Hartmann and Ingeborg Niesler (p.69) “On the evolution of nectaries in Aizoaceae”.

We are not just celebrating Darwin this year, but also the fact that the Royal Botanic Gardens, Kew, are 250 years old, as outlined by David Hunt and Nigel Taylor (p.121) in “Kew and its collections of succulent plants”.

However, this issue is not solely devoted to the Darwin and Kew anniversaries, since it also includes contributions on a wide diversity of succulents from Urs Schlegel, Bert Jonkers, Jean-Bernard Castillon, Len Newton, Susan Carter, John Lavranos, Ulrich Meve, Gideon Smith and Estrela Figueiredo; a truly international range of authors.

I end by thanking particularly those who have contributed to this anniversary issue. Some of the Darwin and Kew papers were specially commissioned and I thank those authors who rose to the challenge and responded positively to my request for contributions. Other manuscripts were offered unsolicited when news of the issue spread. As ever I am indebted to the anonymous band of referees who help to maintain the high standard of contributions. Wilf Thompson of Castle Colour Press Ltd. as ever has done sterling work on the pagination of this issue, and finally Tina Wardhaugh is thanked for Photoshop work on images for the cover and four of the papers.