

## BOTANY

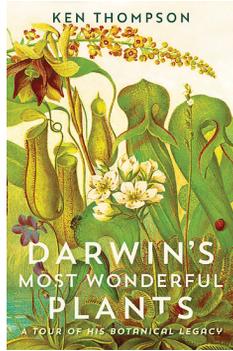
**Darwin's Most Wonderful Plants: A Tour of His Botanical Legacy**

By Ken Thompson. 2019. University of Chicago Press. 256 pages, 25.00 USD, Cloth.

Within the last two decades, several books have been published that focus on single aspects of Charles Darwin's life. Examples include his eldest daughter (Keynes 2002), his barnacle research (Stott 2003), and his work on coral reefs (Dobbs 2005). Author Ken Thompson continues this trend by exploring in detail Darwin's work with plants in *Darwin's Most Wonderful Plants: A Tour of His Botanical Legacy*. Darwin is, of course, most famously known for his book *The Origin of Species* (Darwin 1859) and many people are likely unaware that he spent many years late in his life studying plants. Thompson succeeds in shedding some light on this often-overlooked part of Darwin's life.

The book is divided into five chapters, with each chapter covering one or more of Darwin's plant books. Chapters 1 (Room at the Top), 2 (Slow Learners), and 3 (The Biter Bite) discuss, respectively, Darwin's books titled *On the Movement and Habits of Climbing Plants* (1865), *The Power of Movement in Plants* (1880), and *Insectivorous Plants* (1875). Chapter 4 (Sex and the Single Plant) encompasses three books: *On the Various Contrivances by which British and Foreign Orchids are Fertilised by Insects, and on the Good Effects of Intercrossing* (1862); *The Effects of Cross and Self-fertilisation in the Vegetable Kingdom* (1876); and *The Different Forms of Flowers on Plants of the Same Species* (1877). Finally, Chapter 5 (The Mysteries of the Cabbage Patch) discusses *The Variation of Animals and Plants Under Domestication* (1868). The book also includes these additional sections: Afterword, Sources, Photo Credits, Thanks, and Index.

The author thoroughly covers each of Darwin's plant books with clarity and intrigue. Darwin studied plants late in life, well after his publication of *The Origin of Species* (Darwin 1859), at Down House, where he had green houses and garden plots to set up experiments and leisurely observe plant behaviour with the help of his staff, children, and grandchildren. Darwin also had plant specimens sent to him and continued his massive correspondence effort to glean information from botanical experts to learn all he could about plants and plant behaviour, especially from his botanist friend Sir Joseph Dalton Hooker,



then the director at the Royal Botanic Gardens, Kew, United Kingdom.

Thompson brings the reader interesting tidbits from Darwin's work as well as modern discoveries in the same vein. For example, in relating Darwin's work with plant carnivory, the author describes a plant in the genus *Philcoxia* with sticky underground leaves that traps and consumes nematodes, a process that was unheard of in Darwin's time (p. 155; see Pereira *et al.* 2012). Thompson seems to continue where Darwin leaves off. In the same spirit of Darwin, he highlights material that Darwin would have been thrilled to observe and study himself, and relates discoveries made years later to Darwin's original observations.

In Chapter 4, Thompson recounts an observation made by Darwin in the 1860s that was not confirmed for over 100 years. Hooker was able to provide Darwin with numerous orchids to occupy his "hothouse" at Down House to facilitate Darwin's further experimentation and observation. One such unique orchid was *Angraecum sesquipedale* from Madagascar. Darwin wrote,

A green, whip-like nectary of astonishing length hangs down beneath the labellum. In several flowers sent me by Mr. Bateman I found the nectaries eleven and a half inches long, with only the lower inch and a half filled with nectar. What can be the use, it may be asked, of a nectary of such disproportionate length? (p. 162)

Darwin loved these sorts of questions, and he predicted that a moth with a long proboscis would be the likely pollinator. Indeed, 40 years later, the predicted pollinator, the hawkmoth *Xanthopan morgani* var. *praedicta*, was discovered in Madagascar, but a demonstration of the pollination event was not observed until 1997 (p. 164; see Arditti *et al.* 2012).

Thompson's brief discussion regarding Gregor Mendel (Augustinian friar whose work on plants led him to be described as the "Father of Modern Genetics") and Charles Darwin is well worth the read (pp. 211–213). Darwin and Mendel were working at the same time but never met. Darwin was unaware of Mendel's pea experiments; however, Mendel might have been aware of Darwin's work but never made the connection. Darwin was rumoured to have had a copy of Mendel's famous pea paper (Mendel 1865), but the paper remained "uncut" and was never read. Alas, this account appears to be an urban myth, as no copy of the pea paper was found in Darwin's library.

Nonetheless, evolution and genetics would have had a different history had these two great minds connected. See Johnson (2012) and Clark (2017) for additional details on this fascinating story.

Thompson's book, *Darwin's Most Wonderful Plants*, is a must read for anyone interested in Darwin's botanical work, or in the many facets of Darwin's life. Sir Joseph Hooker's words describing Darwin's botanical work provide a lovely summary:

Darwin still works away at his experiments and his theory, and startles us by the surprising discoveries he now makes in botany; his work on the fertilisation of orchids is quite unique—there is nothing in the whole range of botanical literature to compare with it, and this, with his other works ... raise him without doubt to the position of the first naturalist in Europe, indeed I question if he will not be regarded as great as any that ever lived; his powers of observation, memory and judgement seem prodigious, his industry indefatigable and his sagacity in planning experiments, fertility of resources and care in conducting them are unrivalled. (p. 167)

Thompson's work highlights an aspect of Darwin's life that is not as well-known as his evolutionary foundations but brings to light the idea that Darwin's simple musings about the natural world have set in motion entire scientific disciplines tackled today by modern researchers. Charles Darwin was ahead of his time in many areas of scientific thought, and we continue to learn new insights about his life every day.

Note: all of Darwin's written work can be found at <http://darwin-online.org.uk/majorworks.html> and correspondence at <http://www.darwinproject.ac.uk>.

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