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Review: Greydanus on Bellon: 133-134

Richard Bellon, "Inspiration in the Harness of Daily Labor: Darwin, Botany, and the Triumph of Evolution." *Isis* 102.3 (2011): 393-420.

In this exceptional article examining how Charles Darwin's evolutionary theory replaced ideas of the special creation of species, Richard Bellon indulges briefly in abstract formulations characteristic of old questions about the relationship between Religion and Science. Shared among nineteenth century naturalists, he argues, were convictions that speculative flights of fancy had to be restrained by patient, detailed, inductive study. Thus science was able to strike "a grand bargain with theology. Science, being virtuous, was pious. Piety, being reasonable, imposed no theological litmus tests on scientific ideas" (397). Through the remainder of the article, Bellon moves discussion of Darwin's work beyond the usual simplistic caricatures, delving into practical concerns and motivations.

Darwin's work and writings may exude scholarly modesty, but this sort of judgment is made with the advantage of hindsight. It was not apparent to fellow naturalists, Bellon explains, that Darwin allowed the evidence to guide his thoughts to their proper conclusion. Finding inspiration in the exhaustive method of anatomical description modelled by George Cuvier, a good number held evolutionary theory to be incurably ungrounded. It had been tried, for example, by Robert Chambers and Jean-Baptiste Lamarck, and found wanting by Cuvier and Adam Sedgwick, among a good number of others. Notably, the reactions of churchmen like William Wilberforce, far from being merely theological, were cast in terms of similar methodological and naturalistic – all of which is to say scientific – objections.

When *Origins* (1859) was published, Darwin was aware that he faced an uphill battle against the practical assumptions of fellow naturalists. But he seems to have been genuinely taken aback by the sort of the criticisms levelled against his work, and not without good reason. Bellon observes that "Darwin loved working with his 'eyes and fingers,' particularly after gruelling bouts of writing, which he rarely enjoyed" (407). Being accused of drawing hastily formed, speculative conclusions, the very thing he had worked so hard to avoid, was no doubt galling.

Nor would Darwin have been able to carry the day solely on the elegance or conceptual simplicity of his ideas. So while *Origins* raised a furore in the forum of public debate, Darwin completed a highly specialised study of the fertilisation of *Orchids* (1862). This little-read study included examples of how the supposed evolutionary mutability of species could illuminate botanical phenomena that hitherto had stubbornly resisted the best attempts at explanation. Bellon describes the radical reorientation affected by *Orchids* of the study of plant fertilisation towards evolutionary theory as a flanking movement. "Darwin simultaneously illustrated the conceptual and methodological power of his theory and its prodigious ability to bring order to the study of natural history" (409). Indeed, Darwin's quiet retreat into the evidential minutiae changed the grounds of debate.

The few who read *Orchids*, whether holding species to be mutable or not, immediately recognised its erudition. Its small number of readers willingly followed Darwin as far as the concluding chapter, where he raised questions about whether homologous traits were better explained with reference to the wisdom of a divine plan or to descent with gradual modification fitted to the changing conditions of life. From

the ranks of special creationists, Bellon observes, came warm recognition of "the value of Darwin's extension of empirical knowledge" (411). The scholarly pedigree of *Orchids* established, its reviewers were divided over whether the final chapter added anything of scientific significance. By this time, however, the tide of intellectual discourse was changing as George Bentham and Joseph Hooker pressed *Orchids*' explanatory advantage and John Stuart Mill defended evolutionary theory against Wilberforce's charges of illogicality. Bellon concludes: "Darwin and his allies thus outflanked their enemies – not by undermining the scientific establishment but by making evolution an indelible part of it" (415).

Though an older generation of naturalists continued to ponder Darwin's solution to the problem of the origin of species, the younger generation eagerly embraced his research program. Accolades and awards rapidly followed the publication of *Orchids*. By 1866, Darwin's work was ranked alongside that of Michael Faraday. The acclamation of Thomas Huxley as president at a meeting of the British Association in 1868 is an excellent indication of just how quickly evolutionary theory had won the field.

There is a notable, though understandable, absence of discussion of Darwin's well-known preoccupations with interpretation of the fossil record and the geographical distribution of species in Bellon's discussion. On the other hand, he makes a persuasive case for the triumph of evolutionary theory being a "pollen-grain" (419-20) revolution, rather than one of monkeys and men.

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