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**JEAN-DANIEL CANDAU and JEAN-MARC DROUIN (eds.),
Augustin-Pyramus de Candolle: Mémoires et souvenirs
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ALEXANDRA COOK

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DAVID C. LINDBERG and RONALD L. NUMBERS (eds.), **When Science and Christianity Meet**. Chicago and London: University of Chicago Press, 2003. Pp. xii + 357. ISBN 0-226-48214-6. £20.50, \$29.00 (hardback).
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John Hedley Brooke's *Science and Religion: Some Historical Perspectives* (Cambridge, 1991) has probably been the most influential work in promoting the view, now widely accepted amongst

JEAN-DANIEL CANDAU and JEAN-MARC DROUIN (eds.), *Augustin-Pyramus de Candolle: Mémoires et souvenirs (1778–1841)*. Bibliothèque d'histoire des sciences, 5. Geneva: Georg Editeur, 2003. Pp. xv + 591. ISBN 2-8257-0832-1. €33.00 (paperback).
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Augustin-Pyramus de Candolle (1778–1841) was possibly the greatest plant taxonomist of the first half of the nineteenth century. A student of Cuvier and Lamarck, his active teaching career spanned over three decades, during which he produced nearly three hundred publications and created the Geneva botanical garden. His masterpiece was the *Prodromus systematis naturalis regni vegetabilis*, of which he produced seven volumes (1824–41); it was continued by his son Alphonse and grandson Casimir. Candolle loomed large in the fields of plant morphology and physiology; contributed to plant chemistry, agronomy and pharmacology; and was a founder of phytogeography. His memoir is witty and informative, even sometimes self-deprecating.

Candolle was, as he noted, born shortly after the death of Linnaeus and only a few months after those of Albrecht von Haller and Bernard de Jussieu; he would go on to publish works in imitation of each of these great predecessors. He came from the Protestant branch of a prominent Provençal family. Candolle's father was first a banker and then a member of the *conseil d'état* of Geneva; his mother was a grand-niece of Peter the Great's French admiral. In 1798 Candolle migrated to Paris, where the *Ancien Régime* scientific institutions had been either closed down or reformed, but where science itself – especially natural history – flourished, valued for its contributions to 'public utility'. In that year he marched as part of a contingent of scientists in a solemn triumphal procession from the Jardin des plantes to the Champ de Mars, organized by the Directory to commemorate its victories in Italy and symbolizing the alliance of science with the state.

In Paris Candolle studied medicine, but found the hospitals so distressing that he could not continue (an apt comparison could be drawn with Darwin). Instead he studied zoology with Cuvier, Lacépède and Lamarck, botany with Desfontaines and mineralogy with Haüy. He found Lamarck so obsessed by his diatribes against modern chemistry that he proved a useless teacher, although Candolle later contributed substantially to Lamarck's great *Flore française*. Candolle was thrilled to consult the library of L'Heritier de Brutelle and to purchase his herbarium. He likewise acquired herbaria from Thuillier (the Paris environs), Schleicher (the Alps) and Hoppe (Austria). Using these materials he added two thousand native species to Lamarck's *Flore*.

From this humble start, Candolle went on to greater things. He was not only quick and intelligent – professor of botany at Montpellier at thirty, and natural history at Geneva at thirty-eight – but also well connected. Especially notable among his friends was Benjamin Delessert, wealthy scion of a Swiss banking family that had befriended Jean-Jacques Rousseau during his exile from France in the 1760s. Delessert had come under the influence of Rousseau's teachings in botany as disseminated in eight famous letters to Madeleine-Catherine Delessert, Benjamin's mother, and to his older sister Madelon (for Rousseau's letters in English translation see his 'Botanical writings', ed. and tr. A. Cook, in a recent volume of *The Collected Writings of Rousseau* (Hanover, NH, 2000), pp. 130–63). Benjamin Delessert devoted part of his considerable wealth to developing a significant botanical collection open to all researchers. He also established the first workingman's saving institution, the *caisse d'épargne*, an institution perhaps inspired by Rousseau's teaching that political freedom is impossible without a reasonable degree of equality. Candolle joined Delessert in related philanthropic activities far removed from the lecture theatre and herbarium.

As a political realist, Candolle understood the possible consequences of French royalism; he accordingly returned to Geneva in 1816, where he pursued a political career alongside his

scientific one. In his memoir Candolle did not hesitate to judge his famous teachers and contemporaries, comparing Cuvier to Haller in lacking the 'inventive spirit' (p. 168), and declaring Etienne Geoffroy Saint-Hilaire to have 'knowledge but poorly directed, imagination but poorly directed, a good character, but often blinded by vanity' (p. 171).

Jean-Daniel Candaux and Jean-Marc Drouin have produced a beautiful edition of Candolle's memoir, with a comprehensive introduction by Drouin, an expert on late eighteenth- and early nineteenth-century botany. The footnotes are ample and informative. This engaging memoir is recommended to anyone interested in the history of nineteenth-century natural history.

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JOHN CANTRELL and GILLIAN COOKSON (eds.), **Henry Maudslay and the Pioneers of the Machine Age**. Stroud and Charleston: Tempus, 2002. Pp. 192. ISBN 0-7524-2766-0. £16.99, \$26.99 (paperback).

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As the editors note in the introductory chapter, this book began with the idea of exploring the network of Manchester engineers who were working at the time of Joseph Whitworth, James Nasmyth and Richard Roberts – during, that is, the first half of the nineteenth century. They discovered, however, that Henry Maudslay in London was a significant influence on these workers and on the development of machine tool technology in general. Thus the project was redirected. The eight contributors to this volume paint an intriguing portrait of Maudslay, the environment of the London engineering industry during his career, and the wider context of a pioneering generation of innovative British engineers. In the process, they provide a form of industrial career history that transcends previous technical histories that focused merely on nuts and bolts. The Introduction describes the authors' approach as 'using the wider lens of biography to explore the technological, business and personal progress of the men who made the machines' (p. 16). Moreover, they extricate their stories from the ambivalent, if not malign, historiographical influence of Samuel Smiles, whom the editors characterize as a 'caricaturist ... interested in stories of "triumph over adversity", of single-mindedness, dedication and the rise from humble origins' (p. 12). While Smiles preserved important raw material, he marginalized some engineers (such as David Napier and William Muir) while vaunting the careers of others (e.g. Maudslay, Nasmyth, Roberts, Whitworth and Joseph Clement). Each of these engineers receives a chapter in this book. Bracketing these biographical contributions are two chapters, one that surveys London engineering at the time of Maudslay, and another that discusses the activities of his company to the end of the nineteenth century.

The ten chapters are rather well matched, adopting a perspective and level of detail that are largely consistent. Nearly one hundred illustrations – ranging from crisp and detailed to muddy and blurred – include many drawings, engravings and photographs of machines and individuals, as well as a handful of others showing maps, factories and advertisements. Their captions are generally terse, and so restrict the analytical value of the images. The index is equally sparse, with some two hundred entries limited mainly to the names of individuals and their machines. The index provides no link to the context of business (apart from company and process names) or the wider perspectives of engineering, society and culture. This is unfortunate, because the individual contributions do touch, to varying degrees, upon these aspects of the story. In portraying the interweaving of the career histories of a handful of influential engineers, the book communicates a strong sense of the local pressures and opportunities influencing them, and their ingenuity in conceiving technical solutions.