history of the concept and the terminology in question, exploring distinct French and British historical 'lines'. He tentatively identifies 1850 as the date of the phrase's first appearance (in the second volume of Prosper Lucas's *Traité philosophique et physiologique de l'hérédité naturelle*). Gayon shows how naturalists and physicians were able to endorse the idea of the inheritance of acquired characters but still deny Lamarck's claim that such changes led to the production of new species.

For all that these essays include, there are a couple of surprising omissions. They do not deal at all with the question of why, around 1800, Lamarck concluded that species are mutable. The excuse for not looking at how Lamarck came to believe in species change might be that the question has been explored elsewhere and that here the authors wanted to focus on Lamarck as a 'philosopher of nature'. But if that is the focus, it is ironic, given the insights that have been gleaned in this volume from careful attention to particular words and phrases, that the volume never pays explicit attention to the words Lamarck used to characterize his own intellectual role. It turns out that he never used the phrase *philosophe de la nature* ('philosopher of nature') for himself or anyone else (one can confirm this from the website cited above). He characterized himself instead – especially in the critical years immediately around 1800 – as a 'naturalist–philosopher'. The implications of Lamarck's characterization are important. Pursuing them would have helped clarify the importance of Lamarck's practice as a naturalist (and professor) for his thoughts on the working of nature. Though that perspective is underrepresented in this volume, the volume deserves to be considered required reading for Lamarck scholars from now on.

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Roger Hahn, **Pierre Simon Laplace 1749–1827: A Determined Scientist.** Cambridge, MA and London: Harvard University Press, 2005. Pp. xii + 310. ISBN 0-674-01892-3. £22.95, $35.00, €32.30 (hardback).
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The original, French edition of this book appeared in 2004 with Gallimard under the title *Le Système du monde. Pierre Simon Laplace – un itinéraire dans la science* (Paris, 2004). The 'itinerary' in question was the lengthy and tortuous one that took Laplace from Beaumont-en-Auge in Normandy, where he was born into comfortable (though far from wealthy) rural obscurity in 1749, to national and international eminence as one of the most powerful scientists of his generation. Through the vicissitudes of a long life, as Roger Hahn argues, Laplace was profoundly marked by his experiences and beliefs as a young man. Even his scientific programme was formulated early. It was a programme, Newtonian in its thrust, that led many to regard him as the Newton of France; even the timing of his death in 1827, just a century after Newton's, lent force to an accolade whose true foundation was rather his host of achievements in celestial mechanics, terrestrial physics and probability theory.

Hahn's own pursuit of Laplace has been long and tortuous too. But it has yielded hard-won documentary evidence that earlier biographers had assumed to be unavailable, especially about Laplace's early life, family and religious opinions. The result is an intricately woven study that not only illuminates our perception of Laplace himself but also gives insights into the many worlds – social, political, scientific – that he frequented. Hahn finds in Normandy some of the richest clues to the man that Laplace was to become. The fourth of five children, Laplace lost his mother early, and his education owed more to his time at the college of Beaumont and the University of Caen than it did to his family. At the university his encounter with a modern-minded teacher of mathematics, Christophe Gadbled, seems to have been decisive in turning his aspirations from the priesthood to science. Leaving family and ecclesiastical mentors behind and

arriving in Paris at the age of twenty, Laplace was soon taken under the wing of d'Alembert and found a junior but well-paid teaching post at the Ecole militaire. With the all-important entry to the Académie des sciences achieved (by his election as an *adjoint*) in 1773, there was no holding someone of his ability and single-minded ambition. His collaboration with Lavoisier in the study of heat followed in the later 1770s, and by the eve of the Revolution he was living comfortably, serving the Académie on committees and frequenting the Parisian scientific elite (though never, significantly, the fashionable salons or political gatherings). This was career-making at its most dedicated and effective.

Hahn's biographical focus also pays dividends for the tempestuous period in which Laplace dextrously navigated the choppy waters of French life between 1789 and the return of the Bourbon line in 1815. By 1796 Laplace was irreversibly a major public figure, a respected popularizer (as the author of the *Exposition du système du monde*) and a participant in the restructuring of France's scientific institutions, notably the newly founded Institut national des sciences et des arts, after the depredations of the Terror. And on he went, under Bonaparte, to ministerial office (briefly as minister of the interior) and membership of the Senate, with a salary of 72,000 francs that allowed him, with Berthollet, to sustain the brilliant 'society' (more properly a circle of promising young scientists) at Arcueil, on the southern outskirts of Paris. Only in the last decade of his life, with some of his most cherished scientific beliefs coming under attack, did his star begin to wane, and even then only slowly.

So what kind of Laplace are we left with? Hahn presents him as 'steadfast' in his philosophy, single-minded in his science and resilient in his personal life. One person's steadfastness, of course, can be another's obduracy, but Hahn's Laplace, though cautious in everything he did, does not emerge as the inflexible conservative that he is commonly thought to have been. A starting point of political neutrality, especially evident in his early years, made it easy for him to sway with the changes of regime, and in religion he moved from youthful Catholic conformity to Enlightenment scepticism and finally back to a partial reconciliation with Christianity, tempered by the difficulty of reconciling the notion of supernatural divine intervention with that of a law-bound universe in the Laplacean manner. Not surprisingly, contemporaries sometimes found it hard to determine where the true Laplace lay. This was not someone who inspired affection, and he remained intensely private, travelling little (never abroad and never south of the Loire) and revealing little of himself, apparently even to friends. Such a man was no easy target, and we must be grateful that, in Roger Hahn, he has found the accomplished, tenacious biographer that he deserves.

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John L. Heilbron (ed.), **The Oxford Guide to the History of Physics and Astronomy.** New York: Oxford University Press, 2005. Pp. xxi + 358. ISBN 0-19-517198-5. $35.00 (hardback).
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This is the first of a projected series of thematic volumes derived from the *Oxford Companion to the History of Modern Science*, published in 2003. This *Guide* offers a selection of articles from the *Companion* (plus a few new, mostly biographical, entries) that focus on physics, astronomy and related sciences such as meteorology, geography and geology.

Closely patterned on the *Companion* in its structure, the *Guide* lists entries alphabetically and reprints its thematic listing of entries, though unfortunately not the 'history of science' entry that discusses the motives for adopting this classification. As a result of the carryover, the comments voiced by reviewers of the *Companion* largely apply to this volume (see Aileen Fyfe's review in the *BJHS* **38** (2005), 351–3). Consulting the thematic listing of entries, I was