notebooks, Steinke in Chapter 2 lays out the experiments that led Haller to formulate the irritability thesis, with special attention being given to the role played by Haller's student assistants. Chapters 3 and 4 trace the movement of the thesis from his laboratory to the wider medical community, showing how Haller designed experiments that allowed him to respond to challenges and questions sent to him from all over Europe. Throughout, Steinke emphasizes that the perimeters of irritability were never completely set in Haller's mind and that, prompted by new evidence, he revised his stance at several points during his career. Chapter 5 expands the scope of the book by outlining how irritability played a significant part in philosophical and medical debates of the day. To give focus to his discussion, Steinke describes how the idea was accepted, rejected and modified by adherents of the three most prevalent medical models of the late eighteenth century: animism, mechanism and vitalism. To my mind, this is one of the more helpful treatments of this topic published in recent decades, benefiting from the book's early explication of irritability and showing how different national and linguistic communities reacted differently to the thesis.

For those more interested in the wider public sphere, Chapter 6 offers a fascinating treatment of how Hallerian irritability fared in book-review journals published throughout western Europe. Although Steinke does not explicitly draw out the significance of this form of print, his work on the subject will stimulate those interested in the history of medical and scientific literacy, especially since the birth of these review journals occurred at the same time that Europeans were switching from intensive to extensive reading habits. Drawing on his own research and the work of Anne Goldgar, Ute Schneider, Doris Kuhles and others, Steinke suggests that these journals can be classified into three types: those which reviewed national literatures, those which reviewed foreign literature and those which reviewed both. Since Haller's books were reviewed by journals that fell into all three of these categories, Steinke has much to say about how experimental controversies played out within different communities of readers. On this point he also makes several insightful observations about the types of review method that Haller promoted and discouraged when he edited the *Göttingische gelehrte Anzeigen*, the influential journal managed by the University of Göttingen's professors.

I liked this book. But, in fairness to light readers, I should say that it does drift off into some extremely detailed sections that dissect the manual and methodological intricacies of Haller's experiments, and although it is apparent that Steinke has read Ian Hacking, David Gooding and Peter Galison, it is sometimes not so obvious how his comments about them (especially in the footnotes) are relevant to Haller's experimental method. Even so, this book needed to be written, especially in English, because it fills a rather large hole in the history of laboratory-based medical theories, and also provides a helpful resource for those interested in the uptake of Haller's ideas throughout Europe. I have no doubt that I will be recommending it to historians at future conferences – especially those whose knowledge of laboratory-based medicine in the eighteenth century is limited to one or two examples of experimental physiology.

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Pietro Corsi, Jean Gayon, Gabriel Gohau and Stéphane Tirard, **Lamarck, philosophe de la nature.** Paris: Presses Universitaires de France, 2006. Pp. xii + 167 pp. ISBN 2-13-051976-8. €20.00 (paperback).
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Between 1998 and 2000 the French scholarly collective REHSEIS held a seminar on Lamarck. Four essays developed for the seminar have now been published under the title *Lamarck, philosophe de la nature*. Each offers original insights and is a valuable contribution to

Lamarck scholarship. Whether they collectively confirm the characterization of Lamarck as a 'philosopher of nature', however, is another question.

The first essay, Gabriel Gohau's 'Lamarck, philosophe?', concentrates on a change in Lamarck's conception of nature between 1797, when he represented 'nature' and 'life' as two separate, contrasting entities, and 1820, by which time he had come to regard life as a part of nature. Critical for this fundamental change in Lamarck's thinking, Gohau explains, was Lamarck's coming to embrace, *c.*1800, the idea of spontaneous generation. The idea contradicted a central claim of the chemical system Lamarck had vigorously promoted in the 1790s, namely that only living beings are capable of forming chemical compounds. Tied to this claim was the idea that all minerals were the products of the successive decomposition of compounds that had been initially generated by living things. Gohau notes that Lamarck continued to endorse this idea as late as 1809, in his *Philosophie zoologique*. Gohau's essay is an excellent entry into the subject of the changes and contradictions in Lamarck's theorizing over the course of his career. Gohau also provides a perceptive analysis of how Lamarck's vision of chemistry differed from Lavoisier's.

The volume's second essay, by Pietro Corsi, takes a new look at what Lamarck had in mind in 1802 when he proposed developing a science of 'biology'. Corsi has elsewhere provided scholars with a very valuable tool for analysing Lamarck's publications – an on-line site with the texts of most of Lamarck's writings (www.lamarck.net). Corsi uses this resource to good advantage here, tracking and interpreting Lamarck's use of the words *biologie*, *biologique* and *biologiste*. Where most other scholars have been content to note Lamarck's early (if not entirely unprecedented) use of the word *biologie*, Corsi pays special attention to what Lamarck intended his science of 'biology' to be, and why Lamarck ultimately never developed it under that name. He offers the novel suggestion that the reason Lamarck in 1802 abandoned his plan of developing his new science of 'biology' was neither ill health nor lack of time (Lamarck's excuses), but instead Lamarck's perception that the new political climate was inhospitable to his materialistic explanation of vital phenomena. Corsi indicates that Lamarck's hopes for his *biologie* were temporarily revived in 1815 with the Restoration, but that instead of expressing himself freely he increasingly referred to God in his writings so as not to be accused of materialism or atheism.

Stéphane Tirard for his part concentrates on what Lamarck had to say about spontaneous generation. Like Gohau, Tirard underscores the tensions between the idea of spontaneous generation and Lamarck's earlier view that life was responsible for the formation of all chemical compounds. Examining Lamarck's earliest writings on the very simplest forms of animal life in 1800 and 1801, Tirard maintains that Lamarck's 'reflection on this endpoint of animality' came to constitute 'the keystone of the transformist theory that Lamarck would thereafter devote himself to developing' (p. 80). Tirard observes, however, that while Lamarck came to insist with confidence that spontaneous generation was responsible for the origin of the very simplest organisms of both the plant and the animal scales, he was more diffident about the very beginning of life on Earth. Tirard suggests that Lamarck's thinking about life's primordial origin continued to be hindered by his long-cherished belief in the organic origin of all minerals.

The final essay in the collection is an elegant analysis by Jean Gayon of the history of the phrase with which Lamarck's name is most often associated – 'the inheritance of acquired characters' (*l'hérédité des caractères acquis*). Gayon indicates that while the general concept to which this phrase corresponds can be traced back to antiquity, the phrase itself cannot. Lamarck himself never used the phrase. Indeed, as Gayon explains, heredity per se was never a major concern of Lamarck's. Lamarck set his sights on the transformation of species, not on the phenomena of heredity (notwithstanding the now-famous 'second law' of his *Philosophie zoologique*, where he states that, under the proper conditions, modifications acquired as the result of changes of habit in one generation are passed on to the next generation). Gayon goes on to trace the subsequent

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