1791–1812 and range in length and fame from fragmentary notes of popular lectures on geology at the Athenaeum, to the 70-page 'Preliminary discourse' to the *Researches on fossil bones*—his most celebrated geological treatise. They also document the phenomenal rise of Cuvier's career, from serving as tutor to a noble family in Normandy at the age of 22, to dominance of the natural history community in Paris, in just over twenty years.

The opening gambit in Cuvier's carefully orchestrated elevation was his demonstration of the reality of species extinction—to a world that had long believed the loss of species to be impossible in God's wise and providential scheme of Nature. Extinction, an assumption central to later nineteenth-century geology and evolutionary theory, makes repeated appearances in these translations—from the initial 'Memoir on the species of elephants, both living and fossil' (1796), to the fuller argument presented in the 'Preliminary discourse'—which help document, if not explain, this important revolution in biological thought. Sadly, surviving records apparently do not tell us precisely how (and in whose company) Cuvier arrived at his conviction in extinction or his decision to risk his infant career on its explication.

Rudwick's selection does display many other events and trends central to Cuvier's geological development. Among them are his articulation of the anatomical rules necessary for reconstructing the skeletons and inferring the habits of fossil mammals; his dependence upon colleagues and workmen for field observations to supply and confirm conclusions he reached largely in his workspaces at the museum; his reliance on the histories of many traditional cultures, as well as the intermittent record of the rocks, to support his catastrophism; the gradual growth of his confidence in venturing modest speculations beyond the revered "positive facts"; and the challenges of making sense of strata in the decades when stratigraphic science was just being born. All this provides ample justification for why Cuvier was a catastrophist, and explanation of just what sort of catastrophist he was.

Rudwick has given us the keys to understanding the thought of nineteenth-century France's most brilliant geological innovator. The next steps should be to document in detail how Cuvier's innovations spread beyond France to influence the natural history traditions of the rest of Europe, and to rewrite the geology textbooks.

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Leonard Warren, *Joseph Leidy: the last man who knew everything*, New Haven and London, Yale University Press, 1998, pp. xvi, 303, £25.00 (hardback 0-300-07359-3).

This biography of Joseph Leidy takes us into the heart of nineteenth-century medical Philadelphia. Leidy is little known in Europe today but was then, for more than thirty years, one of the most noted men of Philadelphia, renowned for his anatomical skill, his scientific learning, his versatility, public philanthropy, and personal charm. Professor of Anatomy at the University of Pennsylvania 1853–71, and a founding member of the National Academy of Sciences, he played a key role in reforming American medical education. He was an introverted man, however, much preferring microscopical researches into parasitology and protozoology than dealing with either patients or medical students. Nevertheless, he introduced a course on the new physiology in the medical school at Philadelphia, which he opened to women (and their Papas), ensured that histology became a significant part of the curriculum,

and lectured on germ theory. In 1871 he moved to Swarthmore College as Professor of Natural History, an appointment which was rather better suited to his taste, only to return to the University of Pennsylvania some ten years later as founding professor of the Department of Biology. In the space of this career we learn a great deal about the social structure of science and medicine in Philadelphia during the mid-nineteenth century. Leonard Warren, himself a professor of biology, does an excellent job in bringing both Leidy and these changing medical institutions to life.

Yet Leidy is not an easy person to write about, as Warren is the first to admit. He never became pre-eminent in one medical field, but excelled in many. Instead, as the subtitle suggests, Leidy ranged far and wide over the natural historical sciences, perhaps too far and wide to become notable for any single achievement, a fine all-round naturalist who perhaps lacked that all-consuming urge to dominate a medical speciality which drove other men to fame. Equipped with the latest microscopes and blessed with outstanding artistic talent he first made a name in parasitology, establishing the anatomy and life cycle of *Trichina spiralis.* He added palaeontology to his portfolio soon after. Dinosaurs intrigued him in the late 1850s, at which point he supervised the assembly of the first American dinosaur *Hadrosaurus foulkii.* He went on to write detailed accounts of Cretaceous reptiles from the wild west, followed by extinct North American mammalia; but his expertise was eclipsed by the stupendous fossil discoveries of Edward Cope and Othniel Marsh in the 1870s. Returning to his microscopes, Leidy then published the standard textbook on freshwater rhizopods, as well as making an oddly interesting detour into the unusual subject of the intestinal contents of termites. This repertoire hardly accounts for the high regard—even love—that his students showed for him: the intensity of birthday tributes, for example, as documented by Warren, almost match the devotion expressed for Louis Agassiz, a little further north in Boston. These are a puzzle, as Warren frankly confesses. Even so, the manuscripts he cites certainly show the man highly and affectionately regarded by his colleagues.

Leidy did not participate much in the race and evolutionary debates sparked by Nott and Gliddon and then inflamed by the American Civil War. His views on evolution and polygenism are consequently difficult to determine. He appears to have been a flexible creationist, corresponding intermittently with Darwin and Huxley, although often labelled an atheist by contemporaries, and equally often speaking as if he were a pastor. In discussing the amoeba in a medical class (he was the first to use this organism in the American biological curriculum), he stated that "each and every one of these simple organisms bears the impress of a Divine hand".

Egalitarian, influential, and anti-authoritarian though he may have been, it is hard to pinpoint Leidy's place in the history of medicine. Warren finds it regrettable that such a talented man has been mostly forgotten, even though he acknowledges that our Westernized histories invariably favour isolated achievements over intellectual diversity. This biographical study does much to repair the gap. It is packed with authoritative information and well-salted with Leidy's opinions. "How can life be tiresome so long as there is still a new rhizopod undescribed?" he declared at one point, revealing something of Charles Darwin's engaging enthusiasm for natural facts. But Leidy did not have a propaganda machine like Darwin, nor a Huxley to champion his causes. Medical fame, as Warren reminds us, depends on factors other than skill.

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https://doi.org/10.1017/S0025727300066813 Published online by Cambridge University Press